FORMING SUPPLY CHAINS FRAMED WITHIN AGROECOLOGICAL PRINCIPLES: POSSIBILITIES FOR THE ANDEAN BLUEBERRY IN ANTIOQUIA, COLOMBIA

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By

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DEDICATIONS

This is for my family, mentors, the friends who have accompanied me in this process in Colombia and here in the United States, and for peasants and rural teachers in Colombia. Thanks for your inspiration. They are true heroes who deserve a better world!

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Finally, I conducted this study thanks to Fulbright – Pasaporte a la Ciencia, Colombia, which seeks to contribute to the solution of the country's focus challenge, "Society," within the framework of Colombia Científica. This program pursues to promote social innovation for economic development and productive inclusion. By exploring alternative value chains and including small producers, this research provides a theoretical framework to explore alternative schemes and models of rural development from the perspective of human, integral, and sustainable development to close the urban-rural gaps.

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ABSTRACT

This study discusses the importance of agroecology and food sovereignty in ensuring sustainable food systems. Agroecology improves productivity by utilizing ecosystem services while recognizing the significance of farmers and food producers' knowledge and practices, offering localized solutions for global challenges, and reducing costs and negative environmental impacts by using fewer external resources. Food sovereignty provides a broader political and social context for agroecology, emphasizing the importance of empowering communities through control and local decision-making in food production and distribution. However, traditional approaches to analyzing power in the agricultural food industry have yet to notice the unique characteristics of rural communities. Agroecological social movement studies must take action to prevent smallholders from being overcome by global market pressures. Social capital, which can promote sustainable agricultural practices by encouraging cooperation, knowledge exchange, and resource sharing, cannot be assumed implicitly within agroecological networks, particularly in areas historically impacted by violence and displacement.

This dissertation proposes an analytical framework to examine how social capital shapes power relations within agroecological networks in a region affected by violence and displacement in Colombia. Using a qualitative approach, the study examines how

power relations and social capital elements interact within agroecological networks in Eastern Antioquia, a region with a history of violence where networks struggle to perdure despite the pressure of urban expansion, gentrification, and the agroindustry's expansion. The study explores the obstacles actors within the Andean blueberry (*Vaccinium Meridionale* Swartz) supply chain encounter when trying to associate, access institutions and external resources, and influence policies, considering Colombia's legal framework governing food supply chains. Overall, this study contributes to a deeper understanding of how social capital shapes power relations and affects the formation of agroecological networks, particularly in areas affected by violence and displacement, and offers insights into the challenges of forming agroecological supply chains and joining agroecological networks in such contexts.

CHAPTER 1: INTRODUCTION AND OVERVIEW

INTRODUCTION

Since 1996 when the international peasant movement "La Vía Campesina" introduced the first notions of food sovereignty, agroecology has been a central part of the food sovereignty movement, seeking to provide practices and ecological approaches to agriculture that can achieve the main objective of food sovereignty, which is to guarantee the right of peoples to be healthy, to access culturally appropriate food produced through sustainable methods, and to define their own food and agriculture systems (Nyéléni Declaration, 2007). Thus, agroecology offers localized solutions for global challenges and reduces costs and negative environmental impacts using fewer external resources. According to FAO (2018), agroecology is a people-centered approach that can ensure sustainable food systems by improving productivity using ecosystem services and recognizing farmers and food producers' knowledge, practices, and willingness to form networks and associations. Therefore, social capital[1] is assumed to be inherent to agroecological networks. However, it remains unclear how specific elements of social capital facilitate or hinder the formation, inclusion, and long-term sustainability of these networks within a particular region or territory. Furthermore, although agroecology and food sovereignty seek to empower communities and establish sustainable agrifood systems, there has been limited in-depth studies of power dynamics and relationships within agroecological networks.

[1]Social capital is “an all-encompassing concept for the norms and social networks that facilitate cooperation between individuals and among groups of individuals that are embedded in social relationships involving feelings of gratitude, respect, and mutual understanding that facilitate collaboration and cooperation” (Putnam, 1993 in Onyx et al., 2007. p.5).

Iles and Montenegro (2019) argue that achieving food sovereignty is a process that encompasses various relational forms of sovereignty. Thus, food sovereignty can provide a broader political and social context for agroecology, emphasizing the significance of empowering communities by acknowledging their distinctiveness and enhancing their agency in terms of control and local decision-making in food production and distribution (Rojas & Hoyos, 2018; Anderson & Pimbert, 2019). However, traditional approaches to analyzing empowerment within the agricultural food industry have yet to acknowledge the unique characteristics of rural communities. For example, the political economy of agriculture approach mainly focuses on market structure, who benefits, and how it impacts group agency, often foregoing an in-depth exploration of power relations. In the past, this approach has considered nature as passive and disconnected and natural resources as limited and dependent on population growth. Even today, strict political economy approaches offer limited insights into the specificities and processes of agrifood systems by reducing the agency of food system actors to quantitative linear models, which puts alternative food systems at disadvantage when compared to industrialized agricultural production systems in terms of productivity (Busch & Juska, 1997; Buttel, 2001; Howard, 2016).

On the other hand, the field of political ecology of agriculture focuses on the implications of natural resource distribution, control, and agency in the face of dominant systems (Leff, 2006). Consequently, political ecology approaches to power become relevant in areas where industrialization has depleted biodiversity, providing agroecology with elements and theoretical questions from various perspectives, which aid in

addressing asymmetrical power relationships within agrifood systems and promoting food security. Agroecology achieves this by being place-based, reducing reliance on intermediaries and financiers. However, a challenge for studies on agroecological social movements is how to suggest actions that can prevent smallholders from succumbing to the pressures of the global market.

In sum, since agroecology acknowledges that agriculture is influenced by various factors, such as social, cultural, economic, and ecological elements, it has the potential to strengthen social capital and promote sustainable agricultural practices by encouraging cooperation, knowledge exchange, and resource sharing. However, social capital cannot be assumed implicitly within agroecological networks, and its advantages are not always used for the common good. For example, in areas historically impacted by violence and displacement, social capital can also be a tool to exert power over others. It can foment the formation of exclusive networks due to the mistrust and fear of foreigners (Giraldo et al., 2013). In the following chapters of this dissertation, I examine how social capital shapes power relations within agroecological networks in Colombia, in a region affected by violence and displacement. In the first essay, which corresponds to chapter 2, I conduct a literature review to develop an analytical framework to examine some elements of social capital and their intersection with power relations through different dimensions of agroecology, such as production practices, knowledge transmission, and social and economic ties (iPEP-Food, 2018).

Then, using a qualitative approach, I test this framework in chapter 3 by examining how power relations and social capital elements such as trust, social networks, norms,

and integration (Ostrom & Ahn, 2003) interact in an agroecological network situated in Eastern Antioquia, a region with a history of violence where some agroecological networks struggle to endure because of the pressure of urban expansion, gentrification, and the agroindustry's expansion. Finally, in chapter 4, I explore the obstacles actors within those agroecological supply chains encounter when trying to access institutions and external resources, and influence policies, considering Colombia's legal framework governing food supply chains. In chapters 3 and 4 I use a place-based approach to analyze the experiences of different actors of the Andean blueberry (*Vaccinium Meridionale* Swartz) supply chain and agroecological networks in Eastern Antioquia, Colombia. The Andean blueberry is a novel fruit that grows wild in the area and is gaining popularity for its health benefits and adaptability (Maldonado-Celis et al., 2017). Because of these properties, some have suggested that this fruit is a good alternative to be industrialized and exported.

In this dissertation I attempt to go beyond the assumption that farmers can freely engage in agroecological food production, aiming to understand the challenges of forming agroecological supply chains and joining agroecological networks in a context of historical mistrust and intimidation by violence. The findings of this study contribute to a deeper understanding of how social capital shapes power relations and affects the formation of agroecological networks, which can expand the transdisciplinary academic discussion on agroecology as a social movement. In addition, this study aims to contribute to the understanding of how agroecology can also transform power relations among actors and change production and research paradigms within agrifood systems and value chains. In

this way, this research can guide practitioners and scholars to explore sustainable social and economic development opportunities in areas where communities establish agroecological networks despite a history of violence and territorial control.

The main research question guiding this dissertation is:

What are the possibilities of forming supply chains framed in agroecological principles for the Andean blueberry, a novel fruit that is harvested in rural areas of the eastern Antioquia, Colombia?

The main question of this dissertation is supported by the following sub-questions, which are developed in chapters 2, 3 and 4.

- *How does social capital within agroecological networks in regions impacted by violence in Colombia influence power relations among actors?*
- *How has the context in Eastern Antioquia impacted the intersection of social capital and power relations within agroecological networks and the possibilities for Andean blueberry actors to join them?*
- *How does the power configuration and the legal framework of the conventional food supply chains in Colombia impact the formation and development of agroecological supply chains?*
- *What might actors' knowledge and experience suggest for forming supply chains framed in agroecological principles?*

I conducted this exploratory single case study (Yin, 2018) following a social constructionist approach to conceptualize reality as a construction of the experiences of

different actors in a region. According to Jaccard & Jacoby (2009, p. 8), this construction is tied to a particular time and social context and considers that reality changes as the social context changes. This epistemological approach allowed me to understand the case of the Andean blueberry in Colombia, relying as much as possible on the participants' views of the situation. This case is a bounded, concrete, and specific system with a particular setting, actors, events, and unique processes that have not been studied before using qualitative approaches making it an excellent candidate for a case study (Stake, 2005). I conducted a literature review to develop the analytical framework guiding this research, which includes some of the important elements of social capital that is necessary to analyze power relations within agroecological supply chains. Finally, framed within the Colombian legal framework for conventional supply chains, I heard the voices and experiences of producers, marketers, policymakers, and academics involved in the production, commercialization, research, and policymaking processes of the Andean blueberry supply chain and agroecological networks in rural eastern Antioquia, Colombia.

Theoretical Framework

In Chapter 2, I conducted a literature review to explore theoretical concepts of power, social capital, agroecology, and food sovereignty. This review helped in developing an analytical framework to examine the intersection of social capital and power relations within different dimensions of agroecology, including production practices, knowledge transmission, and social and economic relations (iPEP-Food, 2018). By aligning the research questions of this study with the scope of each dimension of

agroecological transformation and considering various dimensions of social capital, I aimed to explore the potential for stakeholders in eastern Antioquia to form supply chains based on agroecological principles. For this analysis, I consider that agroecology has the potential to empower historically oppressed and marginalized peasants (Van Der Ploeg, 2010), providing an alternative paradigm to the exploitative dynamics of industrialized agrifood systems (Pimbert et al., 2021). Scholars suggest that agroecology can bring about positive changes in production practices, knowledge sharing, social and economic relations, and institutional frameworks (iPEP-Food, 2018). Furthermore, I believe that food sovereignty is crucial in reinforcing the sociopolitical nature of agroecology and empowering smallholders to transition away from unsustainable agricultural practices by promoting local food production and enhances decision-making in food distribution.

To fully comprehend the power dynamics within agroecological networks, I identified particular social capital elements that can shape power relations among different stakeholders. By doing so, we gain understanding of how agroecological networks operate and how they can be reinforced to promote more significant societal changes. According to Rodríguez-Alcalá (2019), three commonly acknowledged social capital types are bonding, bridging, and linking social capital. These social capital types relate to social interactions between individuals or groups and explain how individuals obtain certain advantages through personal contacts, such as social networks. Also, they refer to the compatibility of values and identity between individuals and describe the type of relationships built between them. Thus, some attributes of social capital are

trust and the ties generated through it, norms, social sanctions, reciprocity, cooperation, networks, and forms of civil participation, which could translate into organizations and rules or institutions, both formal and informal. Thus, I consider some elements of social capital such as affection, mutual trust, practical norms, and social networks (Bourdieu, 1986) in order to assess social collaboration between the actors involved in agroecological networks.

According to North (1990), some elements of social capital, such as interpersonal trust, are essential to reduce transaction costs. No additional mechanisms are needed to guarantee compliance with the agreements nor to establish additional quotas that increase security among the parties in the operation (North, 1990). Likewise, when individuals can participate in social and civic engagement networks such as community councils, neighborhood associations, and religious groups, there will be greater possibilities for cooperation between members (Patiño & Varnagy, 2012). Therefore, we can hypothesize that social capital and agroecology principles can be decisive for smallholders to take collective action and form alternative supply chains.

Finally, since decision-making and authority reinforce power (Roscigno, 2011), participating in networks could be challenging for individuals from diverse backgrounds who cannot participate in decision-making (Chazdon et al., 2013). To understand what is happening in my particular case, I analyzed the study area's social capital types and how they impact horizontal and vertical power relations among actors in this case. I identified external alliances enhanced by the linking social capital, which is vertical and refers to relations with institutions and authority. Also, I looked into social and

economic ties between producers and other actors involved in the Andean blueberry production process to analyze their possibilities for working together. The presence of these elements and forms of social capital should facilitate the flow of information and the connection between groups, opening opportunities for innovation, investment, and win-win relationships (Del Cioppo and Bello, 2018). On the other hand, having exclusive social relations among stakeholders prevents them from taking collective action and creating connections with other actors and institutions.

Research methods

After developing the framework guiding this research, I used the following methods to collect and analyze data for the Andean blueberry case in the Eastern zone of Antioquia, Colombia. These methods are similar in Chapter 3 and 4. First, I reviewed the current documentation on indexed journals and search engines (Goedeke & Rikoon, 2008. Romero-Lankao, et al., 2012) regarding Andean blueberry and supply chains in Colombia. With this, I gained a better understanding of how the power configuration is documented. Also, I identified actors involved, research trends on food supply chains, and how the Colombian legal framework for food supply chains shapes power dynamics. Then, I contrasted this information with the experiences of actors involved in research, policymaking, and supply of Andean blueberry in the eastern Antioquia, Colombia. Finally, I analyzed the possibilities of agroecological models that these actors have along the Andean blueberry supply chain in the region.

In detail, I followed the following phases to collect and analyze the data for this case:

1. I conducted a systematic map of indexed journals, publications, and regulations in both English and Spanish related to Andean blueberry and fruit supply chains in Colombia (Delibes-Mateos, 2017). To gain inter-disciplinarity, I accessed the databases provided by Google Scholar and the library database of the National University of Colombia and the University of Missouri, managed by the EBSCO system (Romero-Lankao et al. 2012; Rodriguez-Alcalá et al. 2019). According to Petersen et al. (2015), systematic mapping provides an overview of central topics, researchers, journals, policies, or institutions related to publishing results regarding a research area. Unlike a systematic literature review that seeks to synthesize evidence, this systematic map provides a record of publications to obtain a general view of the research trends, actors, and policies regarding fruit supply chains in Colombia.
2. Then, I contacted the key researchers identified in the mapping to contrast the information collected through the systematic map. I emailed or phoned researchers whose work is oriented towards Andean blueberry and/or alternative supply chains in Eastern Antioquia. Then, in order to find the types of social capital prevailing in this case, I conducted semi-structured interviews with them based on a pre-determined guide that included around six open-ended questions. These questions were formulated in order to identify elements of social capital such as trust, social networks, norms, and integration Specifically, I asked the researchers and academics about their insights and experiences researching alternative supply chains and/or Andean blueberry. I asked these initial participants to refer to some other participants in the area who were involved in Andean blueberry production and/or

alternative food networks. This non-probabilistic sampling method is commonly known as snowballing (Young et al. 2018).

3. After interviewing researchers and academics, I contacted some referrals such as producers, marketers, consumers, and policymakers interested in Andean blueberry in the area. I asked them for their perception of relationships among actors, making decisions, price fixation, and the Colombian legal framework for supply chains. Similarly, the six open-ended questions of the semi-structured interviews were formulated in order to identify types of social capital through some elements such as trust, social networks, norms, and integration. The sampling for the interviews stopped when finding data saturation. Each interview lasted approximately 60 minutes and was conducted in Spanish between October 2021 and March 2022. In total, I conducted 22 interviews. While most of them were conducted in person, five were held virtually due to concerns related to the COVID-19 pandemic. The interviews were recorded and transcribed verbatim (Harvey, 2015; Armstrong & Jackson-Smith, 2017). The study's interviews were conducted in specific municipalities, including Rionegro, Marinilla, Guarne, La Ceja, El Retiro, El Carmen de Viboral, La Unión, San Vicente, Granada, El Santuario, and Santa Elena. It should be noted that Santa Elena is a rural district of Medellín where Andean blueberries are also harvested (see Figure 1). The interview protocol was written in English and Spanish, and it was reviewed and approved (IRB Project Number 2021663 MU) by the Institutional Review Board (IRB) at the University of Missouri.

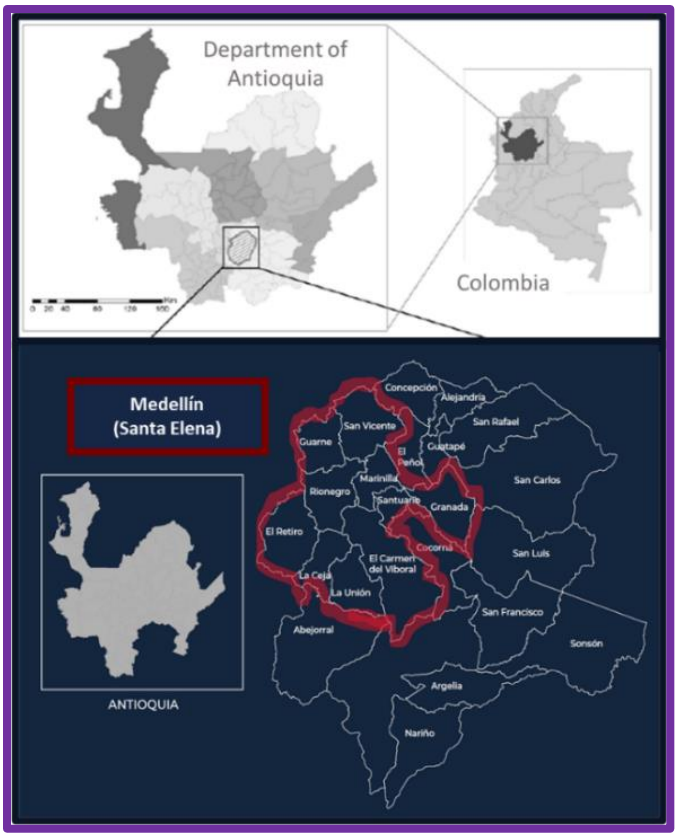
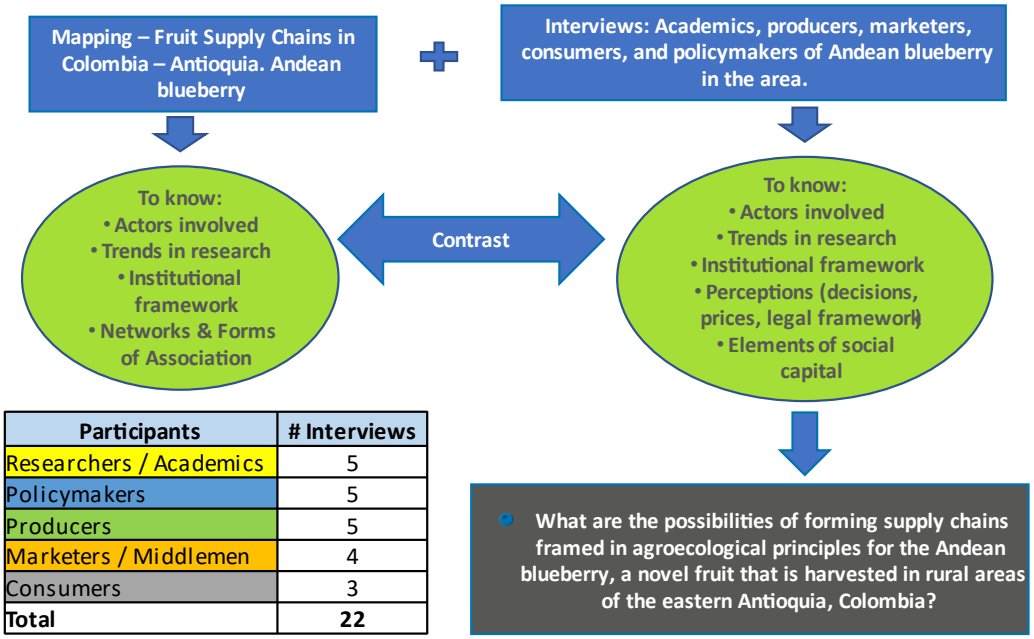


Figure 1. Area of study (Source: Rendon-Rivera et al., 2011; Cámara de Comercio de Medellín, 2021)

Considering the assumption that social capital is inherent to agroecology and establishes equitable power relationships between actors (IPES-Food, 2018; Cadavid et al., 2019), I analyze the collected data using the approach suggested by Hall et al. (2012) and Morse (2015). First, I extracted meaningful quotes, words, and expressions from the interview transcripts and my field notes. Then, I created a list of initial codes, which emerged from the interactions with the participants and their perceptions of alternative networks in the area, their knowledge of agroecology, and their experiences with the Andean blueberry. I organized these codes into categories related to elements of social capital and power relations. To confirm the reliability of the approach and the themes that emerged from the interviews, I asked participants to reflect on and share the most

important topics discussed. Finally, I translated from Spanish to English the quotes used for the discussion and analysis of the data of this study and contrasted these findings with the information from Colombian food supply chains and the Andean blueberry mapping. Figure 2 summarizes the methods used for studying the Andean blueberry in Colombia. In chapters 3 and 4, the methods and their scope will be further explained, aligned with the specific objectives of each chapter.



Participants	# Interviews
Researchers / Academics	5
Policymakers	5
Producers	5
Marketers / Middlemen	4
Consumers	3
Total	**22**

Figure 2. Summarized research methods.

Positionality

As an animal scientist with a master's in food science and technology, I have worked closely with small producers in rural areas near Medellín, the second urban center in Colombia. Most producers seek to add value to their products and to be inserted into Colombia's leading supply chains. Unfortunately, given the country's export-oriented policies, favoring monoculture and extractive systems, the possibilities of small

producers are reduced, and they end up absorbed by the prevailing industrialized models. For this reason, I am convinced that alternative models to food systems focused on the global market should be explored. In this case, I believe that agroecology is a proper alternative because it has gone beyond a set of agricultural tools to produce ecologically, becoming an inclusive social movement that has gained importance in Latin America and can counterbalance the industrialized model mentioned.

Likewise, local food systems are crucial to generating inclusion and balancing the power relations present in the prevailing food systems. Therefore, the traditional knowledge of the peasants must be rescued and valued to strengthen the collective strategies of knowledge construction, which have been threatened by the hierarchical system of knowledge transfer and information control that has been imposed. Being a native of Medellín, Colombia, I focused my study on this region and the Andean blueberry because I grew up in Medellin during its most violent times. So, I am familiar with the wounds and profound impact of violence. Furthermore, due to my lecturer and food safety training activities, I know the characteristics of the producers of this fruit and the challenges they face. In addition, as a commitment to my country, I dream that small producers have alternatives and can stay in their territories. Thus, I hope that someday, public policies in Colombia will be designed considering traditional knowledge and smallholder realities to create value chains adjusted to their possibilities. This will guarantee Colombia's food security and sovereignty, a biodiverse country where agriculture is at risk of being co-opted by agribusiness.

Dissertation overview

As mentioned above, this research consists of three main essays in which, after reviewing the literature, I develop the proposed methods to answer the main research question and its sub-questions. Thus, in the first essay or Chapter 2, I conducted an in-depth literature review to develop an analytical framework to examine how social capital elements impacted by violence and displacement in Colombia shape power relations within agroecological networks in the region. Here, I argue that scholars in agroecology recognize that agriculture is influenced by multiple factors, including social, cultural, economic, and ecological elements. Furthermore, agroecological approaches have the potential to strengthen social capital and promote sustainable agricultural practices by encouraging cooperation, knowledge exchange, and resource sharing. However, I avoid the assumption that social capital is always implicit within agroecological networks. Given this, I analyze the impact of social relations and power dynamics among actors within the community, especially in a region with a history of violence and displacement as Eastern Antioquia.

Then, in Chapter 3, I provide an overview of the history of Eastern Antioquia in Colombia. I highlight that some agroecological networks continue to be present in this region while resisting the pressure of gentrification, industrialized agriculture, and the aftermath of the region's history of violence and territorial control. After that, I analyze how horizontal relationships among actors in these networks and the Andean blueberry supply chains impact the existing power relations to identify the challenges small holders face to join these chains and strengthen them. Finally, in the third essay, which

corresponds to Chapter 4, I expand this analysis to the implications of scaling linking social capital in order to comprehend the challenges actors in agroecological supply chains face in accessing technical and financial resources, as well as influencing policies under the current legal framework governing food supply chains in Colombia.

CHAPTER 2. POWER RELATIONS AND SOCIAL CAPITAL: A FRAMEWORK TO ANALYZE AGROECOLOGICAL NETWORKS

"For every action (force) in nature there is an equal and opposite reaction."
Newton's Third Law

"There is a 'double movement' that results when the negative impacts of capitalist expansion incite a spontaneous, defensive reaction."
Karl Polanyi

Introduction

Agroecology is an approach to agriculture that seeks to optimize interactions between plants, animals, humans, and the environment, and emphasizes the importance of ecological and social diversity in food production. It is based on principles of sustainability, resilience, and social justice, and aims to create food systems that are ecologically sound, socially just, and economically viable (Gliessman, 1998; Altieri & Nichols, 2000; Holt-Giménez & Altieri 2013). Agroecology is often paired with food sovereignty. Trauger et al. (2017, p. 2) argue that food sovereignty is presented as "a transnational social movement struggle and set of alternative practices that seek to transform food systems." This concept was initially introduced by the international peasant movement "La Via Campesina" in 1996. They defined food sovereignty as "the right of peoples to healthy and culturally appropriate food produced through sustainable methods and their right to define their own food and agriculture systems" (Nyéléni Declaration, 2007). From this start, food sovereignty movements aim to turn their demands into public policy and gain visibility and power to achieve dignity and autonomy.

Moragues-Faus (2017) claims that food sovereignty can radically transform the global food system and reinforce the discursive and transformative commitment brought forward by political ecology, which seeks to highlight the importance of adapting food sovereignty to local people's political, social, and cultural rhythms. Thus,

food sovereignty and agroecology are closely related concepts that share a common goal of creating a more sustainable and equitable food system (Rosset, 2018). Agroecological practices can unite people around sustainable production, preventing food sovereignty from losing its political uniqueness and becoming another "co-opted" progressive food movement. For this reason, Trauger et al. (2017) propose food sovereignty as a "construction" process that aims to change the dynamics of food and power in a specific context.

In practice, food sovereignty and agroecology are often intertwined, with many food sovereignty advocates promoting agroecological approaches to agriculture as a means of achieving their goals. Agroecology can provide a framework for small-scale, decentralized, and community-controlled food production, and can help to ensure that food production is environmentally sustainable and socially just (Altieri & Toledo, 2011; Moragues-Faus, 2017; FAO, 2018; Gliessman, 2016). Similarly, food sovereignty can provide a broader political and social context for agroecology, emphasizing the importance of empowering communities through controlling and localizing decision-making in food production and distribution (Rojas & Hoyos, 2018; Anderson & Pimbert, 2019).

As social movements rely on successful collaborations, balanced power relations are crucial for the strengthening of the social dimension of agroecology. Nunkoo (2017) argues that successful collaborations rely on trust, which is a vital element in achieving this balance. Trust is developed through strategic interactions where there is a risk of unexpected decisions. If community members lack trust, it can threaten their

associativity, resulting in resistance to change with long-term effects that are difficult to overcome (Méndez & Casas, 2017, p.47). Thus, trust is a primary factor of social capital. According to Ostrom and Ahn (2003), social capital[2] is composed of three primary factors: trust, collective action[3], and formal and informal institutions. This means that social capital can be formed in networks of trust that can ultimately be transformed into economic gains (Bourdieu, 1986). However, social capital is not equally accessible to all community members; it accrues to those who attain positions of power and status (Bourdieu, 1986). Therefore, social capital can also be utilized as a tool by certain actors within a network to exert power over others by utilizing their relationships and connections within the community.

Some scholars argue that agroecological networks[4] provide an opportunity to establish trust and reciprocity among the actors in the food system by achieving proximity and reconnection, protecting the environment and human health, and promoting equitable relationships (Cadavid, 2019). These networks can enhance the social capital of a community by fostering trust, cooperation, knowledge exchange, and

[2] *Social capital* is "an all-encompassing concept for the norms and social networks that facilitate cooperation between individuals and among groups of individuals that are embedded in social relationships involving feelings of gratitude, respect, and mutual understanding that facilitate collaboration and cooperation" (Putnam, 1993 in Onyx et al., 2007. p.5).

[3] *Collective action* was defined by Ostrom (1990) as the ability of people to organize themselves for equitable access to a common good. She emphasized that collective action involves individuals working together to solve a shared problem or achieve a common goal, often through the creation of institutions or rules that facilitate cooperation and coordination among group members. Ostrom's work also highlighted the importance of considering the context and complexity of the collective action problem, as well as the role of trust, communication, and social norms in shaping the success of collective action efforts.

[4] Agroecological networks are typically composed of farmers, researchers, policymakers, consumers, and other stakeholders who collaborate to promote sustainable agricultural practices.

collective action (Sabin et al., 2015; Lamine & Spicer, 2019; Joshi, 2020). At the same time, agroecological networks can also be strengthened by solid social capital. However, in areas affected by violence in the global south, social movements are constrained by those who see small-scale rural communities as an obstacle to total control of the territory. In Colombia, for example, the armed conflict has been sustained for decades to gain control over natural resources and territory, resulting in unbalanced power relations and a fractured social fabric in many rural areas impacted by violence, inducing mistrust, fear, and forced displacement.[5] This situation redefines the purpose and viability of social networks and movements.

In summary, agroecology recognizes that agriculture is influenced by multiple factors, including social, cultural, economic, and ecological elements. It has the potential to strengthen social capital and promote sustainable agricultural practices by encouraging cooperation, knowledge exchange, and resource sharing. However, we should not assume that social capital is always implicit within agroecological networks and ignore the impact of social relations and power dynamics among actors within the community, especially in regions with a history of violence and displacement, where social capital can also be a tool to exert power over others. Therefore, through a literature review, this essay proposes an analytical framework to examine how social capital elements impacted by violence and displacement in Colombia shape power

[5]The Colombian armed conflict has generated a historical accumulation of almost 8,219,403 victims of forced displacement due to events that occurred from 1985 to December 31, 2021, throughout the Colombian territory. The Internal Displacement Monitoring Center (IDMC) estimates that the number of people who maintain their status as internally displaced is 5,235,064 as of June 30, 2021 (Unidad de Víctimas, 2022).

relations within agroecological networks in the region. The research question guiding this objective is:

How does social capital within agroecological networks in regions impacted by violence in Colombia influence power relations among actors?

I conducted a literature review to explore how power relations have been traditionally approached in agrifood systems and identify why some of these concepts are not suitable to understand power relations in alternative food systems. For that, I examine some notions of political ecology, political economy, and the foundations of the food sovereignty movements. Then, I explore some social capital elements to analyze power relations within agroecological networks in Eastern Antioquia, a Colombian region historically impacted by violence and territorial control. There, despite these challenges, some networks resist the pressures of industrialized agriculture and urbanization. The findings of this study can enhance the transdisciplinary academic discussion on agroecology as a social movement, promote a deeper understanding of how agroecology can transform power relations among actors and bring changes to production and research paradigms within agrifood systems and value chains. Additionally, this research can guide practitioners and scholars to explore sustainable social and economic development opportunities in areas where communities establish agroecological networks.

Literature Review

Agroecology and the empowerment of local communities

According to Van Der Ploeg (2010), agroecology can help to empower peasants, who have historically been oppressed and marginalized. Pimbert et al. (2021) suggest that agroecology can serve as an alternative paradigm to the exploitative dynamics of industrialized agrifood systems. Thus, food sovereignty, which aims to promote local control and decision-making in food production and distribution, has been integral to nurture the political foundations of the agroecology movement (Rojas & Hoyos, 2018; Anderson & Pimbert, 2019). Therefore, agroecology prioritizes social and political processes that incorporate local communities' knowledge and agency to develop practices and policies aligned with the socio-ecological and cultural context of their territories. By being locally based, agroecology can help to bridge the gap between society and nature, which has contributed to the degradation of soil and the impoverishment of peasants. Montenegro (2021) views agroecology as a means of healing ecological, social, and epistemic aspects of the metabolic rift.[6] Additionally, the Food and Agriculture Organization (FAO) recognizes agroecology as an approach that can contribute to global food security, mitigate climate change, improve peasants' living conditions, and conserve the environment and bio-cultural diversity (FAO, 2018).

[6] Marx and Engels introduced the concept of 'metabolic rift' to describe the mutual influence between nature and human society. They believed that nature shapes human society and culture while human activity also transforms nature. Nonetheless, the industrialized food system has disrupted this relationship by creating a gap between urban and rural areas. Over centuries, nutrients have been taken from the soil and transported to cities for consumption, without the natural return of waste products back to the soil (Foster, 1999).

The contributions of the social approach to agroecology can enhance communities' economic, social, and cultural development by valuing local knowledge and proposing new forms of governance, education, community empowerment, and knowledge and technology transfer (Chandra et al., 2017). According to Ravlic (2022), agroecology's social approach must consider the networks that smallholders weave across their territory to facilitate the exchange of inputs, products, knowledge, technologies, and discourses. Therefore, agroecological networks are dynamic when the actors have the agency to make choices, when their plurality of voices are listened to, and when the horizontality of relationships is guaranteed (Dellavale, 2021), resulting in the dissemination of different types of capital, such as social and cultural. Holt-Giménez (1996) and Pimbert (2018) studied some cases of these networks worldwide, including the "Campesino a Campesino" movements in Central America and the Caribbean, the transnational movement for food sovereignty and biocultural diversity in Peru, Iran, Indonesia, and India, and the Brazilian networks of small producers.

In Mexico, Holt-Gimenez (1996) analyzed the experiences of small farmers who were practicing sustainable agriculture by using traditional methods and agroecological techniques. In Nicaragua, he looked at the experiences of small farmers who were using agroecology to resist the Green Revolution and promote food sovereignty. In Cuba, he examined the country's efforts to build a sustainable agriculture system after being cut off from agricultural inputs in the aftermath of the collapse of the Soviet Union. Similarly, Pimbert (2018) analyzed the experiences of French small farmers who were practicing agroecology as a way to resist industrial agriculture and promote ecological

sustainability. In India, he looked at the experiences of tribal communities who were using agroecology to reclaim their traditional agricultural practices and resist the Green Revolution. In Brazil, he examined the experiences of small farmers who were practicing agroecology as a way to build resilience against the impacts of climate change and promote food sovereignty.

Both authors found that agroecological practices were not only environmentally sustainable, but also socially and economically viable. Holt-Gimenez (1996) argued that these practices can help to promote food sovereignty and rural development, and that they could serve as a model for other countries looking to build more sustainable agriculture systems. Pimbert (2018) also concluded that agroecological practices could help to build more resilient food systems that are better able to withstand the impacts of climate change, and that they could help to promote food sovereignty and support local communities. They both found that agroecological networks worldwide tend to be long-lasting, unlike social movements, and do not have the endorsement of the large centers of power, generating a state of permanent resistance that is not always visible. However, they also noted that there are significant barriers to the adoption of agroecological practices, including the dominant power structures in the global food system and the lack of support from governments and international institutions.

Social capital and power relations in agroecological networks

Cadavid et al. (2019) suggest that alternative food networks, including agroecological networks, offer benefits such as proximity, environmental and human

health protection, and the potential to establish fair relationships between system actors. These networks provide an opportunity to build trust and reciprocity between individuals, which are both key elements of social capital. Bourdieu (1986) defines social capital as the level of social cooperation between groups of individuals based on factors such as affection, mutual trust, practical norms, and social networks. According to Rodríguez-Alcalá (2019), there are three types of social capital: bonding social capital, which is based on horizontal relationships with immediate networks such as family, friends, and neighbors; bridging social capital, which connects social groups horizontally with other groups and networks such as cooperatives; and linking social capital, which creates vertical connections between social groups and institutions and authorities. In essence, social capital is a framework that enables communities to address issues such as organization, collaboration, communication, agency, and collective decision-making. It can also help to lower the expenses associated with transactions, enhance access to markets, and encourage the sharing of information through individuals and groups.

According to Putnam (1993), social capital can provide individuals with a means to achieve their objectives and exert influence. This is achieved through the establishment of stronger social networks that offer access to valuable resources such as information, financial capital, and job opportunities, as well as the ability to sway the decisions and actions of others. These benefits can be used for either positive or negative purposes and can contribute to social inequalities. Similarly, Onyx et al. (2007) argue that social capital can be leveraged to gain a competitive advantage over other groups. This concept of power relations embedded in social capital is associated with the Neo-

Marxist tradition, which views power as a complex and multidimensional concept that is closely tied to social and economic relations, in which elites are used to maintain privilege and restrict access to knowledge and resources (Onyx et al. 2007). This coercive form of power is also known as "Power-Over". In addition, power is not just about the ability of one group to dominate or control another, but also about the ways in which power is distributed and exercised within society (Harvey, 2005). This approach to power has been commonly used in traditional agrifood systems. However, to examine power in alternative food systems and networks, it is vital to consider other notions of power that reflect the unique characteristics of local communities.

Approaches to analyze power in agrifood systems.

Robert Dahl defines power as the ability to compel someone to do something that they would not do voluntarily (Guzzini, 2015, p. 98). This definition highlights the cause-and-effect relationship between power and the outcomes of social interactions, primarily concerning government decisions and public actors. However, the conceptualization of power has been influenced by economics and sociology. For example, Marx's perspective links power to the control and appropriation of wealth and means of production (Osorio Bohórquez, 2017). As the relationship between politics and economics is examined only to assess the influence of institutional relationships on social and economic activities, poststructuralist approaches, particularly Foucault's, consider power to be exercised from multiple points. These non-egalitarian and movable relationships operate through persuasive forms of power relations (Foucault,

1986). Therefore, power can be transferred between individuals in a social network, and it is not confined to a specific institution, be it economic or political (Foucault, 1981). Building on these earlier ideas, Bourdieu's approach to power seeks to understand the forms of domination in social relations beyond institutional relationships. It takes into account the historical context, social relationships, and territory where power is exercised (Bourdieu, 1990).

Chandra (2017) argues that the current analysis of power relations within agrifood systems is limited by the narrow focus of political economy. This approach oversimplifies the struggle of political actors to attain positions within government institutions and ignores the concentration of capital and large companies as primary obstacles to individual freedom[7]. Traditional political economists mainly focus on the structure of markets, who benefits from it, and how it affects groups' agency, neglecting the in-depth exploration of power relations. This approach also externalizes nature as a passive and disconnected entity, and views natural resources as finite and dependent on population growth (Buttel, 2001). This oversight has resulted in environmental and social stress, worsened by externally imposed unsustainable extractive regimes of accumulation. Moreover, political economy provides little insight into the specificities and processes of agrifood systems by reducing the agency of food system actors to quantitative linear models, which disadvantage alternative food systems when

[7] Critical scholars in the sociology of agriculture and food have certainly recognized and analyzed the impacts of agribusiness's concentrated capital on farmers, communities and ecologies. Just to mention some: Winders & Ransom (2019), Howard (2016), Heffernan (1998), Hendrickson, Howard & Constance (2019), Ashwood et al (2022).

compared to industrialized agricultural production systems in terms of productivity (Busch & Juska, 1997; Buttel, 2001; Howard, 2016).

To address the limitations of the political economy of agriculture, some authors suggest broadening its scope beyond the measurement of agrifood systems solely in terms of economic efficiency. The political ecology of agriculture has emerged as an interdisciplinary field that explicitly considers the social structure, knowledge and technology flows, institutional framework, power relations, the interrelation with the environment, and opens a spectrum of questions related to power distribution associated to the management of natural resources. Thus, political ecology expands the scope of ecology as a science, when considering the consequences of decision-making in food systems on the environment. Furthermore, NET (Network Environmental Theory) has been also proposed to analyze and measure agrifood systems. This theory views food systems as complex, interconnected networks of actors, resources, and institutions, which operate at different scales and are embedded within broader social, economic, and ecological systems (Eakin & Wehbe, 2009). NET theory emphasizes the importance of understanding the relationships, interactions, and feedback loops existing within and between different parts of the food system (Wehbe, Eakin & Bausch, 2011).

According to Pritchard & Sanderson (2002), despite NET's potential to inform policy and practice, the application of NET theory to agrifood systems has had limited policy impact. This is partly due to the challenges of translating research findings into actionable policy recommendations. Regarding political ecology, some authors argue

that it focuses mainly on finding causes rather than symptoms, and its analysis of power relations tends to overlook social factors and their implications, providing generic explanations for specific issues (Leff, 2006; Lamine, 2015; Robbins, 2020). For example, the political ecology of agriculture can overlook the power of consumers, as it mainly focuses on power dynamics in the production stage (Moragues-Faus, 2017; Kizos et al., 2014). Additionally, the political ecology framework can justify the operation of alternative food systems, fair trade schemes, and environmentally friendly certifications as contributors to capitalist development based solely on their ecological impact, without considering their operational modes and excluding the consumption sphere in agrifood research. Furthermore, political ecology must incorporate practical tools and a sociopolitical agenda into the approaches examining power relations between actors of agrifood systems. It would give voice to underrepresented actors and value their knowledge and relationship dynamics.

Food sovereignty movements: Understanding the local power struggles.

Food sovereignty movements aim to distribute power in food systems by empowering small farmers, indigenous communities, fisherfolk, and consumers instead of concentrating it in the hands of a few corporations (Patel, 2009). These movements prioritize community control over the food system and seek to regain traditional knowledge to challenge the dominant narrative around food and create alternative ways of thinking about and producing food (Windfuhr & Jonsén, 2005). By doing so, they aim to resist industrialized agricultural systems, balance power relations, and strengthen

the community as a source of reward and emancipation (De Schutter et al., 2012, p. 380). According to Iles and Montenegro (2019), the implementation of food sovereignty has arisen as a potential means to reshape existing agricultural and food systems into more democratic, decentralized, and environmentally sustainable structures. Thus, food sovereignty movements promote alternative food systems based on justice, equity, and sustainability, and engage in political activism and advocacy to support small farmers, local food systems, and challenge the power of large corporations in the food industry (Minkoff-Zern, 2014). These movements can be articulated with agroecology and other alternative food systems to turn smallholders' demands into public policy, gain visibility and power, and offer theoretical and practical approaches (Trauger, Claeys & Desmarais, 2017, p. 1).

In sum, to truly understand the impact of power dynamics on alternative food systems, it is crucial to incorporate the concepts of political ecology, agriculture and food sovereignty and align them with the local community's reality. To achieve this, it is necessary to give voice to the actors involved and consider social capital as a factor in the analysis. Previous studies that have examined the intersection of power and social capital have mainly focused on economic operationalization. For example, Onyx et al. (2007) examined how various forms of social capital intersect with a multiplicity of power contextualized in rural Australia. They found that social capital is a source of power that can equally be positive (enabling) and negative (oppressive), often both at the same time (Onyx et al., 2007. p. 20). Svendsen & Sørensen (2006) tested Putnam's

instrument[8] in rural Denmark and found that, although there were a substantial number of associations, the economic performance was minimal. They concluded that there was a high accumulation of trust within the bridging social capital, which can hinder the formation and permanence of inclusive networks. Nevertheless, they propose that further qualitative investigation is necessary to comprehend the underlying causes of the significant bridging social capital within the specific context and history of associational life in Denmark, as well as to determine why rural communities in other regions are devoid of such associations.

Given this background, I believe that the success or failure of associative structures in a region can best be understood by examining the relationship between power and social capital and how they are influenced by the local context. When analyzing alternative and agroecological networks, the use of political ecology and food sovereignty approaches can provide a better understanding of the current environment in which these networks operate. In the following section, I will provide an overview of the context in Eastern Antioquia, Colombia, which is essential to comprehend how social and economic relationships have impacted the development of social capital and power dynamics in the region.

[8] According to Putnam (1993), a region would have a greater willingness to cooperate according to the number of civic organizations in the area. He developed an instrument to measure social capital in terms of engagement in voluntary civic associations. These indicators assume that all civic organizations pursue community welfare and promote trust and integration among members.

Context: Eastern Antioquia, a history of violence, opportunities, and resilience.

Colombia's long-standing internal political conflict has had profound impacts on the country's social fabric, with violence, displacement, and poverty being among the most visible effects. Despite the challenges, civic initiatives and organizations have emerged to represent the interests of marginalized communities and to promote social cohesion. For example, the Civic Movement of the Eastern Antioquia and the community assemblies were created in the 1970s to defend the interests of excluded groups, such as peasants, merchants, workers, students, and teachers. These movements aimed to create a sense of belonging to the region and establish a development vision that consulted and represented the interests of the territory's inhabitants (UNDP & Asdi, 2010). While these initiatives faced resistance from defenders of particular interests who accused them of being aligned with guerrillas, they provided an alternative to the traditional parties and helped to establish new social and political leadership.

The impact of violence and displacement on Colombia's rural communities has been particularly severe. As documented by the United Nations Development Program (UNDP) for Eastern Antioquia, the construction of megaprojects, such as hydroelectric dams, resulted in the displacement of numerous peasants who were forced to change from their agricultural vocation and migrate to urban areas. This not only affected their livelihoods but also led to the breakdown of traditional social ties and the loss of cultural identity (UNDP & Asdi, 2010). Moreover, the violence associated with the conflict has caused many to leave rural areas, with some municipalities experiencing

significant population declines. For instance, the municipality of Granada saw almost half of its population leave after a paramilitary massacre and a guerrilla ambush destroyed the center of the urban area. Such displacement has been a major social problem in Colombia, particularly in areas with potential for wealth accumulation, where the appropriation of land and the expulsion of local populations have been common (Bello, 2003).

After decades of violence and intimidation, many peasants abandoned their land, leading to a loss of agricultural activity in the region. Those who remained were located far from urban areas, where they had limited means of production and infrastructure for marketing their products. Despite the signing of the peace treaty with the FARC guerrillas in 2016, social leaders and individuals associated with such organizations continue to face stigmatization, with some even being killed. However, many civic organizations in the region continue to fight for the rights of peasants, sustainable development, and environmental protection. Some of them, such as Asocampo and RECAB Antioquia, promote alternative networks, agroecology, family farming, and peasant associations. These and other networks, which can be framed within agroecological principles, bring together small farmers in eastern Antioquia, provide services, and link organizations. Furthermore, they promote ecological principles, the solidarity economy, equity, and conservation of diversities in favor of food sovereignty. However, there is limited research that analyzes power relations within these networks.

Despite previous studies on alternative networks, agroecology, and social capital in eastern Antioquia, Colombia (Giraldo et al., 2013; Méndez & Casas, 2017; Rojas &

Hoyos, 2018; Cadavid et al., 2019), no research has been conducted on the impact of the region's context on associative capacity and power relations. While some studies suggest that violence has decreased the collective action capacity of the region (Giraldo et al., 2013), others argue that agroecology has strengthened food sovereignty and security through social movement recognition (Rojas & Hoyos, 2018). To address this gap, this review proposes an analytical framework to examine the intersection between power relations and social capital by identifying elements of social capital, such as trust, social networks, norms, and integration (Ostrom & Ahn, 2003), in an area that has been historically impacted by violence and territorial control in Colombia. Table 1 explains the elements of social capital considered for this study.

Table 1. Elements of social capital

Elements of Social Capital	
Trust	Trust refers to the belief or confidence individuals have in the reliability, honesty, and cooperative behavior of others. Trust helps foster cooperation and coordination among individuals within a group or community.
Norms	Norms are shared expectations, rules, or guidelines that govern the behavior and interactions of individuals within a particular social group or community. Norms can be formal or informal and are often based on social and cultural values. Ostrom (1990) emphasized the importance of developing and enforcing norms that promote cooperation, fairness, and sustainable resource use in the context of common pool resource management.
Social Networks	Social networks refer to the web of social relationships, connections, and interactions between individuals or groups. Social networks play a significant role in facilitating communication, information sharing, and cooperation among individuals involved in collective action or resource management. Strong social networks can enhance trust, facilitate the spread of norms, and enable effective collaboration.
Integration	Integration refers to the coordination and cooperation among different individuals, groups, or institutions involved in managing common resources or engaging in collective action. It involves finding ways to bring together diverse perspectives, interests, and knowledge to collectively address problems and make decisions (Ostrom & Ahn, 2003)

The proposed framework aims to move beyond the assumption that farmers can freely engage in agroecological food production based on the principles of trust and reciprocity (Da Silva, 2022, p. 21), and that the power within these networks is only used for empowerment and mobilization through common goals, which Hampshire et al. (2005) define as "power-to". Therefore, this framework can also help examine the challenges of building agroecological supply chains and joining agroecological networks in an area that has been historically affected by violence and mistrust. Also, it explores how social capital can also be utilized by actors to exert "power over" others through community relationships and social connections. The objective of my work is to expand the scope of power analysis beyond the agroecological and food sovereignty movements' struggle against agribusiness and neoliberal policies that co-opt local dynamics and determine the future of native seeds and local cuisine according to their economic interests. To achieve this, the following framework includes some elements of social capital to analyze power relations within alternative networks in areas impacted by violence. My aim is to provide some theoretical tools to examine the opportunities and challenges of alternative networks to perdure and expand.

Power relations analyzed from the social capital within agroecological networks: An analytical framework.

Agroecology is one of the most promising and integrative alternative movements to the industrialized food system (Altieri, 2021). According to iPES-Food (2018), positioning and transitioning towards agroecology requires more than just sustainable agricultural practices; it also requires a broader societal transformation of environmental and social

relationships. Agroecological networks are a powerful means to promote these changes through four dimensions: production practices, knowledge generation and dissemination, social and economic relations, and the institutional framework. Table 2 provides an overview of the four dimensions proposed by iPES-Food (2018) and their relevance to agroecology. Furthermore, the political foundations of food sovereignty seek to empower smallholders to shift away from unsustainable agricultural practices and unite different actors in the agrifood system to support agroecology. To further understand these dynamics, analyzing power within agroecological networks is crucial, and social capital can be a useful tool for a better understanding of how agroecological networks persist and how they can be strengthened to promote broader societal changes.

Table 2**.** The four dimensions of change toward agroecology (Source: IPES-Food, 2018).

Table 1. The Four Dimensions of Change	
Dimension	**Scope**
I. Changes in Production Practices	Optimizing resources, replacing chemicals and industrialized practices. Favor diversity and interactions between different species.
II. Changes in Knowledge Generation and Dissemination	Shifts in how knowledge is generated and disseminated. Local culture and traditional knowledge are highly valued; alternative ways of communicating as farmer to farmer, farmer field schools, and farmer-led participatory research projects are promoted.
III. Changes in Social and Economic Relations	The strength of social ties and organizational capacity within farming/rural communities. Collective action is considered a core driver of change. Farmers need to have a high degree of social capital to work cooperatively in regional and landscape-level initiatives.
IV. Changes in Institutional Framework	The development of alternative governance structures as critical factors in shaping and accelerating transition processes. A wide range of public policies is necessary to set the underlying conditions and economic incentives for sustainable food systems to emerge.

The framework that I developed seeks to identify the elements of social capital defined in Table 1 within each agroecological dimension explained in Table 2. For that, I suggest the following actions to reach the goal of the proposed analytical framework.

- Mapping social networks and integration: One way to analyze power relations within agroecological networks is to map out the different social networks that exist within the network. This involves identifying the actors, relationships, and flows of information, resources, and support that exist between them. By examining the structure and composition of these networks, it is possible to identify patterns of power and influence that exist within the network.
- Examining norms and values: By analyzing shared norms and values, it is possible to identify which actors have more power and influence within the network. For example, if a particular group within the network values collective decision-making and consensus-building, then actors who are skilled at facilitating these processes may have more power and influence.
- Assessing trust and reciprocity: By examining the degree to which actors trust and rely on each other, it is possible to identify which actors have more power and influence within the network. For example, if there is a high level of trust and reciprocity between a farmer and a consumer, then the farmer may have more power and influence over the consumer's choices and behavior (Rosset et al., 2011).

By identifying the aforementioned elements of social capital within an agroecological network, it is possible to gain an understanding of the type of social capital present in the network and the types of power relations that can emerge. By this, I am referring to bonding, bridging, and social capital. According to Ostrom & Ahn (2003), these types of social capital can be associated with horizontal and vertical forms of power, which are exercised among peers and among actors outside of close networks, respectively, as explained below.

- Identifying bridging and bonding social capital: Another way to analyze power relations within agroecological networks is to examine the different types of social capital that exist within the network. Bridging social capital refers to relationships between different groups or actors, while bonding social capital refers to relationships within a group or community. By identifying which actors have more

bridging or bonding social capital, it is possible to identify who has more power and influence within the network (Onyx et al. 2007).

- Assessing linking social capital: Vertical connections to sources of money and power outside the group can scale up the needs and mobilize resources into the networks. For example, connecting to government funding sources. However, such links invariably entail relations of unequal power, and it relates to a structuralist approach to power (Onyx et al. 2007).

In Table 3, it can be observed how, in a qualitative manner, this framework identifies the elements of social capital mentioned within each dimension of agroecology. To achieve this, a series of questions are proposed related to the actors' perceptions regarding the reliability, honesty, and cooperative behavior of others. For instance, in the case of the first agroecological dimension of change, which corresponds to the implementation of productive practices, the type of questions to be asked are oriented towards understanding whether farmers optimize resources, replace chemicals and industrialized practices influenced by the advice and experiences of their family members, neighbors, and/or other farmers in the region. Such decisions can provide an idea of the existing dynamics of horizontal power among them. Similarly, if they trust governmental institutions, academics, and/or NGOs, this would indicate the hierarchical power, which is vertical, that these institutions hold over the farmers' decisions. Similarly, by inquiring about the shared expectations, rules, and guidelines that govern the behavior and interactions of these individuals with others and institutions, as well as the type of networks and connections they establish with peers and other actors outside their close networks, one could obtain an understanding of these dynamics of horizontal and vertical power.

Table 3. Framework to analyze power relations within agroecological networks through indicators of social capital.

		Types of social capital			
Agroecological Dimensions	**Scope of each dimension (IPES-Food, 2018)**	**Bonding**: Immediate network (family, friends, neighbors, etc.)	**Bridging**: Other social groups and networks (social stratification, with other cooperatives, other networks, etc.)	**Linking**: Institutions and authorities	**Factors to find**
		Horizontal Power		**Vertical Power**	
I. Production Practices	Optimizing resources, replacing chemicals and industrialized practices. Favor diversity and interactions between different species.	How do the existing relations among the immediate network, other social groups, institutions and/or authorities influence on optimizing resources and farm practices? How will those relations boost changes in production practices? Do they trust those networks and institutions to change their production practices?			Trust, Social Networks, Integration, Norms
II. Knowledge Generation and Dissemination	Shifts in how knowledge is generated and disseminated. Local culture and traditional knowledge are highly valued; alternative ways of communicating as farmer to farmer, farmer field schools, and farmer-led participatory research projects are promoted.	How is knowledge generated and disseminated among actors? How is the flow of information among them? What are the sources of information regarding agroecology and political organization? Do they trust them? Do they know about other networks and their norms?			
III. Social and Economic Relations	The strength of social ties and organizational capacity within farming/rural communities. Collective action is considered a core driver of change. Farmers need to have a high degree of social capital to work cooperatively in regional and landscape-level initiatives.	Do they have any form of organization? What norms do those organizations have? Is it easy or not to join those organizations? Do they feel free to participate and make decisions? How are prices regulated? Do they trust the other participants? Are consumers integrated to these networks?			
IV. Institutional Framework	The development of alternative governance structures as critical factors in shaping and accelerating transition processes. A wide range of public policies is necessary to set the underlying conditions and economic incentives for sustainable food systems to emerge.	Do they scale up their need to the institutional level? Do they have agency to mobilize external resources toward the networks? Do they trust institutions? Do they make alliances and participate in political decisions over their territories?			

Discussion

After conducting a literature review, I developed the framework condensed in Table 3, which intends to explain power relations within agroecological networks in terms of some elements of social capital. Traditionally, the analysis of power relations has been approached by political economy and overlooks the potential for empowerment of smallholder communities in the global south by victimizing them and focuses on their disadvantages. Thus, the globalized food system undermines the decision-making, knowledge access, and market entry of smallholders by imposing rules and discourses that subjugate them and force them to comply with the conditions that favor the most influential actors within the agrifood system (McMichael, 2000). This analysis has focused on the causes and consequences of industrialized agriculture's expansion, ignoring that these communities have practiced small-scale and family-based economic models for a long period of time, and do not propose practical solutions for them. Therefore, as we must continue posing questions about power in agrifood systems, we need to prioritize communities' needs over those of multinational corporations. For that, it is crucial to recognize and include local and traditional knowledge, culture, small-scale farming, alternative food systems, and social relations in the analysis of power relations.

Hence, as a countermovement, agroecology can be an advantageous alternative to intensive agricultural practices in policy debates around sustainable food systems. By creating linkages and reconnecting communities with their territories, agroecology can reverse the historical alienation of which peasants have been victims. Agroecology can

provide strategies and tools that can be scaled to generate changes in the institutional and political framework to guarantee food systems in which smallholders have access to markets, technologies, and knowledge. This transformative vision of the relationship between nature and people will also allow us to understand power relations configurated inside agri-food systems to recognize the role of non-humans and humans as actors that catalyze these relations. For that, social capital has been proposed as a helpful tool for analyzing the power configuration within the social relations among actors in agri-food systems. As Onyx et al. (2007) argue, the productive effects of social capital depend on the context of the networks and social ties within the local communities studied. This, in turn, is based on each region's context and history (Onyx et al., 2007. p.7). However, it is narrow to consider that social capital per se will solve all the problems of a community or a network since notions of power must be included to understand better the dynamics created within it.

There are still some gaps in the discussion of power relations and their intersection with the dimensions of social capital in a community or network. For example, the mentioned study conducted by Onyx et al. (2007) in Australia included notions of power to study the social capital of three rural areas but from the political economy perspective. Moreover, although they started from the assumption that social capital works best among equals and that bonding social capital is crucial to this, they ultimately recommend that any such analysis must be contextualized within the historical specificity and the unique dynamics of a particular setting (Onyx et al., 2007. p. 3). For this reason, in order to analyze the power dynamics within agroecological

networks in a region with the characteristics and history of violence of eastern Antioquia, it is necessary to imbue agroecology with notions of power that go beyond measuring results in productivity and economic performance. Furthermore, with this analytical framework that I developed after the literature review that I conducted, I propose to include elements of social capital such as trust, integration, and existing networks in a territory. In the same way, for this study, I believe that the notion of power should be considered from a post-structuralist perspective that includes the sentiments and the common social bonds between communities and people across a specific country or area.

To understand power relations within agroecological networks, it is essential to move beyond traditional structuralist theories of power, which focus on class struggles and institutional structures, respectively (Domhoff, 1998). Instead, a pluralist concept of power that considers the dispersed nature of power among groups and classes within local communities and the context of networks and social ties must be utilized. To expand on this idea, I suggest including notions of power from the food sovereignty movement, which views power as the control of local food systems by smallholder communities, with territorial connections and shared histories determining power relations. This can lead to increased social capital within these communities, as they work together to support each other's needs and interests. By doing so, I aim to broaden Bourdieu's (1986) notion of social capital's volume being the sole determining factor in power dynamics among actors, which neglects the importance of network size and mobilization ability. Ultimately, this proposed analytical framework seeks to

propose solutions that prioritize the needs and empowerment of smallholder communities over the interests of multinational corporations within the globalized food system.

The presence of social capital in agroecological networks cannot be assumed to always promote cooperation among actors in agroecological networks. In regions with a history of violence and displacement, social capital can also be used as a tool for exerting power over others, thereby affecting social relations and power dynamics among community actors. Considering the characteristics, advantages, and limitations of bonding, bridging and linking social capital and how they configurate horizontal and vertical forms of power, I propose this framework that considers attributes such as trust, social networks, norms, and integration to analyze power dynamics among actors within the four agroecological dimensions in networks located in Eastern Antioquia. I acknowledge that the history of violence in the region could have impacted these social capital attributes, and for that, I aim to understand how this social capital shapes power dynamics within these networks and influences their potential for sustainability and inclusion of new actors. Finally, I believe that this analytical framework will be helpful for academics and practitioners to analyze power relations within alternative networks and provide elements to analyze what are the possibilities for agroecology in an area where violence and forced displacement have affected elements of social capital such as trust and associativity.

Conclusions and future issues

From the political economy approach, power relations are determined by the structure of the market and economic forces, which define market access, price setting, and the reduction of competition (Hendrickson & James, 2015). This approach must be expanded to broaden the analysis of agri-food systems, in which several actors, human and non-human, are ignored. As the main political ecologist of Latin America, Enrique Leff, argues, “In the transition from structuralist thought to post-structuralist theories, political ecology was born as a social response to the neglect of nature by the political economy, which focused on the determination of language, the unconscious, ideology, discourse, social and power structures, the mode of production and economic rationality in the forms of domination, exploitation, and subjection” (Leff, 2006. p.37). However, political ecology lacks conceptual and practical tools to identify symptoms that may indicate imbalances in power relations in agri-food systems. Thus, the notions of power in political ecology can be reinforced by an agroecological approach, supported by the political nature of food sovereignty. In this way, agroecology can encourage mechanisms that strengthen the associativity between peasants, which improves their negotiation capacity and thus face the expansionist strategy used by the extractive capitalist system.

With the strengthening of the agroecological movement, in the future, it can scale and influence the State and institutions to redefine the public policies that allow the expansion of the extractive capitalist system, which gains power by controlling markets and prices. (Trauger, Claeys & Desmarais, 2017). Thus, the political and social

components of agroecology can lead to global solutions through the application of place-based approaches, the direct intervention of peasants in agriculture, and decision-making power over labor (Van Der Ploeg, 2010. p.16). Hence, it is central to contextualize agroecology to the specificities of a particular region to demonstrate the undesirable impacts of policies and market conditions on food sovereignty and power relations, especially from the point of view of local people, marginal groups, and vulnerable populations. (Robbins, 2012; Chandra et al., 2017). These place-based approaches are crucial for overcoming the structuralist approach to political economy, which ignores the local context in which agroecology is practiced. Also, these place-based approaches expand the limitations of political ecology to define power relations beyond finding the winners and losers of access to natural resources and land tenure (Robbins, 2004).

I propose an analytical framework that includes elements of social capital in the study of power relations in agroecological networks, which can reveal the type of relationships woven in these networks according to the region's historical study context. Taking a qualitative approach, this framework suggests posing questions to the actors within an agroecological network in order to identify elements of social capital that provide an understanding of the type of power, whether horizontal or vertical, present in a given region for each of the mentioned agroecological dimensions. By applying this analytical framework, it would be possible to explore the power relations among agroecological networks in regions with a context that historically has jeopardized social capital, as it happens in eastern Antioquia, where the history of violence generated a

profound disconnection of peasants and the territory. As a result, this framework allows finding how the intersections of social capital and power relations within specific rural networks can enable social capital to empower or disempower. It will allow us to understand how the role of different types of social capital, such as bonding, bridging, and linking, facilitates or limits the inclusion of new actors in the networks and alternative supply chains according to the generated power dynamics. This understanding is helpful for the strengthening of alternative networks because it opens a debate about how the power relations generated according to the attributes of social capital produced by proximity can become an opportunity or risk for their permanence.

For future studies, I suggest adopting supply chain approaches to understand the role of different stakeholders in shaping power relations among stages along supply chains. This approach is crucial to include consumers in the analysis of agroecological networks and supply chains, given that the traditional analysis of agrifood systems has underestimated consumers' power and locates power primarily on the production side. Finally, this framework will be helpful to broaden the transdisciplinary academic discussion on agroecology as a social movement, enrich its epistemological bases, and open the possibilities for changes in the production and research paradigms within agrifood systems and value chains. Furthermore, this study will provide a roadmap for practitioners and academics to explore the possibilities for sustainable social and economic development in areas where communities pursue forming and joining agroecological networks.

CHAPTER 3 - INTERSECTION OF SOCIAL CAPITAL AND POWER RELATIONS WITHIN AGROECOLOGICAL NETWORKS: THE ANDEAN BLUEBERRY (*Vaccinium Meridionale* Swartz) CASE IN EASTERN ANTIOQUIA, COLOMBIA

"Agroecology without politics is gardening!"
Alejandro Ramírez,
Academic and Practitioner on Alternative Food Networks

"The external enemy is so powerful, and yet we indulge in divisions within the agroecological movement. It's sad that this attack comes from within because, for example, Monsanto never comes to attack agroecology."
Miguel Altieri, Academic

Introduction

Initially, agroecology was conceived as a set of practices seeking to apply ecological principles to the understanding and development of sustainable production systems in order to guide the experiences of ecological agriculture from the local level, respecting environmental and social structures (Altieri & Nichols, 2000; Gliessman, 2007). Some of these agroecological principles have also laid the foundations for a social movement that, unlike organic and ecological agriculture, goes further because it allows the empowerment of smallholders by avoiding dependency on external inputs and governance (Monje-Carvajal, 2011). This sociopolitical dimension of agroecology addresses the issues derived from the exclusion of smallholders from agro-industrial models, the loss of their territory, their empowerment, and the forms of participation that derive from the social capital of the communities (Gliesmann, 2007). Considering agroecology as a social movement provides theoretical and practical approaches that can be articulated within the food sovereignty movement,[9] seeking to turn smallholders'

[9] Food sovereignty is "a transnational social movement struggle and set of alternative practices that seek to transform food systems" (Trauger, Claeys & Desmarais, 2017. p. 2). This concept was initially introduced by the international peasant movement "La Via Campesina" in 1996. They define it as "the right of peoples to healthy and culturally appropriate food produced through sustainable methods and their right to define their own food and agriculture systems" (Nyéléni Declaration, 2007). The narrative and aims of the food sovereignty movements struggle to achieve dignity and autonomy. Thus, it radically can transform the global food system and reinforce the discursive and transformative commitment brought forward by political ecology, which seeks to highlight the importance of adapting it to local people's political, social, and cultural rhythms. Therefore, food sovereignty movements can turn their demands into public policy and gain visibility and power (Trauger, Claeys & Desmarais, 2017. p.1).

demands into public policy and gain visibility and power by working together (Trauger, Claeys & Desmarais, 2017. p.1).

Agroecology also proposes actions for smallholders to resist the pressure of industrialization of agriculture and the constraint over their choices on agricultural practices and access to natural resources, knowledge, and information (Altieri & Toledo, 2011). For that, various scholars consider that agroecology can also be positioned within some notions of political ecology[10] to analyze the power relations implicit within the relationships of human and non-human actors, as well as the impact of transnational policies, market conditions, and corporate agribusiness on smallholders and local communities (Chandra et al., 2017; Moragues-Faus, 2017). However, more research must examine the power relations embedded within agroecological networks, which can nurture the discussion regarding how agroecology can be better articulated with the food sovereignty movement. According to Altieri et al. (2021), between 2011 and 2018, 3,120 scientific works were presented at the congresses of the Latin American Scientific Society of Agroecology (SOCLA). Almost 50% of these studies focus on scientific agroecology, which investigates the contribution of agroecology in improving crop yields and total farm production by increasing the stability of the production, diversification, farm resilience to pests and climate change, and biodiversity. Only 61 studies,

[10] The political ecology of agriculture inquiries about power relations and political conflict over ecological distribution and social struggles to appropriate nature (Leff, 2002). It emerges as an eclectic field of work that explicitly considers the structure of the social fabric, the flows of knowledge and technology, the institutional framework, the power relations within the agrifood systems, and how they are interrelated with the environment (Robbins, 2012). By considering these elements, political ecology goes beyond the limitations of the political economy of agriculture, which does not consider non-human elements in agrifood systems. Also, political ecology expands the scope of ecology as a science, which does not inquire about the consequences of decision-making in food systems on the environment.

representing 1.95%, inquired about the role of agroecology as a social movement (Altieri et al., 2021. p. 5). None of them has delved into studying power relations within agroecological networks.

This qualitative case study explores the intersection between power relations and some elements of social capital,[11] such as trust, social networks, norms, and integration (Ostrom & Ahn, 2003) contextualized to an agroecological network in an area historically impacted by violence. The analysis looks into several dimensions[12] of agroecology, such as production practices, knowledge generation and transmission, and social and economic relations (iPEP-Food, 2018). With this, I intend to go beyond the assumption that farmers can freely engage in agroecological food production and that "the power of peasant movements and agroecology lies in the fact that they are based on the principles of trust and reciprocity" (Da Silva, 2022. p. 21). Located in Eastern Antioquia, Colombia, this study uses a place-based approach to understand the challenges of forming agroecological supply chains and joining agroecological networks in a context of historical mistrust and intimidation by violence. Hence, I aim to analyze how the social capital of this area affects the incorporation of different actors of the

[11]Social capital is "an all-encompassing concept for the norms and social networks that facilitate cooperation between individuals and among groups of individuals that are embedded in social relationships involving feelings of gratitude, respect, and mutual understanding that facilitate collaboration and cooperation" (Putnam, 1993 in Onyx et al., 2007. p.5). Ostrom and Ahn (2003) affirm that social capital is formed from three fundamental variables: trust, collective action, and formal and informal institutions.

[12] iPES-Food (2018) suggests that adopting agroecology involves more than just implementing sustainable agricultural practices. It requires a broader societal transformation of environmental and social relationships. To promote these changes, agroecological networks can be used as a powerful tool, encompassing four dimensions: production practices, knowledge creation and distribution, social and economic relations, and institutional framework.

Andean blueberry (*Vaccinium Meridionale* Swartz) supply chain within the agroecological networks of the area; the blueberry is a novel fruit that grows wild in the area, and that is gaining momentum for its health properties and adaptability.

The following research question guides this research:

How has the context in Eastern Antioquia impacted the intersection of social capital and power relations within agroecological networks and the possibilities for Andean blueberry actors to join them?

To answer it, first, I conducted a systematic review to report the history of Eastern Antioquia in Colombia. In this area, agroecological networks continue making a presence while resisting the pressure of industrialized agriculture and urbanization despite its history of relentless violence and territorial control. Then, after listening to the voices and experiences of some actors who participate in the Andean blueberry supply chain across the area, I seek to unveil how their relationships impact the existing power relations within those networks, and the challenges they face to join and strengthen them. I use a supply chain approach[13] to analyze these data and understand how these power relations are configurated among stages along the Andean blueberry supply chain. This approach is crucial to include consumers in the analysis of agroecological

[13] According to Ha-Brookshire (2015, p.232), a supply chain encompasses all the activities, information, and services required to carry out the process of selling a product, including the sourcing of raw materials, their subsequent transformation into finished goods, transportation, and delivery to the end consumer. In order to evaluate the data collected through the systematic review and interviews, I examined the primary factors that influence the Andean blueberry supply chain at each stage (Rojas Cruz & Barreto Bernal, 2016). Through this analysis, I identified the crucial bottlenecks that affect associativity and power relations, which will be used as the basis for developing and implementing strategies to enhance the chain's performance.

networks and supply chains, given that, traditionally consumers' power has been underestimated by locating power primarily on the production side.

This analysis will provide a better understanding of the role of social capital for agroecological networks by examining the power relations woven within them according to the region's historical study context, and how these intersections can empower or disempower new actors to engage those networks. This understanding is helpful for the strengthening of alternative networks and the development of new value chains because it opens a debate about how the power relations generated according to the attributes of social capital reinforced by proximity can become an opportunity or risk for their permanence. Furthermore, this study will provide a roadmap for practitioners and academics to explore the possibilities for sustainable social and economic development in areas where communities pursue forming and joining agroecological networks. Finally, the findings will be helpful to broaden the transdisciplinary academic discussion on how to better articulate agroecology to the food sovereignty movement, enrich its epistemological bases, and open the possibilities for including new research paradigms within agrifood systems.

Background

Agroecology and food sovereignty for the empowerment of smallholders

In recent years, the Food and Agriculture Organization (FAO) has promoted agroecology as a means to achieve the multiple environmental, social, and economic dimensions of the United Nations' Sustainable Development Goals (SDGs) (FAO, 2018).

By increasing diversified food production, agroecology can improve the economic income of smallholders while empowering women, allowing farmers to gain autonomy and control their food production systems (Altieri & Nicholls, 2021). However, there are not enough studies about the mechanisms to achieve those improvements considering the unequal access to natural resources, class relations, gender dimensions, and power inequalities embedded in the agrifood systems, which are dominated by transnationals, market ideologies, and neoliberal governments (Altieri et al., 2021). Moreover, existing sociopolitical approaches to agroecology fail to adequately address the issues arising from power dynamics among agroecological actors. These analyses are typically focused on the power exerted by actors within the industrialized agrifood system over smallholder communities (Calle-Collado, 2013; Alvin et al., 2022). However, it is essential to recognize that peasant social forms are not always ecologically innocent or socially just, and they can reproduce the same vices and problems as hegemonic agribusiness models (Calle-Collado et al., 2013, p. 259).

Social and political approaches to agroecology can also strengthen the food sovereignty movement, which is a "transnational social movement struggle and set of alternative practices that seek to transform food systems" (Trauger, Claeys & Desmarais, 2017. p. 2) and whose primary goal is to guarantee the right of peoples to healthy and culturally appropriate food produced through sustainable methods and empower them by having the right to define their own food and agriculture systems (Nyéléni Declaration, 2007). Thus, this notion of power is conceived from a reticular understanding of power, which can support food sovereignty movements and

agroecological networks since they comprise a set of relationships between multiple social actors organized according to a common collective goal (Osorio Bohórquez, 2017). Hampshire et al. (2005) argue that this notion of power, known as "power-to," allows smallholders to mobilize toward common goals. It contrasts with the Marxist notion of power, a form of coercive power or "power-over" that the dominant classes use to oppress the workers or proletariat. Hence, it allows the most influential actors in the agrifood system to utilize the relationships and connections they have within a community to fulfill their own will (Onyx et al., 2007).

In sum, a social transition towards food sovereignty could be possible by considering, among other things, agroecological practices and principles. It demands reinforcement of local practices as spaces of autonomy and resistance, allowing food sovereignty movements to turn their demands into public policy and gain visibility and power (Calle-Collado et al., 2013. p. 261; Trauger, Claeys & Desmarais, 2017. p.1). For that, these movements must link ideas of local autonomy, local markets, and community action to make possible the democratization not only of food but also having access and control of resources by the community (Miranda et al., 2013. p. 216). In this way, the analysis of power relations can approximate the agroecological and food sovereignty agendas, which are commonly analyzed separately. Therefore, the analysis of these agendas together would bring strategies to mobilize collective action and collective identity through finding community relations with the land, environmental crisis, climate change, race, and gender, among others (Da Silva, 2022. p. 8). However, to analyze the possibilities for community action and empowerment, it is still necessary

to identify the factors affecting power relations among actors and how they can hinder the reticular notion of power within alternative food systems. For that, some elements of social capital can provide place-based mechanisms to look into these issues.

Social capital to analyze power relations within agroecological networks.

Holt-Giménez & Altieri (2013) suggest that agroecology recognizes the importance of social relationships to promote collective action[14] and scale up knowledge and innovations generated through family labor and small, diversified farms. Social relations are seen as valuable assets for economic and political purposes and are collectively referred to as social capital. Social capital refers to social collaboration between groups, characterized by factors such as affection, mutual trust, cooperation, practical norms, and social networks (Bourdieu, 1986). These elements within social networks explain how individuals obtain certain advantages within their relationships and can translate into organizations, rules, or institutions, both formal and informal (Ostrom & Ahn, 2003). According to Rodríguez-Alcalá (2019), social capital can be categorized into three types: bonding social capital, which is horizontal and refers to immediate networks like

[14] Ostrom (1990) demonstrated that groups of people could sustainably manage their common resources when certain conditions are met. Also, they can be enhanced to change the constraining rules that predict failure and unsustainability by limiting the use of natural resources to ensure long-term economic viability. Although Ostrom focused on managing common-pool resources such as fisheries, forests, and irrigation systems, her findings have been contextualized to different collectivities and endeavors of people seeking to organize themselves and contribute resources to achieve a common good (Wilson et al., 2013). In this way, Ostrom's work conceptualizes collective action as a scenario where a group of people, a common interest, and possible conflicts generated by confronting the community's and individual's interests come together (Ostrom & Ahn, 2003). Thus, the concept of collective action in Ostrom transcends the merely economic sphere in which only costs and benefits are the driving force behind being part of a community. Moreover, collective action is a social construction generated by relatively autonomous actors to achieve common objectives with different orientations but potentially willing to cooperate (Lugo-Morin, 2013, p. 159).

family, friends, and neighbors. Bridging social capital is also horizontal and refers to connections between social groups such as cooperatives and other networks. Linking social capital, on the other hand, is vertical and connects social groups with institutions and authorities.

According to Putnam (2000) and Woolcock & Narayan (2000), power can be defined differently depending on the type of social capital involved. Bonding social capital tends to concentrate power within specific groups, promoting solidarity and mobilizing resources, while bridging social capital is more inclusive and builds broader coalitions, bridging divides between different communities. Linking social capital, on the other hand, is more institutionalized and allows access to resources, policy influence, and navigating bureaucratic systems (Woolcock & Narayan, 2000). These types of social capital can be understood in terms of two dimensions: vertical power, based on hierarchical relationships and linking social capital, and horizontal power, based on equal relationships and bonding and bridging social capital. In the context of agroecology, strong bonds and connections between small-scale farmers and other actors within agroecological networks can increase their power and sustain these networks over time (Lugo-Morin, 2013).

Therefore, strengthening bonding and bridging social capital is necessary to enhance the horizontal power of small-scale farmers, facilitating the management, coordination, cooperation, and engagement in collective action in order to reduce transaction costs and facilitate information flow. However, as noted by Onyx et al. (2007), this horizontal social capital can have both enabling and oppressive effects. For that, there is a need for

further research to examine the intersection of social capital and power relations in agroecological networks, moving beyond the assumption that these networks are solely based on trust and reciprocity, and that farmers can freely engage them (Da Silva, 2022). This examination must consider the unique context of the region or area in which the networks operate to avoid reductionist explanations (Svendsen & Sørensen, 2006) and explore the factors influencing trust and cooperation within rural communities. Thus, by identifying these factors, we can have a more comprehensive understanding of agroecological networks and develop strategies to enhance their sustainability and promote equitable power relations.

Eastern Antioquia, Colombia: a history impacted by violence and territorial control.

The rural areas at the east of the city of Medellín, the second largest city of Colombia, witnessed an unprecedented era of violence that plunged the country into terror since the decade of 1970s. In this region, hydroelectric megaprojects were established to deal with the energy crisis that affected the world during that decade. For this, productive lands were flooded, and hundreds of families whose economic livelihood was agricultural production were displaced. In addition, with the construction of the highway connecting Medellín with Bogotá, the country's capital, the region was divided, and the regional dynamics of commercialization and the inhabitants' relationship were altered (Bello, 2003). Consequently, the municipalities closest to Medellín began to be the center of modernization and industrialization projects, which demanded skilled labor that migrated from the city.

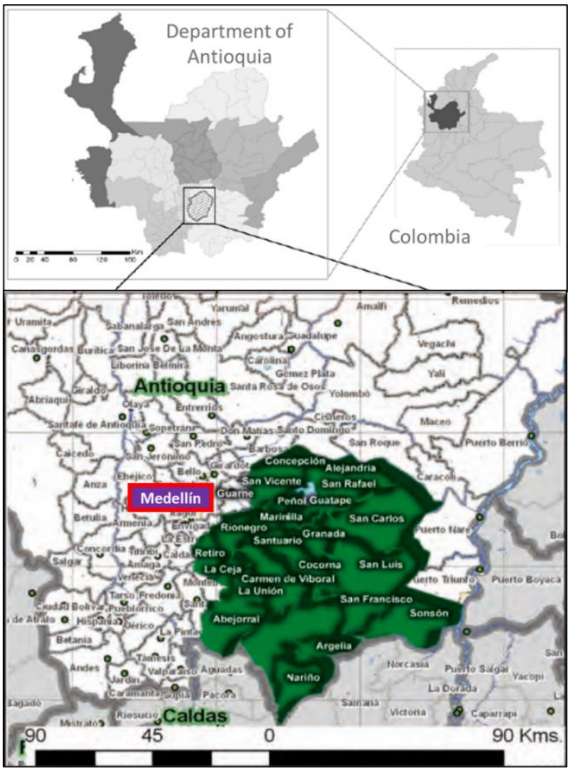


Figure 3. Map of the eastern Antioquia region in Colombia. (Source: PNUD, 2010. p. 39)

In 1985, the international airport serving the city of Medellín was inaugurated in this region, where six reservoirs and five hydroelectric that generated 30% of the national energy were in operation. These megaprojects were "designed from Medellin without taking into account the inhabitants of the impacted municipalities" (Bello, 2003. P. 8). As a consequence, the region began to attract families from the upper and upper-middle class of Medellín who invested in the region and bought recreational farms in the areas closest to the main communication routes. This phenomenon raised the price of land and changed the economic vocation of the region (UNDP & Asdi, 2010). Thus, numerous peasants lost their lands, cultural identity and forms of socialization. As the report of the United Nations Development Program (UNDP) for eastern Antioquia says: "These changes in the demographic composition of the population contributed to the

breakdown of the bonds of social cohesion founded on relationships of "compadrazgo and vecindad" (affection in terms of proximity, camaraderie and companionship), and a change in the village traditions and customs towards more urban lifestyles" (UNDP & Asdi, 2010. p. 7).

Despite the adverse political, economic, and social conditions faced by the peasants in the region, various civic movements and organizations emerged during the 1970s to champion the interests of those who had been marginalized from these power structures (UNDP & Asdi, 2010, p.10). These movements aimed to foster a sense of belonging to the region and develop a vision of progress that represented the concerns of the local inhabitants. As a result, they asserted their rights and created new social and political leaders outside the ambit of the established political parties. However, these civic initiatives were vilified by those who defended their own interests, who accused them of supporting guerrillas and attempting to introduce communist regimes in the region. With the increasing influence of guerrillas in the area, paramilitary groups and the national army waged a brutal war against them. The conflict reached its peak at the turn of the 21st century, with the civilian population caught in the crossfire between these armed factions. For instance, in the municipality of Granada, a paramilitary massacre and guerrilla ambush against the police devastated the town's urban center, causing nearly half of the population to flee the area. Consequently, the population of Granada declined from 18,500 inhabitants to just 8,824 in 2001 (Bello, 2003).

Since the beginning of the 2000s, paramilitary groups, mainly, have selectively assassinated hundreds of social leaders who sought to vindicate the rights of the poor

and their access to land, as well as those who opposed the establishment of mega-projects, extensive cattle ranching, and the establishment of multinationals in the region (Velásquez et al., 2009). Between 2003 and 2006, the national government signed some pacts with paramilitary groups who demobilized (turned in their weapons). At the same time, the government started an intense military offensive to beat down guerrillas with the aim of generating confidence in foreign investors and finally gaining control over the territory. Soldiers who beat down members of the guerrillas were granted salary benefits and aspired to rise in the army ranks. This strategy led many soldiers to kill civilians, mainly in rural areas and report them as guerilla members. Between 2002 and 2006, the UNDP (2010) states that, in eastern Antioquia alone, 218 fights took place between the National Army and illegal armed groups. In these combats, 548 people died, were buried without identifying them, and were reported as guerrillas. To date, it has been shown that civilians, mainly peasants, were those who were killed (Vásquez, 2022).

Agroecological networks as a form of resistance in eastern Antioquia, Colombia

Even after the paramilitary groups were demobilized in 2003 and the peace treaty was signed with the FARC guerrillas in 2016, social leaders and members of civic organizations in Colombia continue to be stigmatized. Those who strive for the transformation of their communities are often labeled as collaborators and supporters of guerrilla groups. At present, 1,318 human rights defenders in Colombia have been anonymously assassinated since the signing of the peace treaty with the FARC guerrillas

in 2016, with 140 of these murders occurring in Antioquia (Palacio & García, 2022). In fact, the eastern region of Antioquia has the highest number of such cases in the entire department, accounting for 25% of the total number of cases, as reported by Human Rights Watch and the Sumapaz Foundation (Montoya, 2023; Semana Magazine, 2023; Vásquez, 2022). Nevertheless, despite the social rift and the disintegration of the cultural bonds among the inhabitants in this region, many of the civic organizations established since the 1970s are still fighting for the vindication of the rights of the peasants, sustainable development, and the protection of the environment.

The associativity in the area has allowed peasants to find a way to resist the exclusion from the industrial development model through the formation of alternative networks (Ministerio de Ciencia, Tecnología e Innovación de Colombia MCTI, 2022). Therefore, various associations and organizations are present in the territory to promote alternative networks, agroecology, family farming, and peasant associations. For example, the Association of Peasant Producers of Eastern Antioquia, Asocampo, is a network that brings together small farmers from eastern Antioquia with a productive philosophy based on agroecological principles. This network seeks processes of productive reconversion of conventional agricultural production systems towards agroecological production systems, promoting the conservation of natural resources, the sovereignty and food security of the rural communities, and the provision of health and well-being for consumers (MCTI, 2022). Also, the Colombian Network of Biological Agriculture (RECAB Antioquia, 2022) stands out in the territory. This network is a civil organization created in 1992 by peasant family producers, service providers, and social

and allied organizations. They are articulated to defend the territory, produce based on ecological principles, practice solidarity economy, equity, and conservation of diversities in favor of food sovereignty.

Thus, even if some authors have conducted essential studies on alternative networks, agroecological practices, and social capital in eastern Antioquia (Giraldo et al., 2013; Méndez & Casas, 2017; Rojas & Hoyos, 2018; Cadavid et al., 2019), there are still no studies that relate the context of the area with the associative capacity and power relations in them. Giraldo et al. (2013) concluded that acts of violence diminished the capacity for collective action in the region. However, other studies state that interest in agroecology in eastern Antioquia has been increasing since it contributes from different perspectives to strengthening food sovereignty and food security based on the recognition of social movements (Rojas & Hoyos, 2012). For the purpose of this study, the case of small producers and other actors of the Andean blueberry in eastern Antioquia is presented. These people seek to articulate with the existing supply chains in the region or form their own chains; however, given the characteristics of this product and the existence of agroecological networks in the region, is it possible for them to join these networks? What influence does the social capital of the area and the history of violence have in allowing or preventing the entry of these new actors into existing networks?

Andean blueberry: A promising fruit with some potential opportunities from an agroecological perspective

Fruit production in Colombia has increased considerably in recent years due to the world's upward demand for fruit consumption and the change in world income (Lasprilla, 2011). According to Gliessman (2007), this is explained because "agribusiness has manipulated consumer tastes and behaviors, creating more demand for the products with the highest profit potential, such as beef, pork, fast food, highly processed snacks, exotic fruits, and out-of-season vegetables" (Gliessman, 2007. p. 331). This trend is potentially unfavorable for tropical countries like Colombia, given that these products have the highest environmental costs and rely the most on unsustainable practices. Moreover, although increasing fruit production may represent economic opportunities in the country, the reality is that more than 50% of the total areas planted for fruit in Colombia is banana monocultures (DNP, 2019). Furthermore, the government guidelines promote that food chains in the national territory follow the large-scale models with which products such as bananas, coffee, avocadoes, and other commodities are produced without leaving room for alternative production models such as those that arise in agroecological networks (Rojas Cruz & Barreto Bernal, 2016).

Thus, for novel products and small fruits that are part of the local diet, researchers and practitioners usually adapt top-down models of fruit chains with similar products and commercialization characteristics (López-González et al., 2009; Olivares-Tenorio et al., 2016). These crops are traditionally produced under family economy models in

several regions and seek to reach the country's main cities. This is the case of the Andean blueberry (*Vaccinium meridionale* Swartz), one of the Vaccinium species, representing an essential line of the world economy that includes cranberry, blueberry, bilberry, and huckleberry. They have gained recognition from consumers due to their organoleptic characteristics and health benefits. These fruits are characteristic of temperate latitudes, such as in Europe, Canada, Chile, Argentina, and the United States. However, the Andean blueberry is endemic to tropical areas. It grows spontaneously in the Andean regions of Colombia, Ecuador, Peru, and Venezuela at altitudes between 2,200 to 3,400 meters above sea level, where temperatures fluctuate from 55 to 74 F (Castrillón et al., 2008). As this plant grows practically in the entire Colombian Andean area, one of the most significant advantages highlighted by some researchers and organizations (Ligarreto, 2009; Corantioquia, 2009; ASOHOFRUCOL, 2009) is its adaptability and resistance to pests, venturing even to classify it as an organic crop because it does not require pesticides.

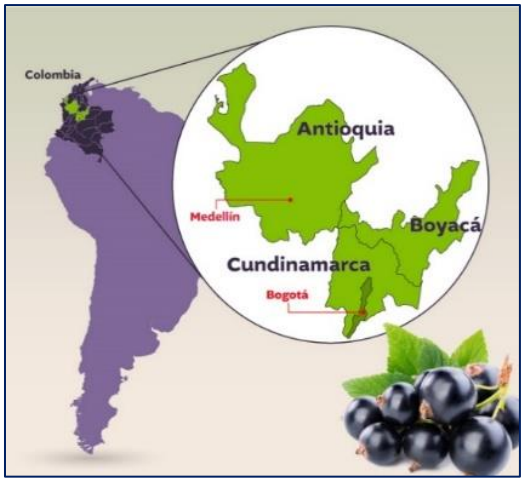


Figure 4. Main producing areas of Andean blueberry in Colombia

This fruit is mainly harvested in mountainous areas that reach up to 2,600 meters (8,530 ft) above sea level in Boyacá, Cundinamarca, and Antioquia. In the last two departments, the main urban centers in the Country, Bogotá and Medellín, are located (Figure 4). There, peasants who produce under family economy models seek to reach markets in the cities where fruit demand has increased rapidly. This demand has arisen because several nutritional compounds and certain antioxidants of importance for human health have recently been found in this fruit (Rodríguez et al., 2007; Garzón et al., 2010; Maldonado et al., 2014; Zapata Vahos et al., 2015). These findings have promoted both its exportation and inclusion in other food products and preparations, and researchers have also explored industrial uses of its extracts and pigments (Corantioquia, 2009; Ruiz, 2011; Rincon-Soledad et al., 2012; Hernández et al., 2012; Zapata et al., 2015; and Diaz-Uribe et al., 2019). However, these recommendations ignore limitations on its production due to the seasonal nature of the fruit, its agricultural practices, the socioeconomic and ecological context of the region, the legal and institutional framework that regulates fruit supply chains in Colombia, and the ecological impact of exporting Andean blueberry substitutes.

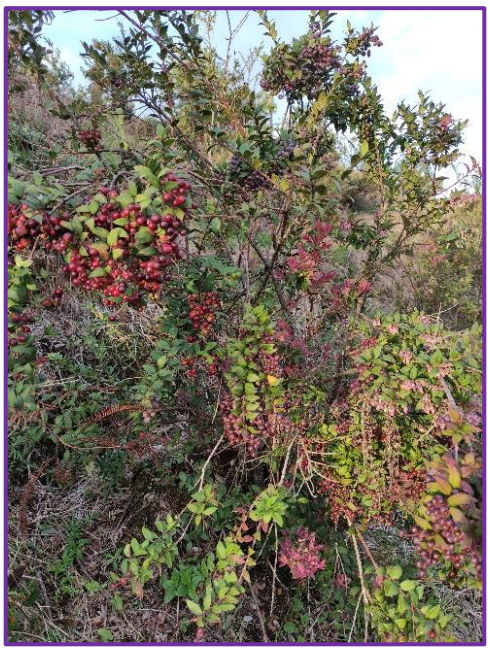


Figure 5. Andean blueberries growing wild in La Unión, Antioquia. (Personal file, November 2021)

Figure 5 depicts an Andean blueberry bush that I encountered in its natural habitat while en route to interview a fruit producer in the municipality of La Unión, Antioquia. It was November 2022, a time conducive to harvesting these fruits. However, what caught my attention was the fact that despite being situated alongside the road, and not located on any private property, the bush was still laden with fruits. Moreover, witnessing such a bountiful harvest of ripe fruits left me pondering the knowledge of the local peasants regarding this fruit. When I inquired with some of the locals as to why no one was collecting the fruit, they responded that transporting these fruits to the nearest market incurred high costs, and oftentimes they were uncertain about potential buyers. Consequently, they preferred allowing the fruit to perish on the tree or be consumed by birds.

Furthermore, even if the Andean blueberry is proposed as a product with ample possibilities to be exported to the global market and with comparative advantages due to its high adaptability and functional properties for health, there is no congruent information about the motivations that small producers have to harvest it, given that the plant has only two production peaks per year, April - May and October – November. In this regard, the Colombian Horticultural Association (ASOHOFRUCOL), mentions that these producers have other means of livelihood, such as beans, potatoes, and dairy; and consider the Andean blueberry only as an alternative product (ASOHOFRUCOL, 2009). Furthermore, the fruit marketing process does not guarantee that all the fruit harvested is sold. Hence, producers rely on intermediaries who sell the fruit in marketplaces and fix prices (Smith Torres, Montoya & Ligarreto, 2009). Finally, in Medellin's case, due to the accelerated growth of the urban area and the high pressure from large corporations to own land close to the city, peasants must struggle to stay on their land, retain their agricultural vocation, and challenge the power structures that condition their entry into the networks present in the area.

This qualitative case study examines the intersection of power relations and social capital elements, such as trust, social networks, norms, and integration, within an agroecological network in an area that has been historically impacted by violence. The study employs a place-based approach and acknowledges power as a dynamic societal relation, operating through structure, discourse, and authority. The focus is on the challenges of building agroecological supply chains and joining agroecological networks in Eastern Antioquia, Colombia. The study analyzes the impact of horizontal (bonding

and bridging) social capital on power relations among actors and the integration of new actors into the Andean blueberry supply chain, a novel fruit gaining popularity due to its health benefits and adaptability. I analyze this impact through some agroecological dimensions such as production practices, social and economic relations, and knowledge generation and transmission (see previous chapter). Through this research, I aim to move beyond the assumption that agroecological food production is solely based on trust and reciprocity and identify possibilities for sustaining existing agroecological networks in the area. (Da Silva, 2022, p. 21)

Methods

This place-based case study utilizes a qualitative methodology to investigate the impact of context in Eastern Antioquia on the intersection of social capital and power relations within agroecological networks, and the opportunities for Andean blueberry actors to join them. The research focuses on identifying the primary factors defining power relations affecting the associativity of Andean blueberry supply chain actors at different stages and processes, in terms of bonding and bridging social capital, and employs a supply chain approach to analyze the data gathered from literature review and interviews. Thus, this study explores the intersection between power relations and some elements of social capital, contextualized to an agroecological network in Eastern Antioquia, Colombia. Specifically, the study analyzes the case of the Andean blueberry, a novel fruit gaining momentum due to its health properties and benefits and seeks to understand how the context in Eastern Antioquia has impacted the intersection of social capital and power relations within agroecological networks and the possibilities for

Andean blueberry actors to join them, considering the particularities of the area historically impacted and intimidated by violence.

Participants

After researching the history of Eastern Antioquia over the past five decades, I conducted interviews with local communities, producers, marketers, consumers, policymakers, and academics involved in the production, commercialization, consumption, and research of Andean blueberry in rural Eastern Antioquia, Colombia. I conducted 22 in-depth, semi-structured interviews to gain insights and experiences regarding joining agroecological networks or being involved in any activity related to Andean blueberries in the area. Initially, interviewees were selected based on their current involvement in scientific projects on Andean blueberries and/or agroecological networks in Eastern Antioquia. I followed a snowball sampling method to recruit the rest of the participants, as explained in Table 3, using methods from Hanes et al. (2018) and Young et al. (2018). These interviews were conducted in Spanish between October 2021 and March 2022 and lasted approximately one hour. They were digitally recorded with permission and transcribed verbatim using methods from Harvey (2015) and Armstrong & Jackson-Smith (2017). Most of the interviews were conducted in person, but five were held virtually due to the preference of the interviewees because of Covid-19 pandemic related risks.

Table 4. Interviewees profile and snowballing process

Researchers / Academics (5)	After conducting the literature review and the mapping, I identified the main researchers and academics related to alternative or agroecological networks and Andean blueberry in Eastern Antioquia. During the interview, I inquired about their insights and experiences researching alternative networks and/or Andean blueberry. Those researchers whose academic work was not related to Medellín, or the Department of Antioquia were not considered. At the end of each interview, I asked them to refer to producers or marketers they know.
Policymakers (5)	As I proceeded with the academics, after conducting the mapping and the literature review, I identified the main institutions, programs, and policies that promote the strengthening of alternative supply chains and networks in the area. Then, I contacted policymakers and people in charge of those policies and programs.
Producers (5)	I interviewed five Andean blueberry producers who live in the region or own land where the fruit grows, and they market it. Therefore, it was not necessary that their livelihood activities were exclusively related to Andean blueberry production. However, they must collect the fruit to trade it, whether they sell it directly to consumers around or the city of Medellín. Also, they could process it to sell it, or sell it to a marketer / middleman or cooperative. Therefore, I did not consider people who only harvest this fruit for family consumption. Regarding the demographics, there is no age limit or gender discrimination. If they sell the fruit to intermediaries or directly to consumers, I asked to refer them.
Marketers / Intermediaries (3)	They must sell fruits and other goods in the region or own some land where the Andean blueberry is produced and sold. Their livelihood activities did not need to be exclusively related to fruit / Andean blueberry trading. However, it was necessary that they sell the fruit directly to a consumer or consumers in the area or the city of Medellín, process it to sell it, or sell it to another marketer, business, or cooperative. The final customer does not have to be located in the area or the city of Medellin. However, if the marketer buys fruits and goods in another region and sells them in Medellin or the area, he /she did not classify for this study. There was no age limit or gender discrimination. If they sold the fruit to other intermediaries or directly to consumers, they were asked to refer them in order to contact them.
Consumers (4)	They must live in Eastern Antioquia or Medellin. They must buy the fruit or any by-product directly from some producer(s) or from some marketer who trades fruit from the area. Therefore, people who harvest the fruit for family consumption did not classify. There was no age limit or gender discrimination. They were asked to refer suppliers and other people who also buy the fruit for consumption.
Total interviews	**22 participants**

Area of study

As previously mentioned, Eastern Antioquia is located near Medellín, Colombia's second urban center, and is home to 524,032 people spread across 23 municipalities, being Rionegro (145,242 people) and Marinilla (68,960 people) the main urban centers (Camara de Comercio, 2021). This study focused solely on the mountainous and altiplano zone, where Andean blueberries grow wild, at altitudes ranging from 1900 to

2600 meters above sea level and temperatures between 9 and 24°C (48.2°F - 75.2°F). This area covers about 1,900 km² (469,500 acres), representing 3% of Antioquia department and 0.13% of the country. The region's main economic activities include floriculture, dairy, and fruits and vegetables, providing 90% of these products for consumption in Medellín. For these reasons, the study's interviews were conducted in specific municipalities, including Rionegro, Marinilla, Guarne, La Ceja, El Retiro, El Carmen de Viboral, La Unión, San Vicente, Granada, El Santuario, and Santa Elena. It should be noted that Santa Elena is a rural district of Medellín where Andean blueberries are also harvested (see Figure 6).

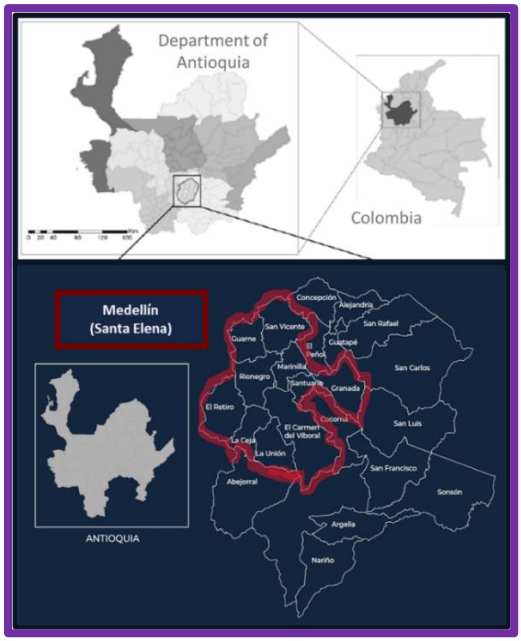


Figure 6. Area of study (Source: Rendon-Rivera et al., 2011; Cámara de Comercio de Medellín, 2021)

Data analysis

I developed an analytical framework to examine the intersection between power relations and social capital by identifying elements of social capital, such as trust, social

networks, norms, and integration (Ostrom & Ahn, 2003), in Eastern Antioquia, an area that has been historically impacted by violence and territorial control in Colombia. Table 5 explains the elements of social capital that I considered for this study.

Table 5. Elements of social capital

Elements of Social Capital	
Trust	Trust refers to the belief or confidence individuals have in the reliability, honesty, and cooperative behavior of others. Trust helps foster cooperation and coordination among individuals within a group or community.
Norms	Norms are shared expectations, rules, or guidelines that govern the behavior and interactions of individuals within a particular social group or community. Norms can be formal or informal and are often based on social and cultural values. Ostrom (1990) emphasized the importance of developing and enforcing norms that promote cooperation, fairness, and sustainable resource use in the context of common pool resource management.
Social Networks	Social networks refer to the web of social relationships, connections, and interactions between individuals or groups. Social networks play a significant role in facilitating communication, information sharing, and cooperation among individuals involved in collective action or resource management. Strong social networks can enhance trust, facilitate the spread of norms, and enable effective collaboration.
Integration	Integration refers to the coordination and cooperation among different individuals, groups, or institutions involved in managing common resources or engaging in collective action. It involves finding ways to bring together diverse perspectives, interests, and knowledge to collectively address problems and make decisions (Ostrom & Ahn, 2003)

In Table 6, a qualitative approach is employed to identify the elements of social capital within each dimension of agroecology proposed by IPES-Food (2018). The questions formulated during the interviews aimed to explore the actors' perceptions regarding the reliability, honesty, and cooperative behavior of others. For example, in the context of the first agroecological dimension, which involves the implementation of productive practices, the questions focused on assessing whether farmers optimize resources and replace chemicals and industrialized practices based on advice and experiences shared by family members, neighbors, and other farmers in the region. These decisions provide insights into

the dynamics of horizontal power among them. Moreover, by investigating the shared expectations, rules, and guidelines governing the behavior and interactions of these individuals with their networking and connections beyond their immediate networks, one can also gain an understanding of the dynamics of horizontal power.

Table 6. Framework to analyze power relations within agroecological networks through indicators of social capital.

		Types of social capital		
Agroecological Dimensions	**Scope of each dimension (IPES-Food, 2018)**	**Bonding**: Immediate network (family, friends, neighbors, etc.)	**Bridging**: Other social groups and networks (social stratification, with other cooperatives, other networks, etc.)	**Factors to find**
		Horizontal Power		
I. Production Practices	Optimizing resources, replacing chemicals and industrialized practices. Favor diversity and interactions between different species.	How do the existing relations among the immediate network, other social groups, institutions and/or authorities influence on optimizing resources and farm practices? How will those relations boost changes in production practices? Do they trust those networks and institutions to change their production practices?		Trust, Social Networks, Integration, Norms
II. Knowledge Generation and Dissemination	Shifts in how knowledge is generated and disseminated. Local culture and traditional knowledge are highly valued; alternative ways of communicating as farmer to farmer, farmer field schools, and farmer-led participatory research projects are promoted.	How is knowledge generated and disseminated among actors? How is the flow of information among them? What are the sources of information regarding agroecology and political organization? Do they trust them? Do they know about other networks and their norms?		
III. Social and Economic Relations	The strength of social ties and organizational capacity within farming/rural communities. Collective action is considered a core driver of change. Farmers need to have a high degree of social capital to work cooperatively in regional and landscape-level initiatives.	Do they have any form of organization? What norms do those organizations have? Is it easy or not to join those organizations? Do they feel free to participate and make decisions? How are prices regulated? Do they trust the other participants? Are consumers integrated to these networks?		
IV. Institutional Framework	The development of alternative governance structures as critical factors in shaping and accelerating transition processes. A wide range of public policies is necessary to set the underlying conditions and economic incentives for sustainable food systems to emerge.	Do they scale up their need to the institutional level? Do they have agency to mobilize external resources toward the networks? Do they trust institutions? Do they make alliances and participate in political decisions over their territories?		

In order to analyze the collected data through the interviews, I used the approach suggested by Hall et al. (2012) and Morse (2015). First, I extracted significant quotes, words, and expressions from the interview transcripts and my field notes. Then, I created a list of initial codes, which emerged from the interactions with the participants and their perceptions of alternative networks in the area, their knowledge of agroecology, and their experiences with the Andean blueberry. I organized these codes into categories related to elements of social capital and power relations. To confirm the reliability of the approach and the themes that emerged from the interviews, I asked participants to reflect on and share the most important topics discussed. I translated from Spanish to English the quotes used for the discussion and analysis of data of this study. Table 3 gives more information about my analytical approach to the interviews. Finally, based on the assumption that social capital is inherent to agroecology and establishes equitable relationships between actors (IPES-Food, 2018; Cadavid et al., 2019), I identified elements of social capital such as trust, social networks, norms, and integration to determine the types of social capital in the case of the Andean blueberry.

Results and discussion

Agroecology refers to the study, design, and management of sustainable food systems that integrate diverse knowledge systems generated by food system practitioners, and involve social movements for the transition to just, sovereign, and fair food systems (FAO, 2018a; Gliessman, 2015 in iPEP Food, 2018. P.12). However, the integration of knowledge and stakeholders into agroecological networks can be challenging due to unclear network structures and varying perceptions of actors

regarding engagement and possibilities for collective action based on their social position and relations' complexity within the network (Huxham & Vangen, 2015). Moreover, the structure of agricultural networks can create a dependency of agricultural producers on the most powerful actors in the network, which hinders their agency (Hendrickson & James, 2015). Thus, the distribution of power within agricultural networks is influenced by the interdependencies and social relationships between individuals, and these power dynamics ultimately affect how fair the system is perceived to be and whether people are willing to participate in it. This is particularly relevant for those involved in the Andean blueberry supply chain in Eastern Antioquia, as their perceptions of the challenges they face are influenced by various factors, including their agricultural practices, education level, access to land and markets, familiarity with technology and knowledge, and their relationships within their community.

Social capital and power in Eastern Antioquia: Advantages and challenges for associativity.

Bonding and Bridging: Trusting each other.

Chazdon et al. (2013) describe social capital as the cohesive element that unites communities and enables them to work effectively. Strong bonding and bridging networks are essential for achieving collective action. In this research, I found that the critical element of social capital shaping power relations for the interviewed participants is trust. Given the history of violence and displacement in the region, this element has severely affected the way relationships are formed and the reception of newcomers.

Thus, some Andean blueberry producers strongly rely on bonding social capital, making decisions based on the trust they have in their close networks, including customers, middlemen, and other producers. Two producers[15] I interviewed in Santa Elena and El Retiro exemplify this. They are retirees who have diversified their income by venturing into Andean blueberry production upon the suggestion of friends and taking advantage of owning land in blueberry-producing areas. Although they are not native to the region, they have succeeded in growing their business by establishing their own distribution channels to sell their product in various parts of the country. They are also exploring the possibility of adding value to the fruit by processing it into wines and preserves.

> *"... within the Andean blueberry program, we do like four things, one is the commercialization of the plants, two, planting, production, harvesting, and commercialization, and we also make wine and preserves from the Andean blueberry."*[16]

One of the Andean blueberry producers[17] mentioned that only a small number of producers grow blueberries in the region, and he is aware of only three others who are engaged in this activity. All of them are friends and relatives. Although he believes that the region is an ideal place for blueberry cultivation, producers tend to rely on recommendations from family members, neighbors, and acquaintances to make productive changes in their farms. As a result, networks tend to form among a small

[15] Producers 1 and 2, Santa Elena and El Retiro.
[16] Original quote in Spanish: "... *dentro del programa de la agraz hacemos como cuatro cositas, uno, es la comercialización de las plantas, dos, la siembra, la producción, recolección y comercialización y también sacamos conservas y el vino del mismo agraz"*
[17] Producer 1, Santa Elena.

number of close producers who trust each other to make decisions. This demonstrates a strong bonding social capital among them, which allows them to establish trust and collaborate to achieve common goals. On the other hand, another producer[18] who owns a farm in a more remote area with difficult access roads (as shown in Figure 7) is aware of these producers and has attempted to form an association with them. However, she feels that the unfamiliarity between the producers and the distance that separates them lead to the formation of exclusive groups that seek benefits only for themselves, hindering the formation of associations or the inclusion of other producers. In her own words:

> *"I see a lot of potential for those who are involved, for those who have the contacts, for those who, like in a swarm of bees, have the whole line, the points. Because what I was telling you, I feel it in any case, like a closed brotherhood. That's what they have. They have a group, and they already have their market under control."*[19]

[18] Producer 5, woman. La Unión.

[19] Original quote in Spanish: *" Yo le veo mucho futuro al que está metido, al que tiene los contactos, al que como en un enjambre de abejas tiene como toda la línea, los puntos. Porque lo que yo te decía, yo lo siento como de todas maneras, como una fraternidad cerrada. Ellos tienen como un grupo y ellos tienen su mercado ya controlado."*

Figure 7. Access roads to the farm of an Andean blueberry producer in La Unión, Antioquia[20]. (Personal file, November 2021)

Therefore, individuals with certain advantages, such as favorable location or higher education, tend to work independently and form partnerships with like-minded people, instead of seeking a more diverse group of partners. This behavior can reinforce social and economic inequalities, resulting in greater sway and control for associated producers in close proximity, which reinforces their influence within the network. As noted by Roscigno (2011), power is reinforced by decision-making and authority, and in this case, the concentration of power among associated producers is reinforced by the absence of bridging social capital, leading to extreme individualism. This makes it challenging for individuals from diverse backgrounds to participate in various networks (Chazdon et al., 2013, p.2). This situation can have negative consequences, as strong

[20] The day I visited this farm was a rainy day in November, a time when the rainy season intensifies in the Andean region of Colombia. Upon arriving at the farm, the producer and her husband expressed concern because I had come in my car, and it seemed like it was going to rain. During the interview, a heavy downpour occurred, and the rocky road became muddy and filled with puddles. Indeed, after finishing my interview, I attempted to move my car, but it was utterly futile due to the precarious conditions of the road. At that moment, several neighbors from nearby farms appeared, and together they helped me free the car from the mud using shovels, placing rocks and sacks. After many attempts, I managed to move the car and bid farewell to them. That is their day-to-day reality.

bonding social capital can sometimes lead to conflicts between different groups within the community who are competing for decision-making power. Conversely, communities with strong bridging networks but weak bonding networks may end up ceding control to outsiders or wealthy and powerful insiders. Unfortunately, this is a phenomenon occurring in Eastern Antioquia.

Harming the social capital: Displacement in Eastern Antioquia.

According to Bello (2003), the war in Eastern Antioquia caused many people to flee both rural and urban areas across several municipalities. As the violence was more widespread in areas with high potential for financial gain or accumulation of wealth, some participants believe that this displacement was part of a larger process of taking control that began with the expulsion of local residents from their territories, followed by the appropriation of lands and natural resources by wealthy outsiders and agro-industrial companies. One of the producers[21] mentioned that "*power is measured by the amount of accumulated land hectares*,"[22] which has caused farmers in the region to feel discouraged and isolated due to historical displacement. Currently, there are urban and industrial projects in the region, and according to a policymaker and activist[23], "*they are trying to remove people from their lands to turn this into an industrialized zone, into a great metropolis, as an extension of Medellin.*"[24]

[21] Producer 4, Guarne. He owns an agroecological farm and distribute fresh products across the municipality.
[22] Original quote in Spanish: "*...aquí, el poder se mide en la cantidad de hectáreas acumuladas*"
[23] Policymaker 4, Guarne. She is a social leader and seeks to associate smallholder producers to join a peasant movement that has been in the municipality for various decades.
[24] Original quote in Spanish: " *Ellos están tratando de remover a la gente de sus tierras para convertir esto en una zona industrializada, y convertir esto, en una gran metrópoli como una extensión de Medellín.*"

Several study participants expressed concerns about large-scale flower companies in the area, which have taken a significant amount of the labor force. A producer[25] in the municipality of La Unión noted that these companies are taking all the labor force and people are not interested in leaving a steady job to go pick berries for only a few days a year. She mentions:

> *"Sometimes my children or husband help me pick Andean blueberries, which is useful because I don't have to pay someone to help me. But what if I had 2,000 to 3,000 bushes? Occasionally I have to seek outside help to plow the land since labor is not easy to come by. A farmworker is not going to leave one of those flower businesses that have arrived. They guarantee a steady, year-round income and all benefits. People are not going to quit for only a few days of blueberry picking per month. This crop requires daily or at least weekly attention as the berries mature and can be lost."*[26]

Another producer[27] observed that after the pandemic, many people are not interested in joining companies or accessing loans to invest in their farms because of government subsidies for unemployment. However, this lack of interest in small-scale

[25] Producer 5, woman. La Unión.

[26] Original quote in Spanish: *"Cuando yo voy y los niños me ayudan a coger, mis esposo me ayuda a coger, eso es utilidad. De resto, no. Yo decía, 'Dios mío, si yo tuviera 2000 - 3000 matas, ¿cómo hago? Si a veces para que me aren la tierra me toca pedir "cacao" y buscar quién me are, porque la mano de obra tampoco es tan fácil, por lo que te decía, un campesino no va perder de trabajar en un sembrado de flores, con un salario mínimo, con todas las prestaciones y una estabilidad de todo el año, por venir a a cogerme mortiño 2 - 3 - 4 lunes al mes; porque eso todos los días hay que ir a darle vuelta o por lo menos cada semana, porque si no, se nos pierde."*

[27] Producer 2. El Retiro.

farming can be problematic for empowerment, as Gliesmann (2007) argues that peasants can remain on their land and farm profitably using sustainable practices when they have alternative models to the agribusiness model and the food system oligopoly. Conversely, when peasants leave their lands or work for agribusinesses, they are often disempowered and overlooked. This notion is reflected in the experiences of some displaced farmers who returned to their land and found a way to reconnect with their territory through alternative production systems. However, not all family members were able to do so, as one farmer[28] noted that although he was able to reconnect with his agricultural vocation thanks to agroecology after leaving his farm in the late 90s, many of his family members did not.

> "*With this issue of agriculture, we started because my family is from the countryside. My grandparents were farmers all their lives, but something particular happened to us, and that was displacement. Guarne was heavily affected by violence between '97 and 2003. So, my maternal grandfather, who had the most developed productive unit, was killed, and we came to live in the urban area of the town. We were displaced and completely forgot about the countryside. I did my school here, then went to study automotive mechanics at the university in Medellin. My other grandfather, when he goes to the farm, he transforms completely. He is active, he doesn't think about things, and when he is in the town, he is depressed, locked up in his house. He lives there since his children did not want to continue in the*

[28] Producer 4, Guarne.

countryside; they live in the town and work in construction or other things, and so, they have not wanted to take up agriculture again."[29]

Social networks, one of the indicators of social capital, refer to the web of social relationships, connections, and interactions between individuals or groups. Social networks play a significant role in facilitating communication, information sharing, and cooperation among individuals involved in collective action or resource management. Therefore, the integration of actors to social networks facilitates the coordination and cooperation among different individuals, groups, or institutions involved in managing common resources or engaging in collective action. During an interview with an academic[30] affiliated with the University of Antioquia, she mentioned that in the 1970s, the region had a "peasant abundance" which positively impacted their ability to form associations. However, currently, small-scale producers are not forming associations, which has significant consequences, particularly in terms of negotiation. When comparing the terms of negotiation achieved by associations to those of independent producers, associations clearly perform better. An official[31] of the Corporation for

[29] Original quote in Spanish: "*Guarne fue muy afectado por la violencia entre el 97 y el 2003. Entonces, mi abuelo materno, que era el que tenía una unidad productiva más desarrollada, a él lo mataron y nosotros nos vinimos al pueblo a vivir, fuimos desplazados y nos olvidamos completamente del campo. Yo hice mi colegio acá, luego me fui a estudiar en la universidad en Medellín y estudié mecánica automotriz. mi abuelo por parte de mi papá, cuando va a la finca, él se transforma totalmente. Él es activo, él no piensa en cosas, y cuando está aquí, él es depresivo, es encerrado en su casa, porque vive en el pueblo porque los hijos de él no quisieron seguir en el campo, y vivien en el pueblo y trabajan en construcción u otras cosas, y entonces, no han querido retomar eso.*"

[30] Academic 4. She is affiliated with the University of Antioquia at Eastern Antioquia. It is important to mention that this University is one of the most important academic institutions in Colombia and Latin America. Its main campus is located in Medellin, but it also makes presence in the different regions of the Department, including Eastern Antioquia.

[31] Policimaker 3, Marinilla. The Corporation for Environmental Studies, Education and Research (CEAM) is a corporation that promotes alternatives to the development of the territory, contributes to welfare of

Environmental Studies, Education and Research (CEAM) in Marinilla, explains some of the reasons why associations do not succeed:

> "*Several associations and processes in the region have failed due to issues with economic sustainability, as well as occasional distortion of their founding purpose. These associations come together to market their products as a block, but sometimes receive better offers from outside sources, causing them to sell their products individually instead of through the association. The administrative side of these associations is also problematic, as trust is sometimes lost in the board or management. Additionally, personal interests and political factors can have a significant impact, as actors within the association may support a particular candidate, and if that candidate loses the local elections, they may be left out of the decision-making process*."[32]

Considering Ostrom's work (1990), the failure of several associations and processes in the region can be attributed to the difficulty of balancing individual self-interest and collective action. This is because these associations are made up of individuals who have their own preferences and priorities. However, the success of the association requires

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smallholder communities, promotes self-management processes and actions for the change in cultural behaviors towards coexistence with nature, based on the principles of solidarity, equity, and participation. CEAM is located in Marinilla.

[32] Original quote in Spanish: " *De esas asociaciones o de esos procesos, bueno lo que te decía ahorita, que el tema de la sostenibilidad económica, y también que a veces se desvirtúa un poquitico la figura para la cual fueron fundadas, porque digamos que ellos casi que se asocian para poder comercializar en bloque, cierto, entonces a veces tienen ofertas mejores desde afuera, entonces ya no mandar la producción por ese canal sino que lo sacan a otro lado, cierto; también la parte administrativa, también a veces se pierde la confianza en la parte de la junta o de quienes están administrando, de pronto a veces intereses personales; también el tema político a veces afecta mucho que a veces los actores que están ahí se casan con un candidato y alguna cosa, y cuando gana el otro entonces casi que quedan por fuera, o les hacen la mala pues en el proceso, entonces digamos esos son los factores."*

that these individuals work together towards a common goal. When I asked the participants about their perceptions regarding these elements of social capital, they mentioned that, although the breakdown of social capital caused by the era of violence in eastern Antioquia, there are some exceptions that are particularly noteworthy. The wounds and pain inflicted on the lives of many municipalities in the area served as a catalyst for collective action, resulting in the creation of resilience mechanisms and a renewed connection with the territory through association and agroecology.

An example of a successful association is Café Tejipaz in the municipality of Granada, a municipality that almost was destroyed by guerrillas in 2000 (see Figure 8). Despite this setback, Tejipaz was created in 2016 to support the productive processes of those who survived the violence brought by the armed conflict in the municipality. Today, the initiative supports over 614 peasant families, including victims of the armed conflict, single mothers, people with disabilities, and young entrepreneurs. They are currently exporting coffee produced under agroecological practices and marketed under fair price policies. They also have a coffee shop located just two blocks from the place where the bomb exploded 23 years ago, where they market their products and offer other services (see Figure 9).

Figure 8. The Municipality of Granada was left devastated after FARC guerrillas detonated a car bomb containing 400 kilos of dynamite on December 6, 2000. (Photo by DeGranada, Dec. 2019)

Figure 9. The headquarters of Tejipaz coffee, located in the Municipality of Granada. This place serves as a marketplace for agroecological products grown by over 600 peasant families who were affected by the armed conflict. A message written on the wall by Elkin Gómez Giraldo from El Libertador village reads "My dream is for my farm to be sustainable so I can live on it". (Personal file, February 2022)

The story of Café Tejipaz has become an inspiration for many smallholder organizations in the area. However, several of these organizations struggle to succeed due to the lack of resources and the fear of intimidation. Another academic[33] interviewee noted that rural organizations in Colombia have faced historical

[33] Academic 3, Medellín. She is a researcher in food security and alternative food networks affiliated with the University of Antioquia – Medellín.

stigmatization, which compounds the challenges of the armed conflict and the existing economic model. The neoliberal model encourages small farmers to compete against each other, leading many to adopt production models that promise greater productivity but limit their market opportunities. Supporting these rural organizations with the necessary resources and strategies to strengthen their negotiating power is crucial to their success. By accessing markets more effectively, they can compete and achieve sustainable economic growth.

Access to markets and consumers: A power in dispute

According to Giraldo et al. (2013), the struggle for control over natural resources and territory in the eastern region of Antioquia has eroded the trust and associative power of the local communities. Despite this, the interviewed producers recognize the importance of working together to compete against agribusiness. They believe that intermediaries have too much power in terms of controlling the market and prices, and that by joining forces, they can increase their negotiating power. In contrast, one intermediary[34] that runs a small marketing business for agroecological and organic products, argues that the region is increasingly in need of local labor with knowledge of organic farming to work on crops for city-dwellers who want to produce their own greenery. Thus, he sees this situation as disempowering for local farmers who become reduced to employees and lose their power and agency as landowners. This intermediary also suggests that empowering farmers means increasing their income and

[34] Marketer 1, Medellín. He also works with smallholders to obtain organic and other certifications, adapting European models, and supporting farmers in the region to improve their alternative production and marketing processes.

quality of life through fair marketing practices that recognize the effort involved in producing organic products.

In this sense, intermediaries in alternative networks can play a crucial role in connecting producers and consumers, unlike intermediaries in traditional supply chains who profit off farmers' work through a "penny war." To avoid this situation, producers and academics recommend short marketing circuits, which are aligned with the concept of agroecological networks. These circuits favor local consumption and seek to bring producers and consumers closer together, strengthening social relations and social capital (Ravlic, 2022, p. 278). To achieve this, according to one of the interviewed researchers[35] affiliated with the University of Antioquia, "*it is necessary to promote relationships within the networks, include new actors, but in coexistence, and position food but from a much more conscious relationship by the different actors. This means recognizing their uses, their properties, but also recognizing who produces it, what it is generated, and that we know the profound opportunities that exist, both nutritional and food-wise*"[36]. In other words, as a producer[37] says: "educate the consumer."

According to one of the most recognized agroecological producers[38] in the region, who transitioned to agroecology more than 30 years ago, his main achievement is

[35] Academic 3, Medellin.
[36] Original quote in Spanish: "*Lo que es necesario es promover las relaciones entre redes, incluir nuevos actores pero en coexistencia. Posicionar los alimentos, pero desde un relacionamiento mucho más consciente con los otros actores. Esto significa que tenemos que reconocer sus usos, sus propiedades, pero también reconociendo al productor, lo que esto genera, y las grandes oportunidades que esto genera, tanto nutricionales como a nivel del alimento como tal.*"
[37] Producer 4, Guarne.
[38] Producer 3, El Carmen de Viboral

having today his own agroecological mini market / restaurant in the municipality of El Carmen de Viboral. When he started in agroecology, sometimes he had to give away most of his production because, according to him, there was no awareness of consuming pesticide-free food. With the pandemic, he claims, agroecology has gained more recognition and he is optimistic about the arrival of new settlers in the region because they are people who arrive looking for healthy food and to connect with the territory. Therefore, it has allowed him to have greater profitability by avoiding intermediaries, and also, to raise awareness among consumers.

> *"It is very good when one can interact with the consumer and tell them the story. Then, they start believing what is being said. On the other hand, I think intermediaries don't have the time to do that, or they don't care to know who their consumers are. So, one of the strengths is having this mini market, or even if it's just a tent in the park, but the farmer himself is able to sell his product to the consumer."*[39]

This producer also claims that he strives to build trust with his clients and other stakeholders interested in agroecology by inviting them to his farm and linking them with his mini market/restaurant. During these visits, he educates them about his farming techniques, establishes a sense of trust with his clients, and encourages other

[39] Original quote in Spanish: "*Es como muy bueno cuando uno puede interactuar con el consumidor, y decirle el por qué y contarle, entonces ya van como creyendo lo que no dice, en cambio yo pienso que el intermediario no tiene tiempo hacer eso, o no le importa o no sabe quiénes son sus consumidores, entonces una de las fortalezas es tener un punto de venta, así sean un toldito en el parque, pero que el mismo campesino sea el que logre vender su producto al consumidor.*"

farmers to adopt agroecological methods. However, he acknowledges that one of his main challenges is that consumers have certain expectations about the appearance of agroecological foods, which are largely influenced by the global market and biotechnology. Additionally, the producer[40] interviewed in Guarne claims that consumers demand prices that are comparable to those in the supermarkets and hesitate to pay a fair price to farmers who produce them without using agrochemicals. Moreover, he notes that these organic products do not meet the aesthetic standards set by the general market. For example, they may be smaller or lack certain attributes demanded by the market, which limits sales channels. Nevertheless, with the growing popularity of organic products, he is optimistic that this situation will improve. Lastly, he emphasizes that organic production should be affordable and accessible to everyone, as many criticize the high prices of organic products.

Figure 10 illustrates the way in which Andean blueberries are marketed by a collector who gathers fruits from native forests and communal areas in the region. They pack and sell them at local farmers' markets. It contrasts with the quality standards demanded by large-scale supermarkets and consumers with higher economic status. For them, Andean blueberries should serve as a substitute for American blueberries, which is why they expect the same organoleptic characteristics as the imported ones. However, Andean blueberries are smaller in size, have a more astringent taste, and firmer texture.

[40] Producer 4, Guarne.

Figure 10. Appearance of wild Andean blueberries marketed by collectors and sold in farmers' markets (left). In contrast, frozen blueberries marketed by associated producers, which are sold to large restaurants and supermarkets (right). (Personal file, Nov. 2021)

In general, the participants in this study consider that institutional support for agroecology is increasing, as demonstrated by the weekly farmers' market held in several municipalities and parks in Medellín. For them, these markets have helped strengthen alternative food systems in the area. Some producers[41] also consider that these markets have attracted a new kind of consumers, described as those interested in healthy food, learning about their food, and experiencing nature:

"*In Guarne, people are becoming aware, especially among the younger population. These people are the biggest supporters of farmers' markets. Most of them have already become aware of their diet and are professionals who are well-informed about nutrition*

[41] Producers 3 and 4. El Carmen de Viboral and Guarne.

issues. Typically, they are individuals between the ages of 25 and 45, who have lived in the city and have a higher level of cultural development. They may be more devoted to the spiritual side and tend to be more conscious about their choices. In contrast, those who are not interested in these topics may not care about buying aesthetically pleasing and cheap vegetables."[42]

Additionally, this producer views farmers' markets as a space for public relations and building relationships with customers. For that, he also provides additional services like product delivery and agroecological consulting upon request. However, most of the study's participants still feel that more institutional support and public policies are needed to fully empower producers and create greater consumer awareness.

[42] Original quote in Spanish: " *Acá en Guarne hay muchas personas muy conscientes de... sobre todo son jóvenes. La mayoría son personas que ya han adqurido una consciencia de su propia alimentación, entonces son personas profesionales, personas que están informadas y les gusta ese tema de la conciencia de qué se están alimentando. Entonces, normalmente, son personas ya profesionales, que ya han vivido en la ciudad, con edades que oscilan entre los 25 hasta los 45 años. Personas con un desarrollo cultural, personas que han salido del país, personas más avocadas a la parte espiritual, gente más consciente, para mí. Cuando a una persona no le interesa eso, le da lo mismo comerse o comprar una verdura que se vea bonita y que sea barata.*"

Figure 11. Farmers' market in Guarne, Antioquia. In English: "Welcome to the fair. I support Guarne's reactivation". (Personal file, December 2021)

In the Andean blueberry case, one of the participating intermediaries[43] believes that it is necessary to form an association of people around the "ancestral knowledge" of this fruit to make producers visible and to attract more state training and support. She buys Andean blueberry from harvesters in Santa Elena and creates channels to commercialize the product, transform it, and connect them with buyers:

"*Thanks to the social capital in the area, I managed to involve several farmers, all family and neighbors, making them motivated to produce agroecologically, and I found them a market through my own contacts in the city, and participating in various farmers' markets in the area and Medellin. If we buy everything here, we already have*

[43] Marketer 3, Santa Elena. She is an intermediary who connects harvesters of wild Andean blueberry with restaurants and other small business in Santa Elena and Medellín.

almost everything won, meaning our true power and happiness will be there, expanding the voice."[44]

In this way, farmers' markets are exalted as a space where producers can connect with consumers and provide the product with a value according to its origin, listen to the stories of producers and how they obtain their products to dignify them. According to Windfuhr & Jonsén (2005), farmers' markets play an important role in promoting food sovereignty by providing a direct link between consumers and small-scale food producers. By purchasing food directly from farmers, consumers can support sustainable agriculture and contribute to the development of local food systems. Additionally, farmers' markets often feature educational programs and workshops that promote sustainable agriculture practices and food sovereignty. This is relevant when farmers only have the option of entering a society that already has an established market or starting to open markets, "which is very challenging", as one of the participating producers[45] in this study observes. In sum, farmers' markets are suggested as a mechanism to integrate those actors in the network who are not part of the associations and also allows for the integration of consumers, which strengthen social capital.

[44] Original quote in Spanish: *"Gracias al capital social de la zona, logré animar a muchos campesinos. Todos familiares y vecinos. Los motivé para producir agroecológico y les busqué forma de vender sus productos a través de mis propios contactos en la ciudad, y participando en varios mercados campesinos de la zona y en Medellín. Si todo lo compramos acá ya tenemos casi todo ganado, o sea ahí va a estar nuestro verdadero poder y nuestra felicidad, expandiendo la voz."*

[45] Consumer 1, Santa Elena.

The opinions of the participants in the study on the relationship between consumers and producers are diverse. Some believe that trust is crucial for building a sense of community and breaking from traditional customs, while others argue that farmers need to have an entrepreneurial mindset and view farmers' markets as an avenue for growth. However, farmers are required to follow standards that increase product costs and limit access to low-income consumers (Maldonado-Celis et al., 2017). Gliesmann (2007) suggests that when consumers are involved in the food production process, they become more aware of how their choices and behaviors affect the environment, food growth, and the food system. Nonetheless, the current global food system exploits small-scale farmers and prevents consumers from actively participating in the production and distribution process, leading to a lack of informed decisions. To address this issue, it is necessary to establish direct relationships between producers and consumers and to promote alternative networks through training and policy. This approach can add value to the Andean blueberry chain and prevent it from being absorbed by industrial agriculture or, otherwise, disappearing in the region. However, achieving these goals requires analyzing the potential for social connections between actors in both immediate and institutional networks.

Conclusions and Recommendations

When it comes to the role of social capital in economic development, research has shown that social networks can play a crucial role in facilitating economic growth and innovation (Woolcock, 1998). In particular, bridging social capital that connects people across different social groups and organizations can help to create new opportunities for

collaboration and exchange, which can in turn drive economic development (Putnam, 1993). However, it is important to note that social capital can also have its downsides. For example, research has shown that social networks can sometimes serve to reinforce existing power structures and exclude certain groups from opportunities (Restrepo & Rozo, 2017). In addition, high levels of social capital can sometimes lead to insularity and resistance to change, which can impede innovation and progress (Svendsen & Svendsen, 2004). Therefore, it is important to strike a balance between bonding and bridging social capital, as this can help to promote both internal cohesion and external connections (Ostrom & Ahn, 2003). In the context of agroecology, this means valuing and preserving local knowledge and practices, while also seeking to build bridges and establish connections with other actors and organizations.

One promising approach to promoting sustainable development through agroecology is to empower small-scale farmers and producers through the formation of cooperatives and other types of collective organizations (Altieri & Nicholls, 2021). By working together and pooling resources, these groups can gain greater bargaining power and control over their own production and marketing processes. However, it is important to recognize that the success of these initiatives will depend in part on the social and political context in which they are operating. In particular, the history of violence and displacement in Eastern Antioquia highlights the importance of addressing social capital loss and promoting trust and cooperation among community members. This may involve efforts to restore social networks and community ties, as well as addressing the underlying economic and political factors that have contributed to the

region's instability (Guáqueta & Delgado, 2006). Overall, achieving sustainable development in the context of agroecology will require a nuanced understanding of the social dynamics and power relations within communities, as well as a commitment to promoting both internal cohesion and external connections. By valuing and building on existing social capital while also seeking to address its limitations and downsides, it may be possible to create more inclusive and sustainable agroecological systems that benefit local communities and promote environmental resilience.

Eastern Antioquia has a high potential for agroecological production of crops such as the Andean blueberry. However, the development of agroecological value chains for this crop faces various challenges related to market access, technical assistance, social organization, and the regeneration of the social fabric and trust, after the damage left by violence and displacement. In this context, the concept of social capital can offer insights for promoting collective action among small-scale farmers, gaining power, and improving their access to resources and markets. However, it is also crucial to explore how the linking social capital of Eastern Antioquia can contribute to the development of agroecological value chains for the Andean blueberry by facilitating access to markets, technical knowledge, and financial resources, as well as influencing policies that support sustainable agriculture (Grootaert & Narayan, 2004). Therefore, the inclusion of linking social capital into the analysis of power relations among actors within the Andean blueberry case in Eastern Antioquia would allow the expansion of the scope of this research as well as revealing strategies to identify and strengthen vertical power.

As this study focuses mainly on horizontal power relations related to bonding and bridging social capital, future research is necessary to also explore vertical power relations related to linking social capital. Thus, it is necessary identify the key actors and institutions that can support the development of agroecological value chains for the Andean blueberry in Eastern Antioquia to propose strategies for scaling up agroecological needs. These may include government agencies, NGOs, academic institutions, private companies, and consumers. Through these linkages, small-scale farmers can access markets, technical knowledge, and financial resources, as well as influence policies that support sustainable agriculture and food sovereignty. Finally, having a combination of strong but inclusive horizontal (bonding and bridging) and vertical (linking) social capital will allow these communities to become more active and influential actors in the policy-making process. Thus, they can advocate for their interests, share their knowledge and experiences, and demand that their voices be heard in decisions that affect their livelihoods and the environment.

CHAPTER 4 - AGROECOLOGY AND COLOMBIA'S FOOD SUPPLY CHAINS: POSSIBILITIES FOR THE ANDEAN BLUEBERRY CASE IN EASTERN ANTIOQUIA.

"Academic and governmental support is crucial to make the short trade networks in the region visible but positioning them from food sovereignty."
Martha Alicia Cadavid,
Academic and Researcher on Alternative Food Networks

"Governments and those in power know that there is freedom and independence if there is agriculture. That is why they do not support the peasant."
Luz Diana Acevedo, Marketer

Introduction

Agroecology prioritizes social and political processes that incorporate local communities' knowledge and agency to develop practices and policies that align with the socio-ecological and cultural context of their territories, serving as an alternative paradigm to the exploitative dynamics of industrialized agrifood systems (Van Der Ploeg, 2020; Pimbert, 2021). Therefore, agroecology can help to bridge the gap between society and nature, which has contributed to the degradation of soil and the impoverishment of peasants. By being locally-based, agroecology can help empower peasants, who have historically been oppressed and marginalized. For that, it not only promotes the formation of networks based on principles of closeness, trust and collective action among the participating actors, but also with external institutions and agencies (Van Der Ploeg, 2010). Thus, agroecological networks have been proposed as a means of integrating various actors, and reinforcing bonds and connections between small-scale farmers, producers, and external actors, which could increase their power and sustain these networks over time (Lugo-Morin, 2013).

According to Howard (2016), by including these notions of power in agroecology, it can reinforce the political agenda of food sovereignty movements by challenging the hegemonic food systems and avoiding their forms of power (Howard, 2016). However, while smallholder producers and other actors are assumed to be free to join these networks, there is not consistent literature on the characteristics of the social

relationships within them and how social capital[46] shapes power dynamics among these actors. On the other hand, as Onyx et al. (2007) argue, the permanence of agroecological networks in a particular region also depends on the capacity to meet local needs and establish connections with various institutions as government agencies, NGOs, academic institutions, private companies, and consumers. In addition, it is also necessary to learn more about the experience of these actors when it comes to relationships with institutions and external organizations.

In 2017, Méndez & Casas investigated the level of social capital throughout Antioquia, finding that eastern Antioquia displayed a high level of trust in family members (91%), acquaintances (64%), and neighbors (58%). However, when examining institutions with indirect citizen participation, state entities exhibited the lowest level of trust at 38%, while universities, the Church, and NGOs focused on human rights, the environment, and women demonstrated the highest level of institutional trust at 69%. This is particularly significant because these external connections, known as linking social capital, allow small-scale farmers to access markets, technical knowledge, and financial resources, and to influence policies that promote sustainable agriculture and food sovereignty (Lugo-Morin, 2013). In terms of power, institutionalized vertical power

[46] Social capital refers to social collaboration between groups, characterized by factors such as affection, mutual trust, cooperation, practical norms, and social networks (Bourdieu, 1986). These elements within social networks explain how individuals obtain certain advantages within their relationships and can translate into organizations, rules, or institutions, both formal and informal (Ostrom & Ahn, 2003). According to Rodríguez-Alcalá (2019), social capital can be categorized into three types: bonding social capital, which is horizontal and refers to immediate networks like family, friends, and neighbors. Bridging social capital is also horizontal and refers to connections between social groups such as cooperatives and other networks. Linking social capital, on the other hand, is vertical and connects social groups with institutions and authorities.

is based on hierarchical relationships, providing access to resources, policy influence, and the ability to navigate bureaucratic systems (Woolcock & Narayan, 2000).

In the previous chapter, I found that bonding social capital in Eastern Antioquia has been reinforced by the history of violence and displacement, hindering the inclusion of new actors in the Andean blueberry (*Vaccinium Meridionale* Swartz) supply chain. This can be explained by the breakdown of certain elements of social capital, such as trust, willingness to form and integrate into social networks, and the ability to propose norms that are embraced by all. When these elements are compromised or weakened, it becomes challenging to establish and maintain associativity. Trust is a fundamental component as it builds confidence among participants, allowing them to collaborate and rely on each other. Similarly, the willingness to form and integrate into social networks fosters the creation of relationships and connections that facilitate cooperation and collective action. Additionally, proposing and adhering to shared norms and guidelines creates a common framework for interaction and decision-making, promoting a sense of unity and cooperation. When these elements are undermined, associativity may be hindered, making it difficult for individuals or groups to effectively collaborate and work towards common goals.

Despite the increasing Andean blueberry's popularity due to its health benefits and adaptability, it is still crucial to identify key actors and institutions that can support the strengthening of the existing supply process and the subsequent development of agroecological value chains. This study, which employs a qualitative case study approach, aims to investigate the intersection between power relations and linking

social capital elements such as trust, social networks, norms, and integration (Ostrom & Ahn, 2003). The research seeks to comprehend the challenges actors in agroecological supply chains face in accessing technical and financial resources, as well as influencing policies under the current legal framework governing food supply chains in Colombia.

To explore the legal framework of food supply chains and the status of agroecology in Colombia, the study employs a systematic review. The experiences and perspectives of actors involved in the Andean blueberry supply chain are gathered to uncover the impact of their relationships on existing power relations within networks and associated institutions. Using a supply chain approach[47] to analyze data, the study aims to understand the configuration of power relations among actors in the stages of the Andean blueberry supply chain, including consumers and intermediaries who serve as main connectors between smallholder producers and consumers, and agribusinesses seeking to fill gaps in markets. Additionally, the study analyzes other cases of novel fruits produced under agroecological and industrialized models to better understand the trade-offs of different production approaches. Finally, I gathered input from various actors involved in the Andean blueberry supply chain who could provide valuable

[47] By differentiating among processes and actors' roles, the supply chain approach provides a useful framework for analyzing agroecological networks and supply chains. It is particularly important to incorporate the perspective of consumers in this analysis since their power has traditionally been undervalued, with emphasis placed mainly on the production side. The definition of supply chains given by Lima et al. (2001) describes them as social groups consisting of various actors such as producers, suppliers, processors, distributors, and consumers. Meanwhile, Simanca, Montoya & Bernal (2016) identified several components of a production chain including stages, segments, flows, and organizational environments. These elements are interrelated and play a role in achieving a common goal. Stages refer to the different actors involved in the chain's activities, while segments represent homogeneous groups within each stage. Flows help to understand the relationships between the stages and segments, thus enhancing the understanding of the chain.

insights into power dynamics and challenges faced in strengthening relationships with institutions to obtain support, training, financial resources, and participate in creating public policies related to agroecological approaches. The research question guiding this study is:

How does the power configuration and the legal framework of the conventional food supply chains in Colombia impact the formation and development of agroecological supply chains?

This analysis will provide a better understanding of the significance of connecting social capital in agroecological networks by analyzing the power dynamics that exist among smallholder actors and institutions in Eastern Antioquia. Additionally, by considering the historical context of the area under study, I discuss how these intersections can either empower or disempower these actors in their efforts to influence public policies and expand their needs to the institutional arena. By understanding the attributes of linking social capital and how they generate power relations, this debate opens up possibilities for the growth of alternative networks and the development of new value chains. This study will also serve as a guide for policymakers, practitioners, and academics to form partnerships and policies that will promote sustainable social and economic growth in regions where agroecological networks are formed and established. Finally, the findings will contribute to the transdisciplinary discussion on how to better align agroecology with the food sovereignty movement, enhance its epistemological foundations, and explore the

potential for incorporating new research paradigms into agrifood systems to gain visibility and institutional support.

Background

Agroecology and linking social capital to scale up power.

According to Altieri and Nicholls (2021), agroecology has the potential to increase diversified food production, improve the economic income of smallholders, and empower them by enabling farmers to gain autonomy and control over their food production systems. This social dimension of agroecology combines traditional knowledge and ecological science to provide a pathway towards sustainable agroecosystems. However, Robbins (2020) argues that despite the interdisciplinary nature of agroecology, there is still a lack of studies when it comes to its social aspects. Furthermore, existing sociopolitical approaches to agroecology often fail to adequately address power dynamics among agroecological actors, particularly the power exerted by actors within the industrialized agrifood system over smallholder communities (Calle-Collado, 2013; Alvin et al., 2022). For that, incorporating a political agenda and articulating food sovereignty movements with agroecology can help avoid its co-optation by the neoliberal model (Trauger, Claeys & Desmarais, 2017).

To prevent agroecology from being co-opted into neoliberal discourse, it is important to reinforce its political roots by acknowledging the power dynamics among actors in these networks. This entails promoting the participation of local communities, marginalized groups, and vulnerable populations and considering their perspectives on

how policies and market conditions affect their well-being (Robbins, 2020; Chandra et al., 2017). Additionally, as noted by Onyx et al. (2007), it is crucial to understand the legal framework and financial mechanisms that can connect agroecological networks with external sources of funding and power. However, such links can also perpetuate unequal power dynamics, as posited by a structuralist view of power (Onyx et al., 2007, p.6). Nevertheless, achieving equitable distribution of power is essential for the success of agroecological networks, so that resources can be accessed by all actors and policies can be developed from the territories to benefit everyone. However, this can only be achieved by taking into consideration the history and context of these territories previously.

Colombian context: Associativity disrupted by violence and the abandonment of rural areas.

In the global south, social conflict has spilled over into the economic field and exacerbated exploitation in the relations of production and economic distribution. Essentially, social conflict has extended to a broader social space, in which forms and strategies of power are built and positioned as the basis of conflictive relations between the social forces that contest to ensure control of the forms of organization within communities and how they relate with their environment (Leff, 2006). Escobar (2017) highlights how relevant the argument of Eduardo Galeano in his 1971 book, "Open Veins of Latin America," is today. There, Galeano denounced how the history of colonialism had exploited Latin American territories and the impact that this had on perpetuating the poverty generated by the exploitation of the land. Unfortunately, this denunciation continues to be valid in contexts of the global south where the struggle for territory and

inequality has meant that small producers lack a voice and decision-making power, succumbing to neoliberal expansion and industrialized agriculture. Given this, one wonders if agroecology is achieving its aim of promoting a multi-dimensional sustainable development of small-scale models and empowering smallholder communities in Latin America.

In countries like Colombia, with high productive capacity due to its biodiversity, the globalization discourse has replaced traditional crops with monocultures of international interest, which often do not guarantee food security in the producing areas. This expansion has deepened the historical wounds of social and economic inequality in the country's different regions. Capital accumulation benefits the elites and deprives millions of inhabitants of their fundamental rights and access to land. Consequently, the country was a breeding ground for the formation of social movements that ended up taking up arms to counter state abuse in rural areas, generating violence that also spread to urban areas and worsened around the decade the 1970s, with the entry of new actors involved in the production of illegal narcotics demanded by the global market.

In the late 1970s, Colombia faced a complicated situation due to a growing demand for food and drug traffickers' interests. These drug traffickers wanted to control the production and trafficking routes of drugs to export them to the United States and Europe. The guerrillas initially formed to protect people abandoned by the State in rural areas also became involved in the drug business due to its profitability, leading to

conflicts with the national army and nascent paramilitary groups. These paramilitary groups aimed to defend the interests of landowners and other actors seeking control of the land to expand monoculture and extensive cattle raising. With the warlike confrontation of these armed actors, the civilian population was left in the middle, causing death and widespread internal displacement, with peasants migrating to cities in search of better opportunities. There, they encountered more violence due to the urban territorial control by armed groups and the police. As Van Der Ploeg (2010) claims, historically, migration to cities has been seen as a way to find new opportunities and welfare; however, it has only led to territorial disconnections and a loss of land value as an emancipatory tool.

Eastern Antioquia: When violent displacement leads to gentrification.

In the late 1980s and early 1990s, Colombia gained widespread attention in global news headlines, embroiled in a violent conflict against drug trafficking. The national government was attempting to control the emergence of drug cartels that were flooding the markets of the global north with narcotics. The epicenter of that crude violence was Medellín, the second center urban of the country, a city bleeding to death from the terrorism of the drug cartels and the fight to dismantle them. Although by the mid-90s, the central drug cartels operating in the country were dismantled, the reconstruction of the deteriorated image of this city took several years, regaining the attention of local and international investors. Overcoming this past, it generated new dynamics in terms of quality of life and a considerable social change in the city and its surrounding areas.

This development is also complicated by the historical forced displacement and territorial struggles due to the arrival of multinationals and new actors in the local economy.

Such is the situation in eastern Antioquia, a region east of Medellín. Beginning in the 1970s, hydroelectric megaprojects were established there to deal with the energy crisis that affected the world during that decade. Productive lands were flooded, and hundreds of families whose economic livelihood was agricultural production were displaced. In addition, with the construction of the highway connecting Medellín with Bogotá, the country's capital, the region was divided, and the regional dynamics of commercialization and the inhabitants' relationship were altered (Bello, 2003). Consequently, the municipalities closest to Medellín began to be the center of modernization and industrialization projects, which demanded skilled labor that migrated from the city. This phenomenon raised the price of land and changed the economic nature of the region (UNDP & Asdi, 2010). Consequently, numerous peasants lost their lands, agricultural knowledge, cultural identity, and forms of socialization.

Fruit supply chains in Colombia: Losing food sovereignty to gain access to the global market.

Bello (2003) argues that the neoliberal model promised social well-being in developing countries but simultaneously implied the redefinition of the territories and their relations according to the production and commercialization needs that the global market demands (Bello, 2003. p. 1). By 1990, the Colombian government adopted the

dominant neoliberal discourse and promised to improve commercial relations and encourage national industry growth thanks to competition with other countries. The aim was to strengthen the financial and service sector, but such policies discouraged the country's agricultural and manufacturing industries (see Table 7). For example, corn production, which in Colombia has historically been a staple food for the population, was more than halved, going from 800,000 ha planted in 1990 to only 390,000 ha in 2021 (Fenalce, 2022). In addition, in 1990, 86 percent of the corn planted in the country was of traditional origin, while only 14 percent was proprietary. By 2021, 65 percent of the corn planted was commercialized (Agro Bayer Colombia, 2022). It is also important to highlight that the yellow variety is the most planted, mainly used for animal feed. Since domestic demand is not met, 85 percent of the shortages are imported from the United States.

Table 7. Composition of the Gross Domestic Product (GDP) of Colombia 1991 VS 2017

Composition of the Gross Domestic Product (GDP) of Colombia		
Sector	**1991**	**2017**
Agriculture, forestry, fishing, and hunting	22.3%	6.3%
Mining and quarrying	4.5%	6.1%
Manufacturing industry	21.1%	10.9%
Electricity, gas, and water	1.1%	3.3%
Construction	2.9%	7.2%
Commerce, restaurants, and hotels	11.3%	12.2%
Transport, storage, and communications	8.8%	7%
Financial sector	15%	21.2%
Community, social and personal services	13.1%	15.6%

Source: Revista Semana (2018) – Elaborated with data provided by the National Planning Department (DNP) and the National Administrative Department of Statistics (DANE)

The production of fruits has experienced a significant increase recently, mainly due to the rising global demand for fruits. According to Lasprilla (2011), this demand surge

can be attributed to changes in the world's income and population structures, as well as to the growing recognition of fruits' nutritional and functional properties. Colombia, a tropical country with diverse climates, has ideal conditions for fruit production. This has led to a rise in the area under fruit and vegetable cultivation, with an annual growth rate of 2.7 percent reported in 2018, representing an increase of 25,000 hectares from the previous year. Consequently, the country's fresh fruit exports grew from USD 455 million in 2002 to USD 1,055 million in 2018 (DNP, 2019). This upward trend has been further stimulated by the increasing external demand for fruits due to the free trade agreements signed with several countries, such as Chile (2006), Canada (2008), the United States (2006), the European Union (2012), South Korea (2016), and the Mercosur group (2017), among others.

While the growth in fruit production presents employment opportunities across Colombia, over 50 percent of the total area planted with fruit in the country is used for banana cultivation (DNP, 2019). Additionally, because of this lack of diversity, farmers need help meeting the requirements of both domestic and international markets due to the limited access to information and technology, the absence of policy support, and precarious infrastructure. (MAVDT & ASOHOFRUCOL, 2009; Rojas Cruz & Barreto Bernal, 2016; DNP, 2019). Given this, some authors and organizations, such as the FAO, promote transition programs toward agroecology. Altieri et al. (2022) claim that agroecology would be the way to implement and guide this transition from industrial agriculture, which causes high environmental degradation and depends on fertilizers, pesticides, and petroleum, to a more sustainable and diversified agriculture based on

natural biological interactions and ecological processes that emerge from complex cropping systems. (Altieri et al., 2022. p. 284). FAO (2018) summarizes the main gaps and opportunities for upscaling agroecology and proposes four levels of transition,[48] highlighting that these transitions are crucial to enhance collaboration with partners and institutions at country and regional levels.

The iPES Food report of 2018 also outlines several crucial strategies for driving the transition towards agroecology across different case studies worldwide. These include establishing community-led governance structures and economic systems, which involve relocalizing food systems, providing services to rural populations, and reinvesting profits into the community. The report also identifies the importance of developing hybrid roles for critical actors such as farmer/peasant organizations and cooperatives and forging new alliances across disconnected domains. The report emphasizes the importance of involving local communities in designing these transitions, avoiding imposition by outsiders, and discouraging focus on export-oriented value chains. However, the report does not explicitly address the issue of new products quickly co-opted by the industrial model due to their high demand in the global market, leading to their loss from small-scale local models.

[48] The four transition levels towards agroecology are: Increasing the efficiency of practices and resources and substituting external inputs, transforming agricultural production systems to be more resilient and sustainable, strengthening markets that support agroecology, and building an enabling environment for more sustainable food systems. https://www.fao.org/3/i9007en/i9007en.pdf

When novelty attracts the attention of the global market

Worldwide, certain crops have gained recognition for their adaptability and health benefits, with some remaining local while others enter the global market. An example of such a crop is Elderberry (*Sambucus canadensis*), a perennial shrub that mainly grows wild in agroforestry systems in the American Midwest without the need for pesticides. Studies have shown that Elderberry has potential for production under agroecological models, with small-scale farmers seeing good returns due to the fruit's high prices in local markets. However, the market for Elderberry faces some limitations such as limited domestic supply, few regionally adapted varieties suitable for commercial production, and high labor costs. Despite the lack of mechanical harvesting equipment, it is viewed as an advantage under agroecological principles. (Cernusca et al., 2012; Cernusca & Gold, 2015). Similarly, there is the camu-camu (*Myrciaria dubia*), a fruit native to the Peruvian Amazon. Blare and Donovan (2018) found that although smallholders had improved their income, the fruit's potential impact was minimal due to gaps in services and inputs, limited coordination among farmers and chain actors, and a risky business environment due to high price fluctuations. They recommended greater attention to building stronger public-private collaboration to expand and diversify markets, strengthen institutions, and grow local markets for high-value products.

In Brazil, Acai (*Euterpe oleracea*) is a black berry collected by natives of riverbanks in the Amazon rainforest, and it has been an essential part of the region's food security and culture. The pulp is extracted from the fruit through procedures that require low

technology, making it easily incorporated into ice creams, yogurt, wine, and liquors (Trevisan et al., 2015). This versatility has meant that local value chains have been integrated with global demand, and they are currently exporting the product. Although viewed as unsophisticated and simple, locals have always demonstrated a capacity to adapt their plant management techniques in ways that harmonize with their environment. However, Pegler (2015, p. 929) warns that "although household income benefits can be significant, gains may be threatened by monoculture trends and local power structures." The same threat caused Quinoa, a crop with high nutritional qualities and historically one of the main foods of Andean cultures in South America, to be converted into a monoculture across several countries.

In Colombia, quinoa was abundant in the past but was almost abandoned, and only produced by small local communities in the Colombian savannahs (Montoya Restrepo, et al., 2005). Since the 2000s, exports of quinoa have increased due to attention the grain has gained in the global north, and it is produced today under industrialized models. Finally, the Goldenberry (*Physalis peruviana*), traditionally harvested as a wild fruit in Andean areas of Colombia, has become one of the country's main export products after the adoption of various FTAs with the United States, Europe, and Asia. Despite the lack of seeds that can meet standard demands of the international market such as color, size, and absence of pests and diseases, the Colombian government enacted policies to industrialize its production (Orjuela-Castro et al., 2008). As a result, industrialized value chains were developed around the Goldenberry, improving sanitary control and domesticating species. However, by 2020, this fruit was industrially

produced on 1,713 hectares with a high dependence on fertilizers and herbicides, and it is rarely harvested in the wild (Ojeda-Correa et al., 2021).

Andean blueberry in Eastern Antioquia: Possibilities from agroecological approaches

Vaccinium species, including cranberry, blueberry, bilberry, and huckleberry, are essential to the world economy and recognized by consumers for their taste and health benefits. The Andean blueberry (*Vaccinium meridionale* Swartz) is a species endemic to tropical areas, growing spontaneously in the Andean areas of Colombia, Ecuador, Peru, and Venezuela. In Colombia, it is known as “Agraz” or “Mortiño” and is mainly collected by small farmers for whom it is a productive alternative rather than a primary source of livelihood (Castrillón et al., 2008). The plant has two production peaks per year, and producers depend on intermediaries who sell it in marketplaces close to the collection site, affecting the product's price stability. Although the Andean blueberry is a fruit with significant comparative advantages and nutritional and functional properties, there is a lack of a constant supply of the product and a structured supply chain in Colombia, limiting the fair and opportune marketing to meet domestic demand and subsequently reach international markets (Smith-Torres et al., 2009).

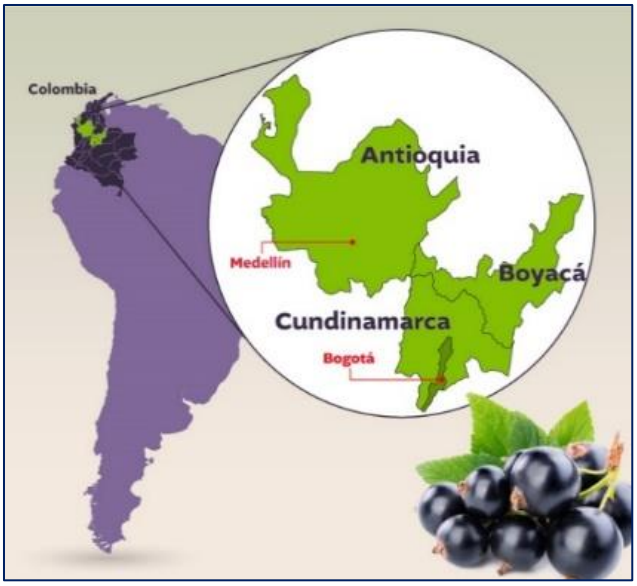

Figure 12. Main producing areas of Andean blueberry in Colombia

Despite the limitations, various authors agree that the Andean blueberry has enormous potential to be exported to large markets such as the United States, which authorized the importation of Andean blueberry from Colombia in 2006. The fruit has excellent adaptability and resistance to pests, making it an organic crop that does not require pesticides (Ligarreto, 2009). It has also been found to contain nutritional compounds and certain antioxidants of importance for human health, making it a promising crop for the Colombian economy. Researchers have evaluated the capacity of fruit extracts and black tea prepared with Andean blueberry leaves for scavenging free radicals and the cytotoxic and antiproliferative effects in colon cancer cell lines (Maldonado-Celis et al., 2014; Zapata Vahos et al., 2015). Other uses have been proposed in the chemical industry, such as natural pigment in the dye industry (Diaz-Uribe et al., 2019). Despite the promising potential of the Andean blueberry, the absence of a reliable and organized supply chain in Colombia continues to be a

considerable obstacle. Moreover, if the fruit were assimilated into the agroindustry, it would rely on agrochemicals and genetic modifications. Consequently, it would no longer adhere to the current small-scale family farming model in which it is grown.

Methods

This qualitative case study explores the intersection between power relations and social capital in an agroecological network in Eastern Antioquia, Colombia, historically impacted by violence and mistrust. The study takes a place-based approach and analyzes how the vertical social capital of the region affects power relations among actors within these networks and institutions. It focuses on the case of the Andean blueberry supply chain, which is gaining popularity but is currently proposed to be produced under industrialized models for export. I used the following methods to collect and analyze the data. These include a systematic mapping of the documentation regarding food and fruit supply chains, and Andean blueberry in Colombia to identify the main obstacles and opportunities for developing alternative supply chains, given the legal framework and the research agenda in Colombia. The study recognizes the legal framework shaping power relations among institutions and smallholders. It examines how effective governance and strategic business alliances can be established to develop alternative supply chains adjusted to their needs and possibilities. (Stevenson & Pirog, 2008).

Data Collection

Systematic mapping: Food Supply Chains and Andean Blueberry

Petersen, Vakkalanka, & Kuzniarz (2015) suggest that systematic mapping provides an overview of critical topics, researchers, journals, or institutions related to a research area. Therefore, I systematically mapped publications on Andean blueberry in Colombia that have been published in indexed journals by Colombian researchers to obtain a record of publications that offer a general view of trends and research gaps. I used the search system proposed by Romero-Lankao et al. (2012) and Rodriguez-Alcalá et al. (2019) to access the databases provided by Google Scholar, the National University of Colombia, and the University of Missouri library databases, managed by the EBSCO system. These databases offer a broader search due to their interdisciplinary coverage. I combined various search terms without restricting the range of publication dates, including "Andean blueberry" AND "Colombia", "Vaccinium meridionale Swartz" AND "Colombia", and their common Spanish names "agraz" and "mortiño". After eliminating irrelevant and repeated entries, I obtained a final number of 78 articles from 600 documents.

I conducted the same process to identify the main critical points reported by the literature regarding food supply chains in Colombia. I chose specific databases, including Google Scholar, SciELO, DOAJ, ProQuest, and EBSCO, accessed through the National University of Colombia and the University of Missouri System. I combined multiple search terms in English and Spanish, including "Cadena productiva(s)" AND "Colombia",

"Food supply" AND "Colombia", and "Supply chain(s)" AND "Colombia". I included quantitative, qualitative, literature reviews, and mixed-methods studies without restricting the range of publication dates. After refining the studies by eliminating irrelevant and duplicate entries and including only Colombian cases related to food supply chains, I obtained 32 studies to analyze. From each study, I identified the type of supply chain studied, the area within the country where the study was conducted or if it was conducted nationally, the most important findings, and the conclusions. Both mappings were initially conducted in 2021 and updated by January 2023.

Interviews

I conducted 22 in-depth, semi-structured interviews with various stakeholders involved in producing, commercializing, consuming, and researching Andean blueberries in rural Eastern Antioquia, Colombia. Also, I considered actors involved in alternative food supply chains or agroecological networks. These stakeholders included local communities, producers, marketers, consumers, policymakers, and academics. I initially interviewed academics or researchers in scientific projects on Andean blueberries and/or agroecological networks in Eastern Antioquia.[49] The remaining participants were recruited using snowball sampling (see Table 8). The interviews were conducted in Spanish between October 2021 and March 2022, lasted about an hour, and were

[49] Two of the interviewed researchers were identified through a systematic mapping of the literature, which involved identifying individuals with the most publications on Andean blueberry and alternative or agroecological food chains. Another two researchers were contacted after attending an agricultural congress in Medellín in November 2022, where they participated in plenary sessions led by academics and researchers specializing in short distribution circuits. The last academic was referred to by three of the four previously interviewed academics and is currently one of the most prolific Latin American academics worldwide in agroecology.

digitally recorded with permission. Most interviews were conducted in person, while five were held virtually due to concerns related to the COVID-19 pandemic.

Table 8. Interviewees profile and snowballing process

Researchers / Academics (5)	After conducting the literature review and the mapping, I identified the main researchers and academics related to alternative or agroecological networks and Andean blueberry in Eastern Antioquia. During the interview, I inquired about their insights and experiences researching alternative networks and/or Andean blueberry. Those researchers whose academic work was not related to Medellín, or the Department of Antioquia were not considered. At the end of each interview, I asked them to refer to producers or marketers they know.
Policymakers (5)	As I proceeded with the academics, after conducting the mapping and the literature review, I identified the main institutions, programs, and policies that promote the strengthening of alternative supply chains and networks in the area. Then, I contacted policymakers and people in charge of those policies and programs.
Producers (5)	I interviewed five Andean blueberry producers who live in the region or own land where the fruit grows, and they market it. Therefore, it was not necessary that their livelihood activities were exclusively related to Andean blueberry production. However, they must collect the fruit to trade it, whether they sell it directly to consumers around or the city of Medellín. Also, they could process it to sell it, or sell it to a marketer / middleman or cooperative. Therefore, I did not consider people who only harvest this fruit for family consumption. Regarding the demographics, there is no age limit or gender discrimination. If they sell the fruit to intermediaries or directly to consumers, I asked to refer them.
Marketers / Intermediaries (3)	They must sell fruits and other goods in the region or own some land where the Andean blueberry is produced and sold. Their livelihood activities did not need to be exclusively related to fruit / Andean blueberry trading. However, it was necessary that they sell the fruit directly to a consumer or consumers in the area or the city of Medellín, process it to sell it, or sell it to another marketer, business, or cooperative. The final customer does not have to be located in the area or the city of Medellin. However, if the marketer buys fruits and goods in another region and sells them in Medellin or the area, he /she did not classify for this study. There was no age limit or gender discrimination. If they sold the fruit to other intermediaries or directly to consumers, they were asked to refer them in order to contact them.
Consumers (4)	They must live in Eastern Antioquia or Medellin. They must buy the fruit or any by-product directly from some producer(s) or from some marketer who trades fruit from the area. Therefore, people who harvest the fruit for family consumption did not classify. There was no age limit or gender discrimination. They were asked to refer suppliers and other people who also buy the fruit for consumption.
Total interviews	**22 participants**

The study area covered the mountainous and altiplano zone of Eastern Antioquia, where Andean blueberries grow wild at altitudes ranging from 1900 to 2600 meters above sea level and temperatures between 9 and 24°C (48.2°F - 75.2°F). The area covers

about 1,900 km² (469,500 acres), representing 3% of the Antioquia department and 0.13% of the country. The region's main economic activities include floriculture, dairy, and fruits and vegetables, providing 90% of these products for consumption in Medellín, Colombia's second largest urban center. The interviews were conducted in specific municipalities, including Rionegro, Marinilla, Guarne, La Ceja, El Retiro, El Carmen de Viboral, La Unión, San Vicente, Granada, El Santuario, and Santa Elena, with Santa Elena being a rural district of Medellín where Andean blueberries are also harvested (see Figure 13).

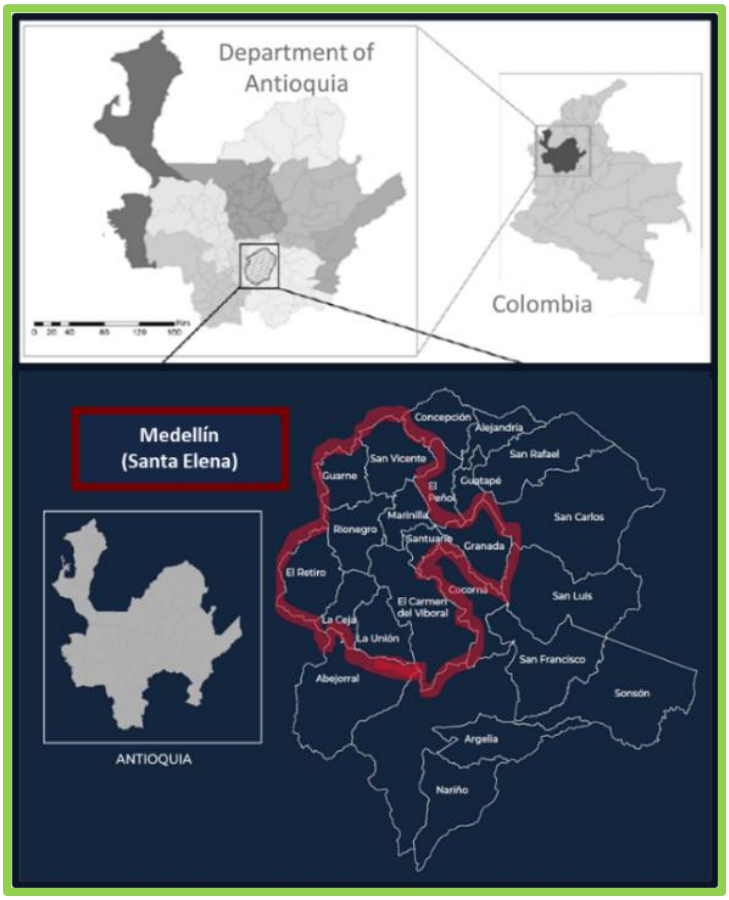

Figure 13. Area of study (Source: Rendon-Rivera et al., 2011; Cámara de Comercio de Medellín, 2021)

Data analysis

Mapping

The systematic search for Andean blueberry mapping resulted in 78 documents categorized by year of publication, field of study, primary findings, and authors. The articles were initially grouped into 13 topics based on the title, abstract, and keywords, and then consolidated into five fields of study. These fields were physicochemical, functional, and biomedical characterization of the fruit and its extracts; processing, conservation, and industrial uses; botanical and agronomic characterization of the Andean blueberry crop; conservation and environmental studies; and supply chain and marketing. Regarding the food supply chain mapping in Colombia, I analyzed the information considering the different stages of the Andean blueberry supply chain. While some studies segmented some agro-industrial supply chains into six general stages (Flores Martínez & Ward Argota, 2013; Simanca, Montoya & Bernal, 2016), Olivares-Tenorio et al. (2016) segmented the Cape gooseberry (*Physalis peruviana* L.) supply chain into four stages: production, processing, distribution-marketing, and consumption. As the Andean blueberry and Cape gooseberry share morphological and logistic similarities, I adopted this supply chain approach proposed by Olivares-Tenorio et al. (2016).

Analytical Framework

I developed an analytical framework to examine the intersection between power relations and social capital by identifying elements of social capital, such as trust, social networks, norms, and integration (Ostrom & Ahn, 2003), in Eastern Antioquia, an area

that has been historically impacted by violence and territorial control in Colombia. The elements of social capital that I considered for this study are:

- Trust refers to the belief or confidence individuals have in the reliability, honesty, and cooperative behavior of others. Trust helps foster cooperation and coordination among individuals within a group or community.
- Norms are shared expectations, rules, or guidelines that govern the behavior and interactions of individuals within a particular social group or community. Norms can be formal or informal and are often based on social and cultural values. Ostrom (1990) emphasized the importance of developing and enforcing norms that promote cooperation, fairness, and sustainable resource use in the context of common pool resource management.
- Social networks refer to the web of social relationships, connections, and interactions between individuals or groups. Social networks play a significant role in facilitating communication, information sharing, and cooperation among individuals involved in collective action or resource management. Strong social networks can enhance trust, facilitate the spread of norms, and enable effective collaboration.
- Integration refers to the coordination and cooperation among different individuals, groups, or institutions involved in managing common resources or engaging in collective action. It involves finding ways to bring together diverse perspectives, interests, and knowledge to collectively address problems and make decisions (Ostrom & Ahn, 2003)

In Table 9, it can be observed how, in a qualitative manner, the framework that I developed identifies the elements of social capital mentioned within each dimension of agroecology. To achieve this, a series of questions are proposed related to the actors' perceptions regarding the reliability, honesty, and cooperative behavior of others. For instance, in the case of the first agroecological dimension, which corresponds to the implementation of productive practices, the type of questions to be asked are oriented towards understanding whether farmers optimize resources, replace chemicals and

industrialized practices influenced by the advice and influence of governmental institutions, academics, and/or NGOs. It would indicate a hierarchical power, which is vertical, that these institutions hold over the farmers' decisions. Similarly, by inquiring about the shared expectations, rules, and guidelines that govern the behavior and interactions of these individuals with others and institutions, as well as the type of networks and connections they establish other actors outside their close networks, one could obtain an understanding of these dynamics of linking social capital and vertical power.

Table 9. Framework to analyze power relations within agroecological networks through indicators of social capital.

		Types of social capital	
Agroecological Dimensions	**Scope of each dimension (IPES-Food, 2018)**	**Linking**: Institutions and authorities	**Factors to find**
		Vertical Power	
I. Production Practices	Optimizing resources, replacing chemicals and industrialized practices. Favor diversity and interactions between different species.	How do the existing relations among the immediate network, other social groups, institutions and/or authorities influence on optimizing resources and farm practices? How will those relations boost changes in production practices? Do they trust those networks and institutions to change their production practices?	Trust, Social Networks, Integration, Norms
II. Knowledge Generation and Dissemination	Shifts in how knowledge is generated and disseminated. Local culture and traditional knowledge are highly valued; alternative ways of communicating as farmer to farmer, farmer field schools, and farmer-led participatory research projects are promoted.	How is knowledge generated and disseminated among actors? How is the flow of information among them? What are the sources of information regarding agroecology and political organization? Do they trust them? Do they know about other networks and their norms?	
III. Social and Economic Relations	The strength of social ties and organizational capacity within farming/rural communities. Collective action is considered a core driver of change. Farmers need to have a high degree of social capital to work cooperatively in regional and landscape-level initiatives.	Do they have any form of organization? What norms do those organizations have? Is it easy or not to join those organizations? Do they feel free to participate and make decisions? How are prices regulated? Do they trust the other participants? Are consumers integrated to these networks?	
IV. Institutional Framework	The development of alternative governance structures as critical factors in shaping and accelerating transition processes. A wide range of public policies is necessary to set the underlying conditions and economic incentives for sustainable food systems to emerge.	Do they scale up their need to the institutional level? Do they have agency to mobilize external resources toward the networks? Do they trust institutions? Do they make alliances and participate in political decisions over their territories?	

Interviews

I followed the method recommended by Hall et al. (2012) and Morse (2015) to analyze the data I collected. Firstly, I extracted meaningful quotes, words, and phrases from the transcripts of the interviews and my notes on the field. After that, I created a list of initial codes based on my interactions with the participants, their understanding of alternative networks in the region, their knowledge of agroecology, their experiences with Andean blueberries, and institutional support. I grouped these codes into categories related to social capital, mainly linking social capital and power dynamics. To validate the approach and the themes that emerged from the interviews, I asked the participants to reflect on and share the most important topics discussed. Lastly, I identified elements of social capital, such as trust, social networks, norms, and integration, to determine the types of social capital involved in the case of Andean blueberries, assuming that social capital is essential to agroecology by enhancing fair relationships between stakeholders (IPES-Food, 2018; Cadavid et al., 2019). I translated from Spanish to English the quotes used for the discussion and analysis of data of this study.

Results and discussion

Legal framework for food supply chains in Colombia: Favoring the industrial agriculture.

According to De Schutter (2017), trade policies, agricultural subsidies, market structures, prices, research, and educational priorities have developed and strengthened over time to shape current food systems. This has resulted in powerful

interest groups evolving alongside other developments in the food system. In the Colombian case, the legal framework regarding fruit supply chains comprises various laws, regulations, and policies that regulate the production, transportation, and marketing of fruits. Table 10 lists the most relevant legal provisions in Colombia and their scopes. However, while the Colombian legal framework regarding fruit supply chains does not explicitly mention alternative networks or agroecology, some policies could indirectly support these practices. For example, Resolution 119 of 2021, which establishes good agricultural practices for producing fresh fruits, encourages adopting sustainable and environmentally friendly practices. These practices may include agroecological approaches such as the use of organic fertilizers, the management of soil fertility, and the promotion of biodiversity. Similarly, Decree 1500 of 2007, which regulates the agricultural supply chain, encourages the development of direct relationships between producers and consumers, which can facilitate the creation of alternative networks. The decree also promotes transparency and fairness in the relationships between producers and intermediaries, benefiting small-scale producers who may be marginalized in conventional supply chains.

Table 10. Main regulations in Colombia regarding fruit supply chains

Number / ID	Name	Scope
Law 09 of 1979	Sanitary Code of Livestock, Fisheries, and Agricultural Products	This law establishes the requirements and standards for the production, processing, and commercialization of fruits, including the use of pesticides, fertilizers, and other chemicals. It also regulates the inspection and certification of fruits for export and import.
Decree 1500 of 2007	Regulation of the Agricultural Supply Chain	This decree establishes the obligations and responsibilities of each actor in the agricultural supply chain, including producers, intermediaries, and buyers. It also regulates the use of contracts and agreements between these actors.
Resolution 140 of 2017	Phytosanitary Requirements for the Import and Export of Fresh Fruits	This resolution establishes the phytosanitary requirements for the import and export of fresh fruits, including the procedures for inspection and certification of products.
Resolution 207 of 2018	Regulation of the National Registry of Agricultural Producers	This resolution establishes the procedures for the registration of agricultural producers, including fruit producers, in a national registry. It also establishes the obligations and benefits of registration.
Resolution 119 of 2021	Establishment of Good Agricultural Practices for the Production of Fresh Fruits	This resolution establishes the guidelines and standards for the implementation of good agricultural practices in the production of fresh fruits, including the use of pesticides and fertilizers, the management of water resources, and the handling of waste.

Colombia undergoes a change in government every four years, resulting in a new set of ministers and a new government plan. The most recent change in government, in August 2022, marked the first time in the country's history that a left-leaning government was elected by popular vote. This change in government has shifted the national development plan's focus from export-oriented supply chains and industrial agriculture to strengthening access to food through efficient production and marketing circuits that recognize local diets and gastronomy. This change emphasizes the fundamental role of peasants, family, and community agriculture in progressively

achieving food sovereignty (DNP, 2023). One of the new government's key proposals is to promote local governance and territorial participation in adopting good agricultural practices, food safety, and quality food standards. Historically, centralized institutions have been responsible for imparting these guidelines to the territories. To achieve this goal, a National Plan for Comprehensive, Technical, and Technological Assistance and the Promotion of Research is proposed. This plan aims to facilitate an intercultural dialogue between ancestral knowledge and scientific knowledge to strengthen territorial innovation systems in matters of agroecology, native seeds, water management, and agricultural logistics (DNP, 2023. p.133).

Nevertheless, this change in the legal framework and the structural focus of supply chains is a process that has just begun, and it is still necessary to have the endorsement of the Congress of the Republic for the implementation of these mechanisms. Thus, the current legal provisions in agricultural matters are still linked to laws that have stayed the same for several decades. For example, the Law 811 of 2003, the General Law of Agriculture in Colombia, has established for 20 years the general principles and norms that regulate agricultural activities in the country. It covers various aspects of agricultural production, including land use, rural development, environmental protection, and agricultural financing. Therefore, this law establishes the legal framework for the functioning of supply chains in the Colombian territory, comprising all the agents participating in an agricultural product's production, transformation, commercialization, and distribution. For that, chain organizations must establish minimum agreements among the members to be recognized by the Colombian Ministry

of Agriculture and Rural Development (see Table 11). These provisions are enforced by various centralized government agencies, including the Ministry of Agriculture and Rural Development, the National Agricultural Institute (ICA), and the Colombian Agricultural Institute (CORPOICA).

Table 11. Minimum agreements among members of supply chains in Colombia to be recognized as chain organizations by the National Ministry of Agriculture and Rural Development (Law 811 of 2003)

Minimum agreements among members of supply chains in Colombia to be recognized as chain organizations by the National Ministry of Agriculture and Rural Development (Law 811 of 2003)
Improving productivity and competitiveness.
Developing the market of goods and factors of the chain.
Decreasing transaction costs between the different agents in the chain.
Developing strategic alliances of different types.
Improving the information flow between the agents of the chain.
Linking small producers and businessmen to the chain.
Managing natural resources and the environment.
Training human resources.
Research and technological development.

Actions to improve supply chains in Colombia: A centralized legal framework that does not consider productive alternatives.

The National Planning Department (2019) reported that only eight of the 30 registered chains in Colombia are related to food supply chains. While some supply chains like banana and coffee have made progress in characterizing their production process and establishing value chains, allowing companies to gain comparative advantages, only one registered chain provides guidelines for producing the country's diverse range of fruits and vegetables. This is because no organized supply chains facilitate the production process, resulting in alternative supply chains and indigenous products being overlooked. Figure 14 shows the number of studies addressing specific

topics or critical points in food supply chains in the country. The authors suggest that the country needs to improve supply characterization and delimited stages, market development, incentivize local production, and provide more institutional support to guarantee better access to information and technology to promote the development of food supply chains (see Figure 14). Also, in some of the studies, it is found that food supply chains in the country still need to meet the food safety requirements demanded by national regulations and export requirements.

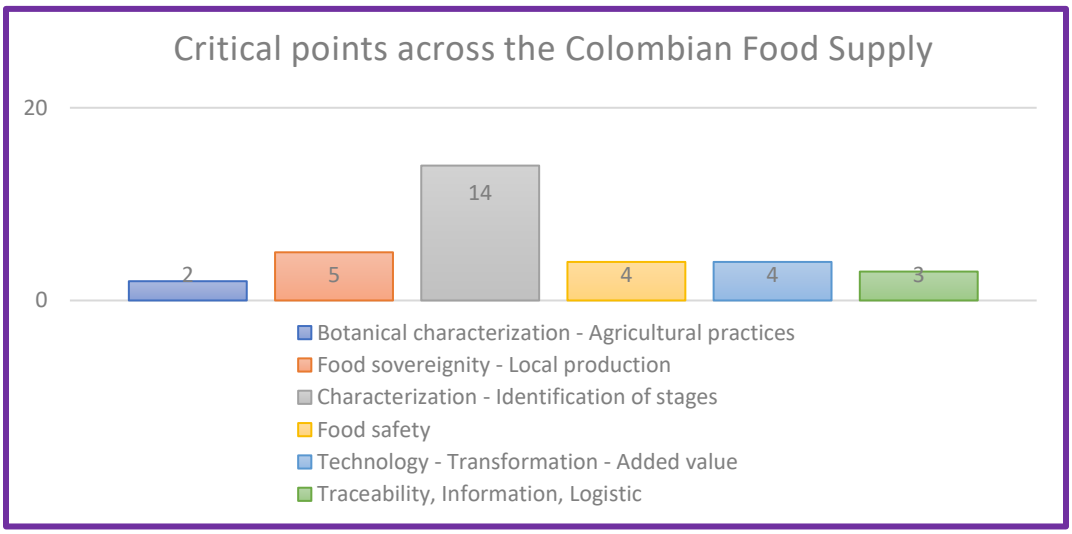

Figure 14. Fruit supply systematic mapping: Number of studies addressing specific topics or critical points in food supply chains in Colombia.

Based on the results obtained from contrasting the nine actions suggested by Act 811 of 2003 in Colombia with the findings and recommendations in the 32 articles included in the food supply chain mapping, it is clear that the research is primarily focused on meeting productivity standards, phytosanitary standards, and aesthetic standards to increase productivity and meet market demands (Lasprilla, 2011). As a result, it is recommended that farmers have better access to seeds with standard genetic composition and agrochemicals to increase their productivity. However, this

productivity-oriented approach ignores the characteristics of the territories, native seeds, and the knowledge of local communities. In a study conducted on the Andean blackberry (*Rubus glaucus* Benth), González-Castro et al. (2019) concluded that there is a need for genetic improvement of crops and standardization of practices in the technical management of this blackberry in Antioquia. However, Lefevre et al. (2020) argue that quality standards should not be extrapolated from long value chains to alternative food networks, given that the former are centralized by purchasing agencies that regulate not only phytosanitary quality but also cosmetic characteristics such as color and shape.

Market demands hinder producers' participation and active involvement in decision-making and pricing, invalidating the power of biodiversity and ancestral knowledge and practices. Therefore, actors in agroecological and alternative chains must overcome the challenge of using agroecological approaches to their agricultural practices while meeting the specifications of food value chains. Calle-Colado (2015) suggests that political, social, economic, and environmental circuits must be strengthened so that farmers and small producers have productive criteria and can assert their knowledge. Otherwise, agribusiness and its standards will continue to endure. By only deciding the type of seeds or breeds they use in their farms, farmers are gaining agency and linking the political agenda of food sovereignty to their production practices. As a result, food sovereignty becomes a reference that allows smallholders to empower themselves by making decisions and challenging exclusionary policies and dominant processes. This

means that more resilient food systems favoring ancestral and dispersed knowledge and practices over centralized ones will be created (De Schutter et al., 2012).

One of the interviewed academics,[50] "Academic 2", is affiliated with a university in Medellin and has worked on several projects to promote collective action and support agroecological initiatives in communities affected by the war in Antioquia. For him, to understand the political guidelines of food chains in the country, one only needs to go to an agricultural supplies store in any town: "*The inputs, seeds, or breeds of chicks are those demanded by the market. You cannot find anything else; they do not reach the towns*."[51] Thus, farmers have no production options, even those who venture into agroecology. For this academic, the power of agribusiness is defined according to market guidelines, in which, according to him, consumers play a vital role: "*It is the complacency and dictatorship of the consumer, and then agroecological producers begin to have standards that do not correspond to agroecology, but rather to conventional agriculture, sizes, presentations, colors*."[52] Moreover, he considers the role of institutions crucial in educating consumers and empowering producers through agroecological assistance programs that consider ancestral knowledge and thus avoid falling into the traps of standardization and market demands. However, he also warns that institutions must be more connected to the reality of communities:

[50] Academic 2, Medellin.

[51] Original quote in Spanish: *"Los insumos, las semillas, las razas de los pollos son los que el mercado exige. Uno no puede encontrar nada más, eso no llega a los pueblos."*

[52] Original quote in Spanish: *"..es la complacencia y la dictadura del consumidor, y entonces los productores agroecológicos empiezan a tener unos estándares que no corresponden a la agroecología, sino que corresponden a la agricultura convencional, tamaños, presentaciones, colores."*

"*Institutions should seek more dynamic and flexible ways of doing things because community reality is moving at a speed that academia is slower than, and local governments, multilateral organizations, etc., are even slower than academia. So, when those institutions go to address that reality, that reality no longer exists because the problem is already different*."[53]

Regarding this, other participants also claim a need for coordination between institutions and the dynamics of markets and the realities of farmers. For "Marketer 1,"[54] government welfare programs deliver inputs, livestock, and seeds on the same day. This saturates the market when the products are ready for sale, and therefore, the farmer must sell at low prices. Likewise, one of the interviewed policymakers[55] mentions that agricultural governmental projects are welfare-oriented, do not empower, and need more continuity. According to her, it takes up to twelve months for an institutional program to start operating due to the contracting process. After two years, there is a change in government, and these programs often discontinued. She mentions that "*agroecology must be a way of life, not a response to the crisis*,"[56] where processes remain in the community and come out of it, not vice versa from institutions.

[53] Original quote in Spanish: *" creo que las institucionalidades deberían buscar formas más dinámicas y más flexibles de hacer las cosas porque yo siento que toda la institucionalidad, es decir, la realidad comunitaria va a una velocidad, la realidad académica vas más despacio que esa realidad comunitaria, y la institucionalidad me refiero alcaldías, Gobernaciones, órganos multilaterales, etc. van más lento que la academia, lo que tiene que entender son esos órganos, entonces cuando van esa institucionalidad a atender esa realidad, esa realidad ya no existe porque ya el problema es otro"*

[54] Marketer 1 owns a small business that connects organic and agroecological producers with consumers in Medellin. He also provides mentorship and training in organic certifications.

[55] Policymaker 4 is a social leader in the municipality of Guarne who promotes the association of smallholders to apply for funding and to participate in policymaking.

[56] Original quote in Spanish: *"La agroecología debe ser una forma de vida, no una respuesta a la crisis."*

An academic[57] affiliated with the University of Antioquia expressed her views on the role of the academy as an institution. According to this scholar, technicians and extension programs should not replace the community when intervening in territories. Instead, academics and practitioners should act as facilitators and identify the community's strengths, empowering them to control their development. This scholar believes that the academy should recognize that it does not possess absolute knowledge but rather one of many types of knowledge. This understanding is necessary for the academy to establish productive dialogues with communities, avoiding any sense of superiority.[58] Furthermore, the scholar suggests that universities must balance power relations by identifying and empowering local community strengths. This approach avoids the transfer of knowledge in a vertical manner and the imposition of technological packages that do not align with local needs. According to Robbins (2020), implementing new technological approaches in agriculture requires transforming existing institutions. In addition, associativity is needed to guarantee that it reaches all the actors, especially the small ones.

Some of the studies included in the supply chain mapping highlight the importance of associativity for receiving external aid programs (Florez et al., 2012; Robayo & Pachón, 2013). However, few studies mention the importance of associativity of small producers to scale up local needs. Additionally, Gil (2017) notes that the lack of technological adaptations to local needs can lead to low productivity and poor product

[57] Academic 3 is affiliated with the University of Antioquia at Eastern Antioquia and has researched on food sovereignty and alternative networks in this region.
[58] This idea is also explicitly expressed by Academic 2.

quality. To address this issue, technological adaptations should be utilized to generate greater added value and improve productivity. Rojas Cruz & Barreto Bernal (2016) emphasize the significance of associativity in achieving sustainable rural innovation processes and strengthening the competitiveness of the sector. This involves improving productivity through effective use of information technologies, improving associativity and added value, and involving consumers in the final stage of supply chains. Some studies recommend that small farmers should associate in gathering centers to access storage and refrigeration facilities that allow the conservation of their fresh products. However, these processes are often standardized and geared towards competitiveness, rather than community needs, as agroecology intends. Table 12 provides an overview of the main findings and recommendations from the studies collected for the food supply mapping, grouped by stages among supply chains.

Table 12. Main findings and recommendations of the studies collected for the food supply mapping, grouped by stages.

Stages	Main findings and recommendations	Most relevant articles
Production	External and centralized institutions provide quality guidelines, but smallholders still need to meet them. Improve genetic standardization, agricultural practices, and access to inputs.	González-Castro, et al. (2019); Gil (2017)
Processing	Access to technology is critical to extending shelf life. To improve food safety procedures, more training and equipment are still necessary. The primary preservation method is freezing, and smallholders are not trained to add value to fresh products.	Urbano-Cáceres, et al. (2018); Robayo & Pachón (2013)
Distribution-marketing	Intermediaries control markets. Better prices must be guaranteed to producers.	Vélez-Guzmán, et al. (2018), Rincon, et al. (2017)
Consumption	Prices are crucial for consumers, and they demand constant access and aesthetic parameters. The health benefits of food are relevant nowadays for consumers. Consumers gain power but they are not educated to avoid the demand of food standards.	Aranguren, et al. (2014)

Thinking vertically: The importance of institutions to strengthen agroecology.

According to Robbins (2012) and Chandra et al. (2017), agroecology must adopt a place-based approach to be emancipatory, rather than replicating the world scale productive model. To achieve this, agroecology should adopt the food sovereignty discourse to strengthen the claims of peasants and other smallholders around the formation of associations and networks. However, other authors, such as Wittman et al. (2010), warn about the risk of encoding food sovereignty movements and agroecological networks into law or legal structures, which may hinder their capacity for mobilizing and transforming institutions, states, and movements themselves. Additionally, Restrepo and Rozo (2017) argue that agroecological networks founded on food sovereignty principles may perpetuate established power structures and create barriers for some groups to access opportunities. They suggest that too much social capital can lead to resistance to change and insularity, which can hinder progress and innovation (Svendsen and Svendsen, 2004).

This issue is particularly relevant in the context of violence and displacement in Eastern Antioquia, where excessive bonding social capital among some actors and general mistrust between producers and intermediaries have hindered the associativity and capacity for forming agroecological networks, as found in the author's previous paper. I found that the lack of some elements of social capital such as trust, norms, social networks, and integration hinder the associativity of those actors, and can also lead to a lack of access to institutional support and visibility of the agroecological movement. Trauger et al. (2017) claim that institutions are central to the exercise of

power because they normalize and codify the social relationships between social agents and the state. Institutions can use their power to weaken alternative networks and movements by shaping individual action according to their convenience. For this reason, local communities must be aware of the institutional framework and take advantage of these power structures by strengthening their linking social capital.

Chazdon et al. (2013) and Huxham and Vangen (2015) describe linking networks as characterized by a power hierarchy where one group has more control and resources than the other. Onyx et al. (2007) note that linking networks usually entail vertical connections to sources of money and power outside the group, such as those entailed in connections to government funding sources. However, these links may entail relations of unequal power, configuring a vertical dimension of power and resource access and hierarchy. Consequently, communities seeking to connect with external institutions are often seen as being in an inferior position. By strengthening social networks within the community, external institutions can better engage with and support local producers, leading to improved economic and social empowerment. However, the traditional view of linking social capital has focused on external linkages and overlooked the diversity of social relations and power dynamics within communities, which may not recognize the importance of strong internal networks of social capital for effective decision-making and community mobilization.

In the first part of this study, it was found that in the Eastern Antioquia region, the history of violence and displacement emphasizes the need to address the loss of social capital and promote trust and cooperation among community members. This could

involve efforts to restore social networks and community ties, as well as address the underlying economic and political factors that have contributed to the region's instability. Therefore, the development of agroecological value chains for a novel fruit, as the Andean blueberry, faces several challenges related to market access, technical assistance, social organization, and the regeneration of the social fabric and trust after the damage caused by violence and displacement. In this context, analyzing the social capital of a network or association can offer insights into promoting collective action among small-scale farmers, gaining power, and improving their access to resources and markets. However, it is also crucial to explore how the linking social capital of Eastern Antioquia can contribute to the development of agroecological value chains for the Andean blueberry by facilitating access to markets, technical knowledge, and financial resources, as well as influence policies that support sustainable agriculture (Grootaert & Narayan, 2004).

Andean blueberry supply in Eastern Antioquia and the risk of co-optation by the industrial agricultural model.

Through systematic mapping of the Andean blueberry, it was found that academic analysis on this fruit has mainly focused on the characterization of its nutrients and beneficial components for health promotion (Maldonado-Celis et al., 2017). This promotes the expansion of supply to encourage consumption and encourages the creation of value chains through transformation and industrial use of the fruit, with an emphasis on exportation (Ligarreto, 2009; Rincón Soledad et al., 2012; Hernández et al., 2012; Zapata et al., 2015; Ruiz, 2011; Corantioquia, 2009). Figure 15 shows the research

trends promoted in the country, which are aligned with the critical points found in the country's supply chains, seeking to meet the minimum legal requirements necessary for exportation. However, this approach does not consider the specific characteristics of this crop, as its production only has two peaks per year, and there is still insufficient information on agricultural practices, and morphological characterization of its seeds is still being studied. Given its small-scale production, it still faces many risks in the context of institutional support.

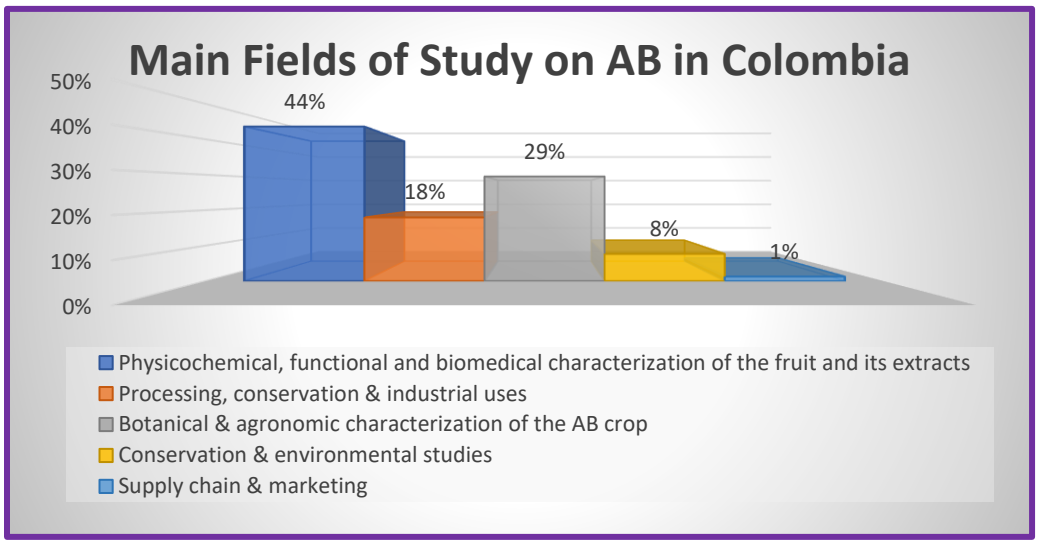

Figure 15. Main fields of study on Andean blueberry in Colombia

For one of the academics[59] interviewed, who has led the national physicochemical characterization of this fruit, "*the supply chain of Andean blueberry as such does not exist; that is something that has been put together over time*."[60] For her, one of the significant challenges has been the need for good quality fruit, as it is not possible to find it all year round, and it is difficult to find reliable producers or associations that sell

[59] Academic 1, Medellin. Researcher affiliated with the University of Antioquia, Medellin.
[60] Original quote in Spanish: *"La cadena del agraz como tal no existe, eso es algo que se ha ido construyendo con el tiempo."*

fruit with minimum quality characteristics. Of the producers interviewed, only two[61] have created their distribution channels to reach specific customers requiring these guarantees. One of the most representative customers is the restaurant chain Crepes & Waffles. According to the head of Sustainability at this company,[62] their commitment to the country includes hiring single mothers, the recovery and protection of ecosystems, and working hand in hand with Colombian farmers. For this, they seek to accompany producing communities in processes of food safety standardization, access to financial resources, and associativity. She says that "*more than looking for specific products, Crepes & Waffles has come to many communities because they have been impressed by the way these people make peaceful resistance to projects that do not coincide with their principles and the spirit of their territories*."[63]

This research participant also describes a major obstacle encountered while collaborating with smallholder communities, which is the limited effectiveness of associativity. In order to create external alliances and receive institutional support, these communities must associate themselves, but they often face a higher tax burden

[61] Producers 1 and 2. They are located in Santa Elena and El Retiro.

[62] Consumer 2. She is located in Bogota, where Crepes & Waffles has its headquarters. Crepes & Waffles is Colombia's second-largest restaurant chain (El Tiempo, 2021). It was founded in 1980 and has over 180 restaurants and 130 ice cream parlors throughout Colombia. Also, it has branches in seven Latin American countries and Spain. Since 2016, Crepes & Waffles has been certified by the American company B Lab as a B corporation worldwide. This distinction recognizes the work of companies worldwide that use the power of business to develop a more inclusive and sustainable economy, complying with standards in terms of social and environmental performance, transparency, and corporate responsibility. There are more than 2,500 B Corporations in over 130 industries and 60 countries worldwide.

[63] Original quote in Spanish: *"Más que buscar por productos específicos, Crepes & Waffles se ha acercado a muchas comunidades porque se han impresionado por la manera en la que las organizaciones y las personas estaban, pues, haciendo una resistencia pacífica a proyectos que no coincidían con sus principios y el espíritu de sus territorios, con su determinación de desarrollo."*

as a result. Moreover, Crepes & Waffles has stringent food safety requirements that must be met by their suppliers, leading them to only purchase from those who comply with these regulations. She also highlights the Andean blueberry as a source of unique flavors that aligns with the restaurant's philosophy of diversifying its menu. Therefore, they have tried to adopt the concept of forest fruits or berries from Europe and the United States through the Andean blueberry, which they have tried to position as a symbol of Colombian diversity and the Andean forests of the country. Thus, some farmers in Boyacá, the most important producer area of Andean blueberry in Colombia, have even started cultivating it to help conserve the forests that are threatened by cattle ranching. Similarly, the fruit can be used to promote forest conservation in eastern Antioquia, where urban pressure from Medellín is high. However, as this participant claims, there is still room for improvement in promoting the consumption of Andean blueberries.

> "*Very few people around me know the Andean blueberry. When I mention it, people ask me, 'But what is that? how is it?' And they confuse it with imported blueberries. 'Oh yes, I love those little boxes...' And I tell them no, that is not an Andean blueberry, that is blueberry. That happens in the restaurant, where the Andean blueberry is mainly promoted as seasonal ice cream. That is stubbornness since they*

know they are going to sell less than if they brought out an ice cream with a recognized flavor like strawberry, chocolate, or vanilla."[64]

For some of the interviewed academics[65], the consumer has enormous power in food chains. Therefore, to position agroecology, they must be included. One of the recommended strategies is farmers' markets, which was discussed in the second part of this study, where social capital and horizontal power in the area were discussed. For one of the interviewed consumers,[66] the main incentive to buy Andean blueberry is its price and physical access. This participant values the product highly and recognizes its characteristics because she grew up in the region and remembers it as part of the native forests where she collected it in childhood. However, she stopped seeing it for a long time until recently when she sporadically saw it in supermarkets. Her current lifestyle sometimes does not allow her to go to farmers' markets or the main central markets[67] of the municipalities (see Figure 16). Therefore, she tries to find it in supermarkets, but it is expensive and only sometimes available. However, she notes that she has recently

[64] Original quote in Spanish: "*Muy poca gente a mi alrededor conoce el agraz. Cuando lo menciono, la gente me pregunta ¿pero qué es eso? ¿cómo es? Y ellos lo confunden con los blueberries importados. 'Ah sí, me gustan mucho esas cajitas...' Y yo les digo que no, que eso no es agraz, que eso es blueberry. Eso mísmo pasa en el restaurante donde el agraz es principalmente promocionado como un healdo de temporada. Eso es como terquedad ya que ellos saben que van a la pérdida porque lo venden menos que si fuera un helado con un sabor reconocido como fresa, chocolate o vainilla"*

[65] Academic 3, University of Antioquia – Medellin.

[66] Consumer 1. A woman who grew up in the region and that has been related to the fruit. When possible, she tries to include it in her diet.

[67] During my fieldwork, I visited the local markets in the municipalities where this study took place. While speaking with fruit and vegetable vendors, I discovered that they were familiar with Andean blueberries and claimed to sell them. However, when I inquired about their availability, they mentioned that they would only sell them by request because they disliked bringing them to the market. They explained that Andean blueberries were mainly purchased by wealthy individuals, and they did not frequent those markets because they were considered for the less affluent population.

seen more offers for imported blueberries, which she believes may not be as "good for health."

Figure 16. Central markets in Rionegro and Marinilla. Together with the central market at El Santuario, are the largest in the region. (Personal file, October 2021).

One of the farmers participating in this study is an agroecological leader in El Carmen de Viboral[68] states that the Andean blueberry would be very successful if it is positioned as an agroecological product. He also remarks that having his own mini-agroecological market in town and participating in farmers' markets has allowed him to avoid intermediaries and also educate and raise consumer awareness: "*I explain to the consumer why the tomato is small, why that cabbage did not tighten, why the carrot is also small*."[69] This power held by consumers should be used to strengthen the political foundations of the food sovereignty movement, from which consumers have been excluded. Therefore, I believe relationships with them should be "horizontalized," face-

[68] Producer 3.

[69] Original quote in Spanish: *"Yo le explico al cliente porque ese tomate está pequeño, porque ese repollo no apretó, porque la zanahoria se quedó pequeña también"*

to-face. This is crucial because small producers currently see consumers as external actors. As consumers, we are a faceless force that the logic of agribusiness has hidden. We lost contact with rurality, and it is only seen beyond the supermarket shelves, ignoring the struggles of farmers and the abuse of market power over them and ourselves.

Trauger et al. (2017) claim that agroecology is a way to prevent food sovereignty from losing its political distinctiveness and becoming like other "co-opted" progressive food movements if it does not work to rectify systemic injustices enabled by both states and markets. Thus, food sovereignty must be understood as a "construction" process attempting to change the dynamics around food and power. As an activist and policymaker[70] interviewed in the municipality of Guarne argues:

> "*The idea is to form peasant associations and attract resources for the territory so that the peasants can be much more at ease and produce what they do more profitably. There are peasant units at the departmental level, annual meetings where ceremonies take place, and training and pedagogical activities are provided. However, if the association itself is not well constituted, participating in these spaces does not generate any benefit. So, at this moment, we are in the process of rebuilding the association and energizing it with young people as well; because we already have adults who provide us with their wisdom, but it is essential to start*

[70] Policymaker 4.

getting involved in other processes where young people can become involved and energize."[71]

As Smith-Torres, Montoya & Ligarreto (2009) state, it is necessary to empower producers by expanding their knowledge about what they do. In this case, it is important for peasants to know more about agroecology, their products, their advantages, and how to access the institutions present in the region. When I asked about these types of programs and institutional support, the participants' opinions were contrasting. While some highlight these programs and the management of these institutions, others have reservations because they consider these programs to be paternalistic and not empowering for communities. On the one hand, the participants consider the role of the environmental authorities of the study region to be fundamental to the progress of agroecology and the sustainable management of natural resources. These are CORANTIOQUIA (Autonomous Regional Corporation of Central Antioquia), CORNARE (Autonomous Regional Corporation of the Negro and Nare River Basins), and the Metropolitan Area of the Aburrá Valley. In turn, these are regulated at the national level by the National Ministry of Environment and Sustainable Development (Bioplaver, 2020). All the farmers assert that they have received quality advice on the sustainable

[71] Original quote in Spanish: "*La idea con estas asociaciones campesinas, es jalonar recursos para el territorio para que el campesino pueda estar mucho más tranquilo y producir de una manera más rentable lo que ellos hacen, pero que también se generen otro tipo de dinámicas. Hay unidades campesinas a nivel departamental, e incluso se hacen encuentros anuales donde se llevan a cabo ceremonias, se les provee capacitación y parte pedagógica, pero si la asociación como tal, no está bien constituida, participar en estos espacios no genera ningún beneficio. Entonces, en este momento, estamos en el proceso de reconstruir la asociación y dinamizar, con jóvenes también; porque ya tenemos adultos también, y ellos nos proveen esa parte y esa sabiduría, pero es importante empezar a que los jóvenes entren en otros procesos y los dinamicen.*"

management of their farms from these institutions. Regarding the role of CORNARE, one of its directors[72] commented during the interview that:

> "*CORNARE promotes projects that contribute to farmers by improving their productive processes through the implementation of better productive and environmental practices for mitigation and adaptation to climate change. However, there are still many producers who are difficult to change their mindset, so what we are doing here is trying to promote good practices through different projects, but we do not certify, if a producer asks me to certify that he produces clean or organic, we cannot do that because that is not our role*."[73]

Also, CORNARE's official explains that their support in the region covers 15 municipalities in strengthening local markets, but its implementation depends on the political agenda of each mayor. Likewise, the institution cannot choose the beneficiaries of the projects because the municipal administration selects them through an administrative act, where some guidelines are established. Regarding the Andean blueberry in particular, several of the interviewees highlight that the other mentioned environmental corporation, CORANTIOQUIA, launched a booklet on the fruit in 2009, which collected part of the ancestral knowledge of the plant and focused on the

[72] Policymaker 2. CORNARE's headquarters are located in El Santuario and provide services for most of the municipalities of the region.

[73] Original quote in Spanish: "*CORNARE promueve proyectos que contribuyan al mejoramiento de los procesos productivos de los campesinos a través de la implementación de mejores prácticas productivas y ambientales para mitigar y adaptarse al cambio climático. Sin embargo, hay todavía muchos productores que cambiarle la mentalidad un poco difícil, entonces lo que estamos nosotros haciendo acá es tratar de impulsar a través de todos estos proyectos, de que implementen buenas prácticas, pero nosotros no certificamos, que a mí me diga un productor ¡certificarme que es que yo produzco limpio!, no lo podemos hacer, porque ese no es nuestro rol, para eso hay otras entidades*"

conservation of the species. However, although some policymakers expressed that these environmental corporations should have more agencies, they recognized their importance in raising environmental awareness among farmers and regulating agribusiness in environmental damage. In addition, they believe that the national government should have more influence in promoting agroecology policies in the region[74].

In the region, the Corporation for Environmental Studies, Education, and Research (CEAM) is present, which promotes agrarian districts[75] with the support of the European Union. In the 1990s, CEAM led a project in the eastern Antioquia region that sought to implement an agrarian district model to protect the peasant economy and safeguard food production within sustainable production and conservation of natural resources. Thus, in 1998, the municipality of Marinilla was the first to create an agrarian district in the region. Rionegro, El Carmen de Viboral, and San Vicente followed suit in 2003. Regarding the CEAM Corporation, one of the officials[76] I interviewed highlighted that the corporation's role has been crucial in "*promoting alternatives to territorial development, contributing to the well-being of communities, and promoting self-management processes and actions for cultural and behavioral change towards*

[74] Only recently, in March 2023, the government of the president of Colombia, Gustavo Petro, announced that it will provide technical and legal guarantees for the creation of an Agroecological and Tourist District in the southwest of Antioquia as a protection measure to avoid the environmental impacts of mining in that region (López Plazas, 2023).
[75] An Agrarian District is an agrarian territorial management unit located in the agri-food and forestry production areas. It seeks to protect peasant economies and encourage agroecological production and fair markets, promoting food sovereignty, sustainable rural development, and the well-being of the population (Revista Semillas, 2009).
[76] Policymaker 3, Marinilla.

coexistence with nature, based on the principles of solidarity, equity, and participation."[77] However, this same participant expresses that the corporation has identified certification as a major challenge for developing regional alternative networks. On this point, he says:

"*An organic product, if you sell it labeled as organic, must be certified, which has high costs, meaning that you have to go to a certifying body and make some adjustments on the farm. In this way, the peasant would comply with the national organic production standard. As we have always worked more with peasant communities, we have pursued participatory agroecology certifications. So, if you certify a product as organic, you can be sued because it needs to be certified, and the standard for organic products exists in the country. On the other hand, the term agroecological or artisanal is still somewhat covered in that regard because no standard certifies it, and the endorsement is based more on trust in the producer*."[78]

To clarify the terms of certifications in Colombia, I interviewed an intermediary[79] who works with smallholders to obtain organic and other certifications, adapting

[77] Orignal quote in Spanish: "*…promover alternativas al desarrollo territorial, contribuyendo al bienestar de las comunidades y promoviendo los procesos de automanejo y acciones para el cambio cultural y del comportamiento hacia la coexistencia con la naturaleza, basados en principios de solidaridad, equidad y participación.*"

[78] Original quote in Spanish: " *un producto orgánico si usted lo vende etiquetado como orgánico, debe certificarlo, y eso tiene unos costos altos, o sea, tiene que ir a una certificadoras, tiene que hacer unas adecuaciones en la finca, porque para cumplir pues con la con la norma cierto, a nivel de país esta pues la norma, la norma de producción orgánica, nosotros como siempre hemos trabajado un poco más con comunidades campesinas, pues nos hemos ido más por la línea certificaciones participativas. si uno se pone orgánico, ya uno lo pueden demandar porque realmente no está certificado, o sea, hay una norma que no está cumpliendo es estándar, cierto, en cambio la agroecológico o artesanal bueno todavía y pues estamos un poco cubiertos en ese asunto"*

[79] Marketer 1, Medellin.

European models, and supporting farmers in the region to improve their alternative production and marketing processes. On this, he says that there are advances in the development of certifications for organic production in the country. However, it is focused on complying with international requirements allowing Colombia to export. He led the development of organic production regulations, together with RECAB,[80] to promote agroecology and organic farming. Although the Colombian State has supported them, he says there is still a long way to go to democratize the use of seeds and increase the number of registered families to supply the growing demand. These limitations, he claims, have "led to certifications being ignored and products being sold as agroecological or organic, which are not." For this reason, they manage a marketing system called ECO Marketing, Fair and Solidarity, whose objective is to market and support certified organic production and guaranteed agroecological production. This trust guarantee system promoted by RECAB consists of joining the agroecological network, making themselves known, and thus integrating them into the process to guarantee the final consumer that these foods are agroecological. They currently have two brands, ECOTERRA and Biocanasta (Bio-Basket).

However, when it comes to adding value to a product, some participants expressed that these certifications must be done under national guidelines that do not consider

[80] Asocampo and RECAB Antioquia promote alternative networks, agroecology, family farming, and peasant associations. These and other networks, framed within agroecological principles, bring together small farmers in eastern Antioquia, provide services, and link organizations. Furthermore, they promote ecological principles, solidarity economy, equity, and conservation of diversities in favor of food sovereignty.

alternative practices or the possibilities of small producers. Regarding this, an Andean blueberry producer in the municipality of La Unión claims:

> "*I can only freeze the product, and sometimes I have to discard large amounts of the fruit. Also, certification is a confusing issue for producers. If I go with my small package of Andean blueberries, they will say, "What is that? Where are the Invima*[81] *permits? What about the labeling and packaging? How do I sanitize my products? Which products do I use?"*[82]

Policymaker 3 mentioned that some years ago, CEAM and RECAB supported an association of Andean blueberry producers in La Union since they identified potential in the product. This association started to sell packaged Andean blueberries to the Association of Horticulturists of Rionegro (Asphor). However, although they tried to promote the Andean blueberry's antioxidant properties, people needed to learn more about the product. For this reason, it is necessary that people have more access to knowledge and information, and the role of universities is crucial in these cases. In the municipality of La Ceja, one of the policymakers[83] there explains that, to address this issue, the municipality has provided technical assistance programs in partnership with

[81] INVIMA means the National Institute of Surveillance of Pharmaceuticals and Food (Instituto Nacional de Vigilancia de Medicamentos y Alimentos), Colombia's food and drug regulatory agency.
[82] Original quote in Spanish: "*Yo solo puedo congelar el producto, y algunas veces tengo que descartar un montón de frutos. La certificación también es confusa para los productores. Si voy con mi bolsita de mortiño, me van a decir que eso de dónde viene, que a ver los certificados, que a ver los permisos, el Invima, que a ver la etiqueta, que a ver el empaque, que a ver dónde yo hago la desinfección, ¿cuáles son los productos que utilizo?*"
[83] Policymaker 1, La Ceja.

SENA[84] to train farmers and connect them with buyers and marketers for export. In fact, some producers[85] exalt SENA's support: "*The one that has benefited me the most is SENA. SENA has excellent agriculture and agroecology programs and transformation chains, and I am finishing an agribusiness course there right now*."[86] However, other participants criticize these programs because they are paternalistic and promote industrialized agriculture according to each municipality's development guidelines.

A policymaker[87] who supports advocacy programs and training smallholders in Santa Elena claims:

> "*Every semester, we go to the University, to a university here in Medellín that offers an undergraduate degree in agricultural engineering. We notice that very few students go along the line of agroecology. The same professors often say that this does not make sense, that these are just little shakes with vinegar, when they refer to the Bio preparations that we teach how to prepare. On the other hand, others come to seek profit and commercial opportunities. Very few professionals are interested in*

[84] SENA stands for Servicio Nacional de Aprendizaje, which is a Colombian government agency that provides vocational training and workforce development programs. SENA was created in 1957 and is responsible for promoting the technical, technological and vocational education in Colombia, with the aim of strengthening the country's human resources and promoting economic development. These programs are designed to help individuals acquire the skills and knowledge necessary to succeed in a variety of industries, including agriculture, tourism, construction, manufacturing, and technology.
[85] Producer 4, Guarne.
[86] Original quote in Spanish: " *La que más me ha beneficiado es el SENA. El SENA tiene programas de agricultura y de agroecología muy buenos, y de cadenas de transformación también. Yo estoy terminando un curso de agroindustria en el SENA."*
[87] Policymaker 5, Santa Elena.

following up on this matter because it requires work and time. We are very immediate! "[88]

Therefore, a producer in the municipality of El Retiro[89] comments: "*Many times, the little push is not even money; it is training. For example, the National University would be essential in our matter. I went there to do a complete characterization of antioxidants and the nutrients of the Andean blueberry. I am collecting the money to do it, and it has to be done because one can already sit down and talk to someone to sell them a product with a complete product data sheet and bromatological analysis. However, that is very expensive, between 4.5 and 5 million pesos (between 1,000 and 1,100 USD). That should be free for being the largest public University in the country! In addition, the farmer feels what it means that his fruit has 70 mg of this compound, that people understand, and thus people appropriate their product, understand it, become professional in what they have.*"[90] Saying this, I want to finalize with a reflection by one of the academics participating in this study: *"Academy must empower. It has the mission of training professionals with a social sense, who empower instead of being "bosses" that only*

[88] Original quote in Spanish: "*…nosotros cada semestre nos acercamos a la Universidad, a una Universidad aquí en Medellín en la que se hace el pregrado en ingeniería agropecuaria y muy pocos estudiantes van por la línea de la agroecología. Los mismos profes dicen muchas veces que eso no tiene sentido, que las agujitas de vinagre, cuando se refieren a los Bio preparados que se proponen. Otros vienen buscando hacer negocios y oportunidades de negocio. Muy pocos profesionales están interesados en continuar con este asunto porque se requiere más trabajo y tiempo. ¡Somos mucho de lo inmediato!"*

[89] Producer 2, El Retiro.

[90] Original quote in Spanish: "*…muchas veces el empujoncito no es ni plata, es capacitación, por ejemplo en el tema nuestro, sería muy importante la Universidad Nacional, yo fui a hacer una caracterización completa no solamente de antioxidantes, sino del mortiño, estoy recogiendo la plata para hacerla, y hay que hacerla, porque uno ya se siente hablar con alguien para venderle un producto con una ficha técnica completa del producto, un análisis bromatológico completo de esta vale, bien hecho cuatro y medio o 5 millones de pesos. Eso debería ser gratis. Es la universidad más grande del país. Y le explica al campesino eso que es, que quiere decir que su fruta tiene 70 mg de ese compuesto, cierto, que la gente entienda, entonces la gente se apropia de su producto, lo entiende, se profesionalizan en lo que tiene.*"

provide solutions to specific problems but increase the dependence of farmers, without dynamizing the flow of knowledge. They only use communities for their own benefit, that is, 'academic extractivism'."[91]

Conclusions

Although sociopolitical and environmental activism has been intense since the 1970s in eastern Antioquia, paradoxically, the hegemonic parties maintain a strong influence in electoral life. For this reason, the transformations envisioned from the social groups fail to become public policy (UNPD & Sida, 2010. p.49). Creating mechanisms for political participation and reinforcing security in all municipalities, and not just hiring private security in residential areas and the facilities of the large agro-industries in the region, would allow small producers who struggle in the region to preserve their territory and produce agroecologically to gain visibility and avoid being stigmatized as promoters of guerrilla incubator ideals. For this, the institutional political power support of each municipality is necessary to generate spaces for citizen participation and promote the direct relationship between producer and consumer. Also, although it still needs to be addressed in further studies, the financial sector could facilitate loans for agroecological adaptations of small producers on their farms and create financial education programs that strengthen the decision-making power of small producers.

The consolidation of agroecology must be understood as a slow process, especially

[91] Original quote in Spanish: "*La academia debe empoderar. Esta tiene la misión de capacitar profesionales con sentido social. Que empoderen en vez de ser 'jefes' que solo dan soluciones a problemas específicos pero que incrementan la dependencia de los campesinos. No dinamizan el flujo de conocimiento. Solo usan a las comunidades para su propio beneficio. Puro 'extractivismo académico'.*"

in an area like eastern Antioquia, where the levels of trust in institutions are low and where people tend to trust more and associate with similar ones, generating exclusive networks around a powerful bonding social capital. A potential strategy is to reinforce the work of agroecological networks in the region that seek to generate trust guarantees so that more and more actors enter these networks and make agroecological transitions. This would ensure the inclusion of new people in the community and avoid disconnection from other distant networks. As a final result, the strengthening of agroecological networks in the region would strengthen their political character, empowering small producers by gaining visibility and scaling their needs and initiatives to the institutional arena of the region, thus balancing power relations between these actors.

According to Méndez & Casas (2017), social capital is critical because it is a community resource and a mobilizing factor for change that strengthens formal and informal patterns of local interaction and the construction of new bottom-up institutions. Therefore, several interviewees expressed that the institutional framework does not seem to understand the community's needs, and they never receive the support needed. It demonstrates that they still conceive institutions hierarchically and feel they need more support to scale up their needs. By following only the guidelines of the global market, alternative agriculture programs fail or are co-opted by agribusiness. This was explained by the policymaker interviewed in the municipality of La Ceja, who said that one of the difficulties they have faced in promoting alternative food systems is the export boom of avocado, cape gooseberry, passion fruit, and hydrangeas. This has

caused many farmers to abandon their traditional crops and focus on exporting crops, which has had negative consequences for the local economy, given that many farmers do not meet the conditions to certify their products for export, such as having good agricultural practices or pre-export certificates. Moreover, although the academy could be involved in training those people to succeed in their traditional food systems, they also follow global market guidelines and educate them to industrialize agriculture.

Miguel Altieri,[92] one of the most prolific academics on agroecology claims: "*Academics do not possess the power; the educational institutions and their diffusion agenda are those that decide*." Another interviewed policymaker, identified as #5, expressed that although universities have a fundamental role in empowering students and creating critical thinking, they are still teaching formulas and repeating models from 20 to 30 years ago. As a consequence, for agroecological producers, there is a blockage. For example, when they try to market their products, the logistical advantages, such as transportation costs, belong to the traditional markets and monoculture models. This discourages agroecological producers, who must survive in a productivism approach that rewards quantity over quality and the nutritional content of food. For him, family farming is the starting point to empower producers and seek ways to expand, sell surplus, associate, and make alliances with institutions. In the specific case of the Andean blueberry, its agroecological possibilities are considerable. However, educating and incorporating the consumer into these networks and supply chains is essential to

[92] In January 2022, I had the opportunity of visiting and interviewing Dr. Altieri in his agroecological farm in Southwest Antioquia.

dismantle them from vertical power and bring them closer to balancing horizontal power through a direct relationship with producers.

CHAPTER 5 - CONCLUSIONS, FINAL REMARKS AND RECOMMENDATIONS

Power relations in agroecological systems should be analyzed differently, considering the interdisciplinary nature of food sovereignty's social and political components. This study proposes an analytical framework that considers social capital and a supply chain approach to understanding power relations among actors in agroecological networks. The framework can reveal how different types of social capital facilitate or limit the inclusion of new actors in the networks and alternative supply chains and how power relations generated can become an opportunity or risk for their permanence. This is crucial to understand how the adoption of agroecology in food value chains can be limited by various factors, such as the dependency on corporate value chains, lack of direct connections between consumers and producers, and insufficient institutional frameworks.

According to Lanka et al. (2017), coffee farmers in India face these challenges, as they are still subject to the control of agribusiness supply chains that dictate prices and provide farm inputs. This dependence on corporate value chains restricts the emancipatory potential of agroecological value chains, which can only be fully realized through direct connections between consumers and producers and adequate institutional support. Therefore, the success of alternative agri-food networks and agrarian movements in promoting diversified farming systems depends on the support of the regulatory framework and the contextualization of policies to local realities (Kremen et al., 2012).

In Europe and Latin America, policies supporting agroecology are fragile. They are often overshadowed by large-scale conventional chains, and their implementation

depends on the political ideology of the government in power. However, countries like Cuba and Brazil have successfully oriented their agri-food systems towards short-value chains, where relationships between producers and consumers are strong and connected with food security and sovereignty at the territorial level (Sabourin et al., 2018). In contrast, in a country such as Colombia, it is still necessary to enable producers, consumers, and their organizations to adapt policy instruments to their specific contexts and design flexible policies at the territorial level. Furthermore, in some areas of the country, due to historical violence, access to social networks and trust are crucial components of the social capital that have been hindered, affecting the capacity of stakeholders to associate (Oble Vergara et al., 2017).

According to Hatt et al. (2016), the complexity of local conditions must be considered before applying general solutions. Thus, new actors may find it easier to enter existing networks and establish relationships with local actors in areas with substantial social capital and a history of peaceful cooperation. Trust and collaboration are already established, and new actors can benefit from the existing social networks and norms. On the other hand, in areas with weak social capital and a history of violence and conflict, new actors may find it challenging to enter existing networks. Reinforcing social capital in a region affected by violence requires a multifaceted approach that focuses on building trust, fostering community connections, and promoting collaboration. Table 13 lists some actions that can help strengthen social capital in such a context.

Table 13. Proposed actions to reinforce social capital in a region impacted by violence.

Proposed actions to reinforce social capital in a region impacted by violence
Promote dialogue and reconciliation: Facilitate spaces for open and constructive dialogue among community members, encouraging them to share their experiences, concerns, and aspirations. Support initiatives that promote reconciliation and healing, allowing individuals to rebuild trust and establish positive relationships.
Strengthen community organizations: Empower local community organizations and grassroots initiatives by providing resources, training, and support. These organizations can play a vital role in fostering social cohesion, addressing community needs, and promoting collective action.
Encourage community participation: Actively involve community members in decision-making processes, development projects, and local governance. This inclusion gives individuals a sense of ownership and responsibility, enhancing their engagement and promoting a collective sense of purpose.
Foster intergroup interactions: Create opportunities for diverse groups within the community to interact and collaborate. Encourage initiatives that bridge social divides, such as intercultural exchanges, joint projects, and events that promote understanding and cooperation.
Invest in education and skill development: Support educational programs and skill-building initiatives that empower individuals and enhance their opportunities for personal and professional growth. Education can serve as a catalyst for social change, empowering individuals to actively contribute to their communities.
Encourage economic cooperation: Promote economic initiatives that encourage cooperation and collaboration among community members. Support the development of cooperatives, social enterprises, and local markets that facilitate fair trade and economic opportunities for all.
Support social networks and community spaces: Invest in the creation and maintenance of social networks and community spaces where people can come together, share experiences, and build relationships. These spaces can serve as platforms for social interaction, dialogue, and the exchange of ideas.
Address underlying issues and root causes: Identify and address the underlying issues and root causes of violence in the region. This may involve addressing socioeconomic disparities, providing access to basic services, improving security, and promoting justice and human rights.

Thus, reinforcing social capital in a region affected by violence requires a comprehensive and sustained effort that empowers individuals, builds trust, promotes collaboration, and creates an enabling environment for positive social interactions. Despite the potential benefits that agroecology in Eastern Antioquia can provide to reinforce social capital and balance power relations, its adoption faces challenges due to the particularities and dynamics of these territories. Adopting agroecology in food value chains requires direct connections between consumers and producers, adequate institutional frameworks, and policies designed at the territorial level. Thus, the social

capital of the area and the history of violence can have a significant influence on allowing or preventing the entry of new actors into existing networks.

With this study, I found that trust and cooperation in Eastern Antioquia may be lacking, and local actors may be suspicious of outsiders. The forced displacement of individuals in Eastern Antioquia has significantly impacted the region's social capital. The loss of human capital, social networks, and community ties resulting from this displacement has weakened the ability of the affected communities to organize, cooperate, and mobilize for collective action. Also, the loss of trust among individuals and groups hinders the creation of new social networks and relationships, making it more challenging to rebuild social capital. This, in turn, reduces the region's capacity to respond effectively to its challenges, such as economic inequality, poverty, and political instability. In some cases, existing networks may be controlled by powerful groups or individuals who resist the entry of new actors that could challenge their dominance.

Therefore, considering the social capital of this area, finding a balance between bonding and bridging social capital is crucial for achieving sustainable development in the region, as it allows for both internal cohesion and external connections. Thus, social capital is essential in promoting economic growth and innovation. In agroecology, promoting bonding and bridging social capital can help build internal cohesion and external connections while valuing and preserving local knowledge and practices. Similarly, linking social capital can facilitate access to markets, technical knowledge, and financial resources and promote policies that support sustainable agriculture and food sovereignty. For that, empowering small-scale farmers through collective organizations

and cooperatives can promote sustainable development, but this depends on addressing the social and political context in which they operate.

Considering the issue of displacement and restoring social capital is critical to achieving sustainable development in Eastern Antioquia. Furthermore, it is crucial to consider both the internal and external dimensions of social capital when working to support community empowerment and sustainable development. This requires a more nuanced and holistic understanding of social capital, considering communities' complex social dynamics and power relations, which will allow strengthening a combination of inclusive horizontal and vertical social capital to enable communities to become more active and influential actors in the policy-making process and promote more sustainable and resilient agroecological systems.

The role of consumers is also crucial for balancing power relations among agroecological networks and the Andean blueberry supply chain. Incorporating consumers into agroecological networks and supply chains is vital to balancing power relations between producers and consumers and dismantling vertical power structures. As Altieri & Nicholls (2021) argue, "Consumers must be conscious that eating is an ecological and political act. And, by supporting local farmers, they are committed to promoting socio-ecological sustainability and communities' resilience" (Altieri & Nicholls, 2021). Thus, consumers must be educated more to prevent them from continuing to demand industrial quality standards in agroecological production. The academy plays a significant role in training people in traditional food systems and agroecology, but it must move away from teaching outdated models and formulas.

According to De Schutter et al. (2012), political, social, economic, and environmental circuits must be strengthened so that farmers and small producers have productive criteria and can assert their knowledge. Otherwise, agribusiness and its standards will continue to perpetuate. In the Andean blueberry case, given its characteristics, it can be produced under agroecological practices. However, it must continue being free of agrochemicals, under family farming models, and being promoted on small-scale and short marketing circuits. By linking food sovereignty's political agenda to Andean blueberry production practices, farmers can be empowered by making decisions and challenging exclusionary policies and dominant processes. As a result, they can build more resilient food systems that favor ancestral and dispersed knowledge and practices over centralized ones will be created.

Given the associativity problems of producers and other actors in this region, it is easier to scale their needs and increase the power of negotiation and the strengthening of logistics and marketing processes once they influence local policies and allocate financial resources and technical assistance. With an institutional framework consistent with the region's realities, it is easier for the agroecological networks that can be formed in the area to prosper. For this reason, it is necessary to broaden the transdisciplinary academic discussion on agroecology, enrich its epistemological bases, and open possibilities for carrying out further studies that bring the Colombian institutional framework closer to the needs of the agroecological movement so that value chains for novel fruits, such as Andean blueberry, can be structured within the principles of agroecology, which would allow the empowerment and adhesion of new actors.

To conclude, I propose the following list of specific actions to reinforce agroecology in Eastern Antioquia. This list involves different parties and the compromise of both public and private sector:

- Promote agroecology awareness and education: Develop and implement educational programs that raise awareness about the principles and practices of agroecology among farmers, agricultural extension workers, and the general public. This can include training workshops, seminars, and educational campaigns to highlight the benefits and potential of agroecological approaches.
- Provide technical support and capacity building: Offer technical assistance, training, and resources to farmers to adopt and implement agroecological practices. This can involve providing guidance on organic farming techniques, sustainable soil management, natural pest control methods, and diversified crop rotations. Access to information and knowledge-sharing platforms is crucial for successful adoption of agroecological practices.
- Foster farmer-to-farmer knowledge exchange: Facilitate platforms and networks where farmers can share their experiences, innovations, and best practices in agroecology. Encouraging peer-to-peer learning and knowledge exchange strengthens the agroecological movement and helps disseminate successful approaches.
- Establish supportive policies and incentives: Advocate for the development and implementation of policies that support agroecology, including organic agriculture, agroforestry, and sustainable land management. Provide incentives

such as subsidies, grants, and market access for agroecological farmers to encourage their adoption and sustain their practices.

- Strengthen local and regional markets: Support the development of local and regional markets that value and promote agroecological products. This can involve creating platforms for direct farmer-consumer connections, supporting farmers' markets, and facilitating access to fair and transparent market channels.
- Encourage participatory research and innovation: Promote participatory research approaches that involve farmers, scientists, and other stakeholders in co-creating knowledge and solutions for agroecological challenges. Encouraging innovation and experimentation at the farm level helps refine and adapt agroecological practices to local contexts.
- Support agroecological networks and organizations: Strengthen and support agroecological networks, associations, and organizations that serve as platforms for advocacy, knowledge exchange, and collective action. These networks can play a crucial role in fostering collaboration, policy dialogue, and resource sharing.
- Integrate agroecology into agricultural education: Introduce agroecology as a core component in agricultural education curricula and training programs. This ensures that future generations of farmers and agricultural professionals are equipped with the knowledge and skills necessary to practice and promote agroecology.

Based on my field observations, the eastern region of Antioquia is an area with a social and cultural fabric that supports the existence of agroecological networks. However, the challenge lies in the inclusion of new actors due to the mistrust that people have towards newcomers and external actors. This is a problem that needs further multidisciplinary applied research that considers different perspectives across the different agroecological dimensions.

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APPENDICES

Appendix 1. Studies yield by the systematic mapping of food supply chains in Colombia.

Table 4. Identificaction of variables on each case study evaluated. This gives an idea of the main critical points that should be considered in each supply chain. (Actions are adapted from Act 811 of 2003)

Studies	Productivity	Market	Transaction costs	Alliances	Information	Linkage of small producers	Natural resources	Human resources	Reseacrh and technology
González-Castro, Y., Manzano-Durán, O., & García-Hoya, O. (2019). Puntos críticos de la cadena productiva de la mora (Rubus glaucus benth), en el municipio de Pamplona, Colombia. Rev.investig.desarro.innov., 10 (1), 9-22 doi: 10.19053/20278306.v10.n1.2019.10008	x				x	x	x		x
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VITA

Andres Felipe Mesa Valencia holds a bachelor's degree in animal science and a master's degree in food science and technology from the National University of Colombia. He is currently a Ph.D. candidate in Rural Sociology at the University of Missouri, expected to graduate on May 12, 2023. His doctoral research focuses on applying the concepts of agroecology and social capital to form networks and alternative value chains for a tropical fruit called "Agraz" or "Andean blueberry". This research is conducted on smallholder communities in eastern Antioquia, Colombia. He was honored to be a Fulbright Scholar from 2018 to 2022, and sponsored by Colfuturo – Colombia, from 2019 to 2021.

In addition to his academic pursuits, he has worked as a food safety trainer to small farmers and producers, a teacher, lecturer, and researcher. He currently holds the position of Assistant Coordinator at the MU Cambio Center, which leads research in Latino and changing communities in the American Midwest.

He is a fluent speaker of Spanish, which is his native language, and has professional proficiency in English. He has completed courses in General English at Embassy CES in Melbourne, Australia, and Academic English at Missouri State University in Springfield, Missouri. He is also proficient in software skills, including the Office package with an emphasis on Excel, R Statistical Software, and NVivo – Qualitative Data Analysis Computer Software.

During his academic career, Andres has received numerous recognitions for his achievements and contributions to public service, including the Rollins Society award in 2023, which recognizes graduate and professional students who have significantly advanced the well-being of self-defined communities beyond the scope of their academic work. He was also awarded the 2022 Dissertation Research Award Competition by the Rural Sociology Society of the United States (RSS), which recognizes dissertation proposals presented by Ph.D. students in rural sociology across the United States.

Throughout his career in Colombia, Andres held various positions as an assistant professor, instructor, and project coordinator at universities and organizations in Colombia and the United States. His passion for research, education, and community outreach has allowed him to make a positive impact on the Latinx and immigrant communities in the United States and beyond.