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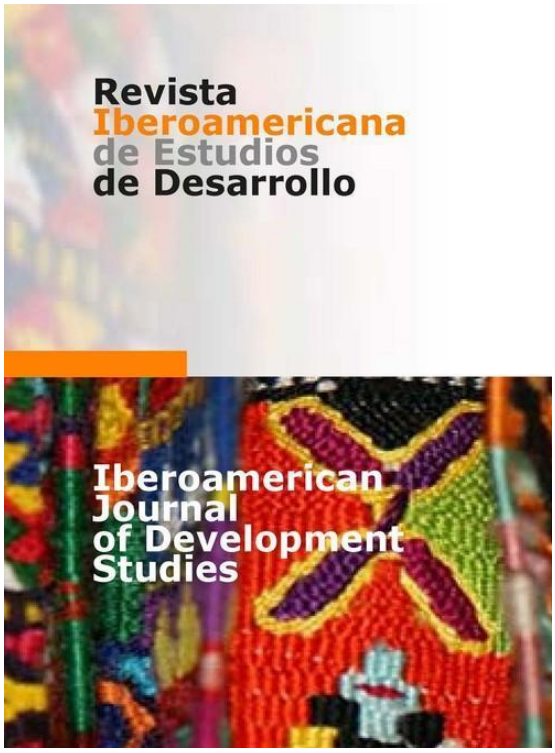
María José Castillo



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Weak governance and its impact on food systems: an analysis in two Ecuadorian territories

Débil gobernanza y su impacto en los sistemas alimentarios: análisis en dos territorios ecuatorianos

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Abstract

This article analyzes the governance of three value chains in two territories of Ecuador, identifying critical factors that contribute to their underperformance and the shortcomings of the related food systems. It also highlights potential leverage points for systemic change. The study reveals disconnections — marked by poor communication and coordination — across all levels of the value chains, along with asymmetric power relations, limited agency among small-scale producers, and a weak institutional framework. Together, these factors reflect weak governance, which the article identifies as a major barrier to addressing key challenges, such as poverty, food insecurity and environmental degradation. To facilitate food system transformation, the study proposes four criteria to foster effective coordination among value chain actors.

Keywords: food systems governance, weak governance, food system transformation, value chain performance.

Resumen

En este artículo se analiza la gobernanza de tres cadenas de valor en dos territorios de Ecuador, identificando factores críticos que contribuyen a su bajo rendimiento y a las deficiencias de los sistemas alimentarios relacionados. También se destacan posibles puntos palanca para el cambio sistémico. El estudio revela desconexiones —marcadas por una comunicación y coordinación deficientes— en todos los niveles de las cadenas de valor, junto con relaciones de poder asimétricas, limitada capacidad de agencia de los pequeños productores y marco institucional débil. En conjunto, estos factores reflejan una gobernanza deficiente, que el artículo identifica como un obstáculo importante para abordar desafíos clave como la pobreza, la inseguridad alimentaria y la degradación ambiental. Para facilitar la transformación del sistema alimentario, el estudio propone cuatro criterios para fomentar una coordinación eficaz entre los actores de la cadena de valor.

Palabras clave: gobernanza de los sistemas alimentarios, gobernanza débil, transformación del sistema alimentario, desempeño de la cadena de valor.

1

Introduction

Food systems encompass the interactions between food chains, food environments, and consumer behavior, all of which are influenced by external determinants such as biophysical and environmental drivers, technology, infrastructure, and political, economic, sociocultural and demographic forces. These interactions give place to several outcomes — dietary, economic, political, and environmental — that impact individuals, society, and the environment (De Brauw *et al.* 2019).

Many studies highlight that the greatest weakness of current food systems is their inability to ensure food security (Hospes & Brons 2016). They are also frequently seen as undermining environmental sustainability and social welfare. This has led many countries to pursue the transformation of their food systems (Brouwer *et al.* 2020).

Because external determinants of food systems are difficult to control, addressing food insecurity, climate change, and other undesirable outcomes largely depends on sound decision-making by food system actors. These decisions are shaped by complex interactions among actors within each system component — ultimately involving all human beings as consumers. The fluidity and quality of these interactions are determined by the type of governance under which food systems operate.

According to Van Bers *et al.* (2016, p. 10), «the governance of food systems refers to the processes and actor constellations that shape decision making and activities related to the production, distribution, and consumption of food». Governance extends beyond the formal roles of governments to include markets, traditions, networks, and non-governmental actors such as businesses and civil society (Liverman & Kapadia 2010).

Van Bers *et al.* (2019) argue that food system transformation is more closely tied to changes in governance than to public policies alone, as the way food systems are governed can either drive or hinder transformation. Similarly,

Brouwer *et al.* (2020) emphasize that, rather than seeking simple solutions, efforts should focus on the interactions among system actors to effectively identify development interventions.

This article draws on contributions from the literature and findings from a qualitative study (2020-2023) conducted by Rimisp-Latin American Center for Rural Development to analyze the processes behind unfavorable outcomes in the food systems of two Ecuadorian territories: Guayas, and Los Ríos. It argues that these outcomes largely stem from disconnection — characterized by limited communication and coordination — and asymmetric power relations among actors, all of which reflect weak system governance.

Given the food system's breadth and complexity, we narrow our functional definition to focus on specific chains. We examine interactions among direct actors — producers, agro-industrialists, importers, exporters, wholesalers and retailers of rice, corn, and cocoa — and supporting actors in Guayas and Los Ríos. The analysis centers on relationships shaping production decisions, value distribution, and the impacts of these dynamics on food security and the environment. This focus is guided not only by practical considerations, but also by the critical shortcomings and importance of these value chains in the food system of these territories.

The purpose of this article is to analyze the interrelationships among the afromentioned actors, identifying barriers to transaction fluidity and food system transformation, as well as potential leverage points for systemic change. This research seeks to shed light on the challenges facing agrifood value chains, not only in Ecuador but across Latin America, and to deepen understanding of the role of governance in value chain and food system development — an essential step toward defining and implementing corrective actions (Brouwer *et al.* 2020).

The next section reviews the literature on food systems governance and outlines the article's conceptual framework. Sections 3 and 4 present an overview of the study territories and the methodology, respectively. Section 5 analyzes the governance of the three selected agrifood chains, and Section 6 concludes with a summary of key findings.

2

Literature review

Researchers worldwide have identified several undesirable outcomes in food systems, including malnutrition, food insecurity, poverty, and environmental degradation (*e.g.,* Bortoletti & Lomax 2019, Hospes & Brons 2016, Leeuwis *et al.* 2021). Bortoletti and Lomax (2019) argue that government efforts to develop sustainable food systems are often ineffective, as they focus on isolated aspects such as production and overlook the inherent complexity of food systems. These authors advocate for a systemic approach to policy design and implementation, emphasizing that improved governance holds significant potential for food system transformation.

Van Bers *et al.* (2016) found that governance plays a crucial role in driving fundamental changes in food system outcomes. They emphasize collective action across geographic scales and interest groups as key to transformation. Governance, which encompasses social and power relations, agency, and institutions, was repeatedly identified as a central issue that can either facilitate or hinder any transformational change of food systems (Van Bers *et al.* 2016, 2019). Similarly, Leeuwis *et al.* (2021) view food system transformation as a governance effort to shift undesired outcomes toward desired ones, such as improved nutrition, food security, wealth, and environmental sustainability.

Hospes and Brons (2016) identify key weaknesses in current food systems governance, including the fragmentation of food policy across sectors (agriculture, health, society, etc.), the dominance of a *productionist* paradigm that overlooks environmental and public health concerns, limited civil society participation, and power imbalances. Based on their review, these authors propose three alternative governance approaches for food systems: *a)* integrating policy across different sectors with multi-actor involvement (government, civil society, or value chain actors); *b)* resisting capitalist agro-industrial powers by empowering small-scale producers and consumers, and *c)* fostering reflexive governance by creating new spaces for dialogue and collaboration across scales and stages of the food system.

In a similar vein, and with a focus on rural territories, Berdegué *et al.* (2015) argue that rural development policies should prioritize institutions[1] and power relations rather than solely focusing on asset transfers. Berdegué *et al.* (2020) emphasize that weak institutions are at the root of many social and environmental conflicts in rural areas of Latin America. Therefore, rural development must involve not only productive transformation but also institutional reform, aimed at addressing market failures and strengthening resource governance (Schejtman & Berdegué 2004).

The articulation of actors is key to institutional change. In their analysis of the factors that lead to institutional change in Latin America, Berdegué *et al.* (2015) highlight the critical role of transformative social coalitions — diverse groups of actors aligned around a shared vision of development that promotes growth, social inclusion and environmental sustainability. These coalitions consolidate their power over time and share two traits: *a)* broad participation across economic, social, and sectoral groups, and *b)* inclusion of both territorial and non-territorial actors, an essential feature for mobilizing resources to empower the coalition.

Furthermore, Fernández *et al.* (2014) emphasize that transformative social coalitions can enhance agency,[2] by creating opportunities and providing resources for marginalized actors to identify and defend their interests. However, territorial actors with low agency may sometimes be excluded from dominant coalitions. In such cases, mediating actors can play a counterbalancing role, by limiting coalitions' actions or negotiating additional benefits.

To strengthen integration and reduce power asymmetries in value chains, Bode *et al.* (2008) stress the importance of effective communication and information sharing. Poor information flow hinders learning, innovation and decision-making across the chain. A key bottleneck in information flow lies in the leadership of organizations, due to lack of training and representativeness. These authors emphasize the need to strengthen ties between different stakeholder

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[1] De Janvry and Sadoulet (2016, p. 711) define institutions as «the rules and conventions that codify social interactions and, in so doing, constrain individual behavior».

[2] Fenández *et al.* (2014) summarize the concept of *agency* in two elements: the ability to identify one's own interests, and the capacity to promote them in social interaction.

groups, both horizontally and vertically, while promoting mutual understanding of common challenges to enhance coordination and overcome obstacles within the value chain.

The reviewed literature shows that limited communication among actors, power asymmetries, lack of agency and a weak institutional framework contribute to weak food systems governance. This, in turn, generates or exacerbates issues such as food insecurity, environmental degradation, health and nutrition problems, and poverty. Figure 1 illustrates this conceptual framework.

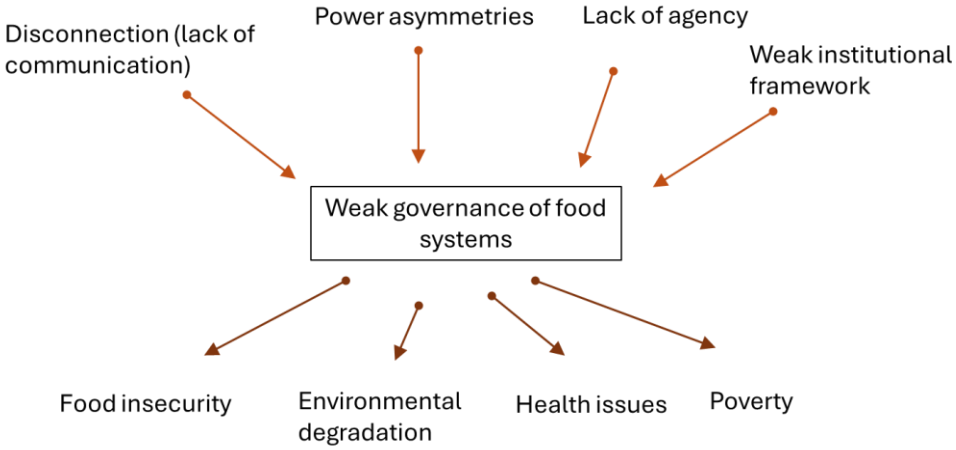


Figure 1

Conceptual framework

Source: authors' own work.

Considering this complexity, the need for collective and coordinated action among food system actors becomes evident. Transforming food systems cannot rely on isolated efforts that ignore systemic and governance challenges. The fact that the system involves numerous, diverse and often uncoordinated actors with conflicting goals and power imbalances makes change difficult. Still, strengthening food system governance through collaboration and agreements among diverse actors — both territorial and extra-territorial — towards a shared goal offers a promising path forward (Leeuwis *et al.* 2021, Berdegué *et al.* 2015). This process, however, will unfold over the medium to long term.

Context of the study territories

The study focuses on rural areas of Guayas and Los Ríos, two adjacent provinces in Ecuador's coastal region (Figure 2). While agriculture is central in both, Guayas has a more diversified economy, due to its proximity to the major city of Guayaquil. Most of the population in these provinces identifies as *mestizo,* followed by *montubio* — a self-identification closely tied to rural life (Casa de la Cultura Ecuatoriana Benjamín Carrión, n.d.) —. Table 1 presents the sociodemographic characteristics of both provinces.

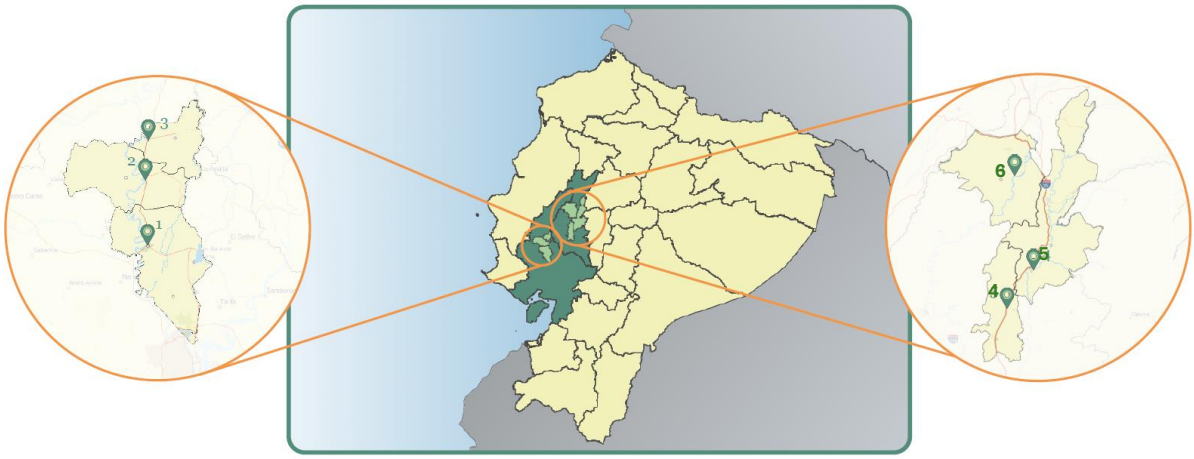


Figure 2

Territories of the study

Source: taken from Castillo (2022). Specific territories: Guayas: 1 Daule, 2 Santa Lucía, 3 Palestina; Los Ríos: 4 Pueblo Viejo, 5 Ventanas, 6 Mocache.

	Guayas (excluding the city of Guayaquil)	**Los Ríos**
1. Population (2022)	1,770,632	952,979
2. Rural population (2022)	32.5 %	32.4 %

3. Agricultural economically active population (2022)	37 %	44 %
4. Poverty rate (2014)	20.3 %*	39.5 %
5. Racial self-identification (2010) • *Mestizos* • *Montubios* • White • Afroecuadorians • Other	 67.5 %* 11.3 %* 9.8 %* 9.7 %* 1.8 %*	 52.9 % 35.1 % 5.0 % 6.2 % 0.9 %

* In these cases, statistics do not allow the exclusion of Guayaquil. This city represents 60.6 % of the province's population.

Table 1

Socio-demographic characteristics of Guayas and Los Ríos

Source: points 1 and 2 ENEMDU Survey, INEC (2022); point 3 Living Conditions Survey, INEC (2014); point 4 Population and Housing Census, INEC (2010).

Figure 2 also highlights the specific territories selected for the field research, which include rice-growing areas in Guayas and corn and cocoa-growing areas in Los Ríos. Guayas leads national rice production, accounting for 67 % of cultivated area, while Los Ríos is a major producer of hard yellow corn, contributing 39 % of the national area. Both provinces each represent 21 % of the total land dedicated to cocoa cultivation in Ecuador (INEC 2019). While rice and hard yellow corn[3] are primarily destined for the domestic market and play a crucial role in national food security (Marín *et al.* 2021, Villanueva *et al.* 2017), cocoa is largely produced for export.

[3] In the rest of the document, we will refer to hard yellow corn simply as *corn*.

Table 2 summarizes producer characteristics for each selected crop in the two provinces, based on data from INEC's 2021 Continuous Survey of Agricultural Area and Production (ESPAC). Most are small-scale farmers, with plots of five hectares or less. Family labor makes up over 70 % of the workforce across all crops. Female participation varies by crop and region but does not exceed 30 %.

Variable	**Detail**	**Rice – Guayas**	**Corn – Los Ríos**	**Cocoa – Los Ríos**
General characteristics				
Number of producers	Persons	32,157	23,551	39,540
Area sown	Hectares	204,874	152,417	130,773
Small producers (5 ha or less)	% of producer person (PP)	97 %	96 %	86 %
Family labor	% of the total labor force	77 %	82 %	77 %
Woman as main producer	% of PP	16 %	26 %	30 %
At least primary education	% of PP	86 %	90 %	92 %
At least secondary education	% of PP	17 %	27 %	30 %
Production characteristics				
Certified seed	% of ha.	51 %	91 %	15 %
Irrigated area	% of ha.	79 %	15 %	33 %
Fertilized area	% of ha.	98 %	99 %	70 %
Use of organic fertilizers	% of fertilized ha	8 %	3 %	5 %
Sales to intermediaries	% of tons	68 %	92 %	91 %
Source of financing				
Own resources	% of PP	90 %	91 %	91 %
Financial institution	% of PP	8 %	11 %	7 %
Informal lender	% of PP	17 %	5 %	1 %

Table 2

Farmer characteristics, production practices, and sources of financing

Source: Continuous Survey of Area and Production (ESPAC), INEC (2021).

Intermediaries remain the primary buyers of these products. Only between 7 % and 11 % of farmers access credit through formal financial institutions, of which just 16 % to 20 % originates from public banks; the remainder is obtained from private banks or savings and loan cooperatives. Among rice producers in Guayas, informal credit (17 %) is more prevalent than formal financing, and this percentage may be underreported, due to the sensitive nature of informal lending practices; for example, Chiriboga (2008) documents considerably higher levels of reliance on informal credit sources (see Subsection 5.1).

4

Methodology and participants

The study conducted qualitative fieldwork between 2021 and 2023 in rural areas of Guayas and Los Ríos. These provinces were selected for their reliance on family farming, high initial incidence of COVID-19, and poverty levels. The research followed a multiple case study methodology (Creswell 2007), examining several bounded cases over time through in-depth data collection from focus groups, interviews, and life stories.

Given the importance of family farming in Latin America — measured by its share of farms and its role in food supply, land use, and employment (Leporati *et al.* 2014), this research initially aimed to assess the impact of COVID-19 on agricultural family farming (AFF) and key food chains vital to the economy and food security of the selected territories (rice, corn, and cocoa). However, as the study progressed, deeper structural issues became apparent. The poor performance of these chains stemmed primarily from power imbalances and lack

of coordination among actors. This article thus shifts focus to this broader, longstanding problem, which predates COVID-19 and continues to leave rural communities highly vulnerable to external shocks.

The primary participants in the study belong to the AFF; however, other actors in the selected food chains also took part, enabling a broader understanding of value chain dynamics and stakeholder interrelations. Between April 2021 and January 2023, four rounds of fieldwork were conducted with AFF, including focus groups with male and female producers and life story interviews with women. The research explored the initial impacts of COVID-19, the evolution of production conditions, and the changes in food access for peasant households from 2020 to 2022. Most AFF participants were members of producer associations and lived in rural areas, with few residing in peri-urban areas.

Due to pandemic-related restrictions, a combination of convenience and snowball sampling was used, starting with contacts through association leaders in each territory. The sampling aimed to reflect diverse AFF perspectives, with emphasis on women's experiences. The study focused on market-oriented producers, excluding subsistence farmers and large non-family farms.

Most focus groups were held at association meeting centers, while others took place at farms or leaders' homes. Life story interviews with women were conducted at their homes during the first two rounds and by cellphone in the last two.[4] Nine women participated in the life stories across all four rounds.[5] Twelve focus groups were conducted: four with only women and the rest mixed-gender groups. In total, 122 AFF participants took part in the study, 60 % of whom were women. All produced rice, corn, and/or cocoa for the market, along with other

[4] In each round, all participants were fully informed about the purpose of the research and provided their informed consent to share their thoughts and experiences. They also agreed to have the meetings recorded for later analysis (see Appendix 1.1 for the informed consent communication).

[5] Six out the nine women participated in all rounds, while the remaining took part in some rounds but not others.

crops, like pigeon peas and green plantains. Nearly all also cultivated crops or raised animals for self-consumption.[6]

In June 2022, 11 stakeholders from other segments of the value chains or supporting institutions were interviewed about the challenges these chains faced during the COVID-19 pandemic. They represented the public and private sectors, industry unions, and Nongovernmental Organizations (NGOs). Seven were not directly involved in the chains but belonged to institutions that influence them, such as the Ministry of Agriculture (MAG), the Guayas Provincial Government, and cocoa- and corn-related NGOs. The remaining participants were involved in processing and agricultural input supply.

5

Analysis of the governance of selected chains

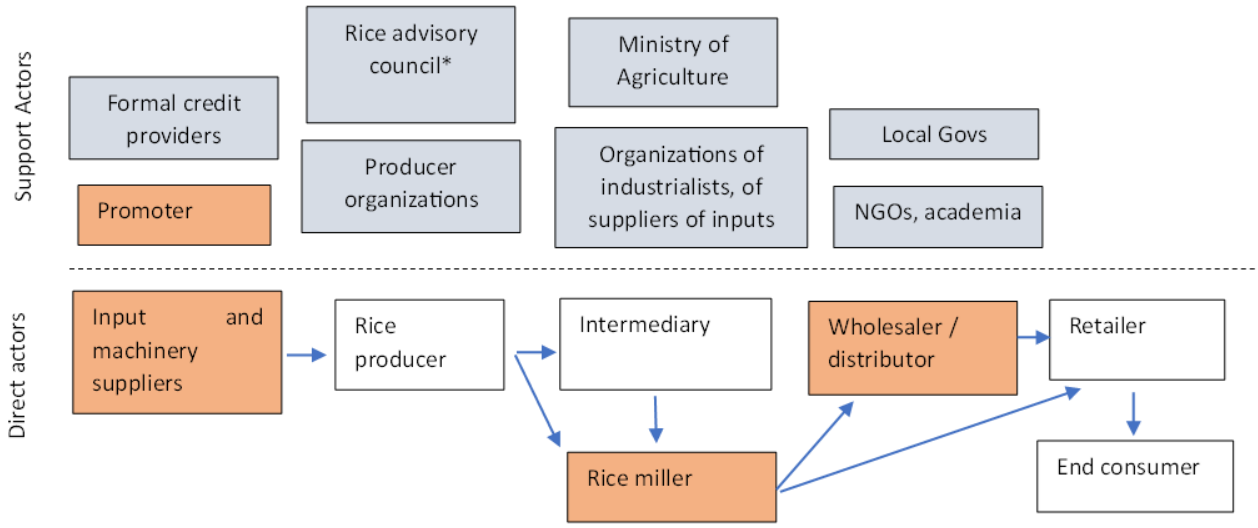
This section defines the interrelationships among actors in the three selected value chains, providing a framework to analyze the critical points that hinder the fluidity of transactions. The analysis is grounded in the context of research participants, including both producers and other interviewed actors, with emphasis on relationships involving small and medium-sized producers. After examining each value chain individually, the discussion identifies shared critical points and explores potential pathways for transforming the associated food systems.

5.1. Rice

Figure 3 shows the actors in the rice value chain in Guayas. Chain dynamics are shaped by those with the most market power (highlighted in

[6] See Appendix 1.2 for a summary of focus group participants and a list of women interviewed for the life stories. Names have been changed, to protect their identities.

orange): input and machinery suppliers, millers (or industrialists), and wholesalers who distribute milled rice.



* In 2006, the Rice Advisory Council was created as an instrument for the coordination between the public and private sectors related to research, production, industrialization, and marketing of this product (https://faolex.fao.org/docs/pdf/ecu66209.pdf).

Figure 3

Schematic diagram of the rice value chain, rice-growing territory of Guayas

Source: authors' own work.

From the industrialist's perspective, wholesalers hold the most market power, as they control market distribution, have storage capacity, and can monopolize production to influence prices. Producers, however, see rice millers as the dominant actors:

> It's the industrialists […]. They're the ones who practically set the price; they're in full communication with each other […]. Nobody can do anything […]. It's a monopoly, and now they pay after 15 days, but we must

cover harvest costs and wages (mixed focus group of rice farmers, Palestina, Guayas, 2nd round).

Velásquez *et al.* (2023) also highlight the dominance of industrialists, especially large millers, who set producer prices, despite government regulations.[7] Similarly, Villanueva *et al.* (2017) note that rice millers function as the sector's main storekeepers. Many also have their own distribution channels and market their own brands (Granados *et al.* 2014).[8]

The power of industrialists and input suppliers is reinforced when they also act as *promoters* — informal lenders who provide credit and influence production decisions, such as seed selection, input use and sale channels. The promoter figure is common in the rice sector of Guayas, where market and institutional failures limit access to formal credit. Based on interviews in Daule — the country's main rice-growing canton, Chiriboga (2008) reports that promoters finance 80 %-90 % of producers. He describes them as a hybrid between traders and agricultural financiers.

As observed in this study, promoters control nearly all critical points in the value chain. Beyond financing, they supply inputs and/or own rice mills, making producers dependent on the conditions they impose:

> If we had timely credit, training, and proper technology, great. If we were motivated and had incentives, great. But how can we change our people's mindset when it's sold to the «big boss»? […] The rice mill owners are the ones who promote our farmers and now even sell their own agrochemicals. As we say, they have, «triple money»: they own the mill,

[7] The government of Ecuador sets a price for rice and other agricultural products under the minimum support price policy; however, weak enforcement prevents key actors from adhering to this regulation.

[8] According to the Internal Revenue Service, there were 1,831 rice millers in the country by 2023, 56 % of which were in the province of Guayas. Rice millers in Guayas account for 98 % of the total value of assets and 90 % of the revenue generated by all rice millers nationwide.

the agrochemicals, the truck that carries the rice; they have it all (mixed focus group of rice farmers, Santa Lucía, Guayas, 4th round).

Although promoters control several points in the value chain, none of the participants reported a coordinated relationship between promoters and producers. As a result, the rice value chain remains fragmented: producers struggle to sustain a traditional activity, while upstream and downstream actors seek maximum returns at the expense of producers and consumers. Under these conditions, the flow of information is very limited, enabling opportunistic behavior, undermining transaction efficiency, and leading to market failures. Producers and consumers are the most vulnerable; especially producers, who show limited agency and bear most of the agricultural risk — as seen in 2021, when rice prices dropped sharply, compared to 2019 and 2020 (see Figure 4):

> […] the price of the rice is terrible […]. We don't know what else to do. We took the streets, and most of the farmers got sick from the Molotov bombs they threw at us […]. What we're going through is tough. Rice is selling for $20-$24, even though the minister, before leaving office, set the price at $32.50 […]. That price was never honored. (president of a Santa Lucía rice growers association, short interview, September 23, 2021).

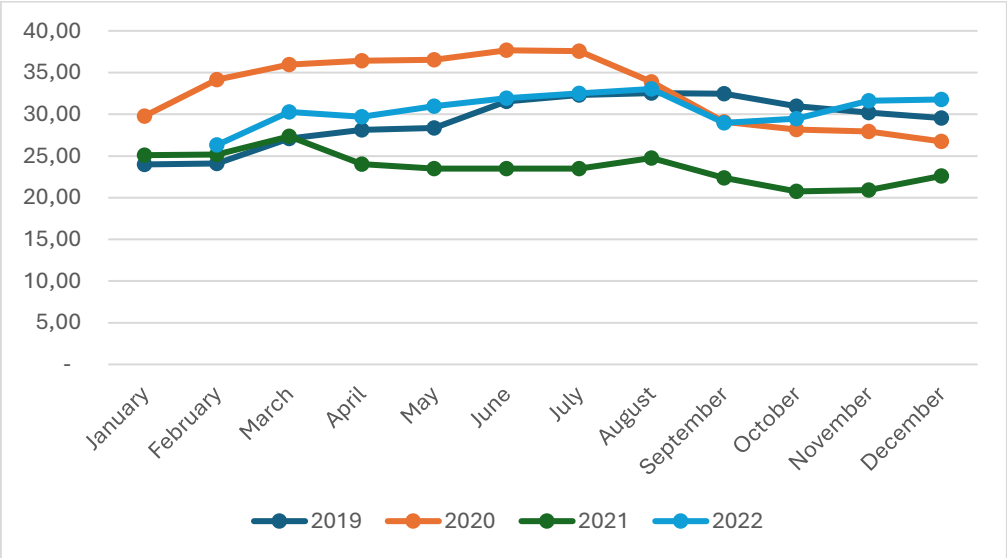


Figure 4

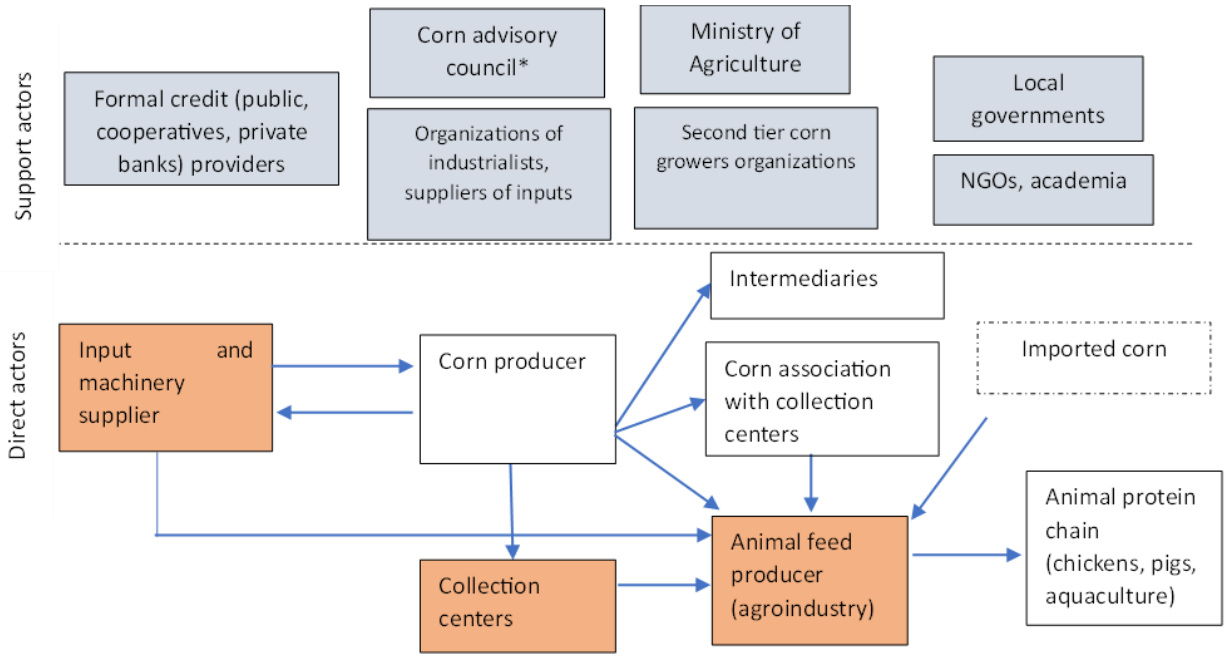
Average monthly producer prices ($/sack of 200 pounds), paddy rice, 2019-2022

Source: Sistema de Información Pública Agropecuaria del Ecuador (SIPA), Ministerio de Agricultura (MAG) (2023). Authors' own work.

Although irrigation-user boards in the area have ensured irrigation access for small and medium-sized producers and helped connect them with government programs, these boards — and rice producer organizations more broadly — have struggled to organize effectively or negotiate with suppliers and buyers. According to Chiriboga (2008), after the State withdrew support in the late 1980s, Daule's irrigation-user boards limited their role to irrigation management, leaving production and marketing to individual farmers. As a result, producers turned to traditional systems of financing, input supply and commercialization. Chiriboga also notes the growing prominence of promoters during this period.

5.2. Corn

Figure 5 depicts the corn value chain in Los Ríos. Although corn has other uses, the figure focuses on its main destination — animal feed production, which consumes 87 % of national corn production (MIPRO n.d.). Market power in this chain is concentrated in input and machinery suppliers, collection centers, and the animal feed industry.



* In 2012 the Advisory Council for the Yellow Corn – Animal Feed – Animal Protein Producers Agrifood chain was created as an instrument for dialogue between the public, private, and popular sectors related to this chain (https://faolex.fao.org/docs/pdf/ecu139851.pdf).

Figure 5

Schematic diagram of the corn value chain, corn-growing territory of Los Ríos

Source: authors' own work.

Corn producers have several market options, but most sell to collection centers, that act as intermediaries between producers and the agroindustry (Piedrahíta 2016). Compared to rice, producer associations in the corn sector are more active in commercialization, as some operate their own collection centers to gather members' production before selling to the agroindustry. While this connection with the agroindustry seems to shorten the value chain and improve producer prices, that is not always the case. Many associated producers still sell outside when intermediaries offer better prices:

> It's convenient [to sell outside] because sometimes there is another price, and sometimes the scale is better […]. Once, the scale was off […], and the seed was small. The administrator told me: «No. I'll pay you less because the seed is small»; so, we argued […]. After that, we sold less [to the association] […]. This year [my husband] said: «The scale is good and the payment here is good»; so, he sold to the association (Mrs. Linda, corn producer, Ventanas, Los Ríos, 1st round).

This suggests that even when selling directly to the agroindustry, producers lack meaningful connections with agro-industrial actors, as clear benefits are absent. Similarly, producers' commitment to their associations is weak, leaving farmers to absorb most of the sector's risks:[9]

> Corn planting is starting. We plant as soon as the rains start, in December, but many of us are changing our minds, because we need to plow […], buy seeds and fertilizer […]. What will be left? […]. Before, corn was a «piggy bank», but now how can it be a piggy bank? […]. Everything is expensive […]. When we sell, prices drop: it doesn't compensate […]. The profit we make barely covers our wages […]. And the producer who rents the land, what will be left for them? (focus group of women corn growers, Ventanas, Los Ríos, 2nd round).

Even when there have been arrangements, such as contract farming in corn producing cantons, studies by Vinueza (2009) and Borja and Castillo (2013) find that the benefits largely favor industrialists. Due to the imbalance in bargaining power, contract conditions fail to ensure fair risk-sharing.

The uncertainty farmers face influences their decision-making, which combined with limited capital leads them to take the most familiar path: relying

[9] See more citations on risks and uncertainty in the production of corn in Appendix 2, Table A2.1.

on production techniques, that are often inefficient and environmentally unfriendly, due to their dependence on agrochemical suppliers:

> Balzar never had the «asphalt stain»[10] or all these viruses that are decimating corn crops, but this year it's already 100 %: it appears in every corn crop […]. If you don't apply fungicide in a corn crop, it won't grow. [That means] more investment, more contamination […]. I'm sure if we tested our blood, all farmers would show traces of chemicals […]. This can be genetically transmitted to the next generation. It's a social problem in the making (mixed focus group of corn growers, Balzar, Guayas, 4th round).

This aligns with other studies. Bonilla and Singaña (2019), for instance, suggest that a government program implemented in Ecuador between 2012 and 2014 to promote high-yield corn seeds, likely contributed to the rise of pests and diseases. This is because cultivating these seeds in uncontrolled environments makes them highly vulnerable, requiring intensive pesticide and chemical fertilizer use.

Studies in Mocache, Los Ríos, also find widespread sanitary issues in corn production and heavy reliance on chemical insecticides and herbicides for pest and disease control. These problems result in lower yields, reduced income, and difficulties recovering investment. At the same time, farmers must cope with low corn prices and high input costs, leading to unfavorable production decisions — such as reducing hired labor or fertilizer use, and cuts in household spending, due to low crop profitability. Limited capital, adverse weather, and maize perishability force farmers to depend on input suppliers, who offer credit, and buyers, who impose unfavorable terms — often paying below the official price and delaying payment by 8 to 30 days (Piedrahíta 2016, Guadamu 2019).

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[10] *Asphalt stain* («mancha de asfalto» in Spanish) is a crop disease produced by the interaction of three fungi: *Phyllachora maydis, Monographella maydis,* and *Coniothyrium phyllachorae*. They produce leaf and plant death (Intagri n.d.).

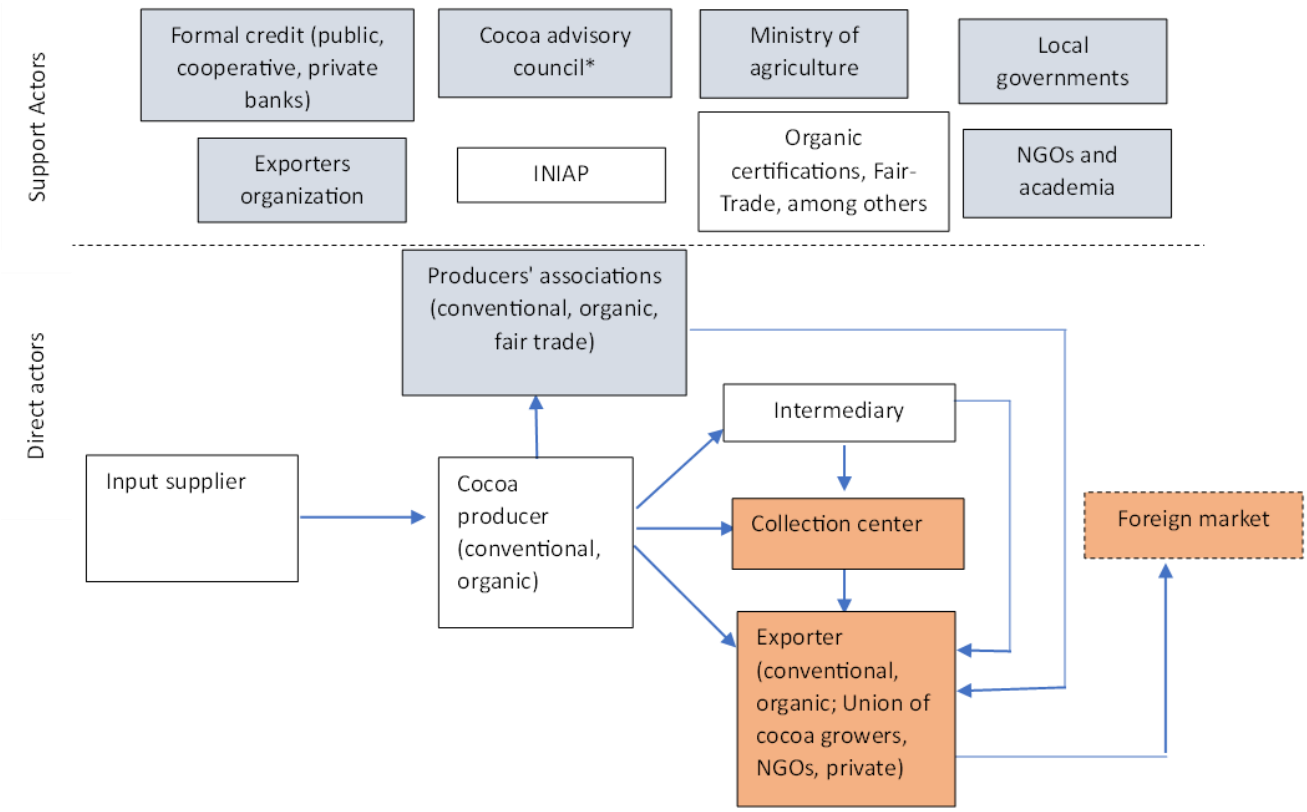
On the agroindustry side, animal feed producers in Ecuador often face structural constraints, as they are required to purchase all domestically produced corn, which is typically more expensive than imported corn. The Corn Advisory Council annually sets import quotas based on a supply and demand analysis, ensuring all domestic corn is absorbed first (MAG 2024). However, conflicts of interest frequently arise, affecting the timing and quantity of imports and creating political tension (La Hora 2024).

While both producers and industry could benefit from productive and institutional reform of the corn value chain, each operates independently, resulting in a disconnected, inefficient system that harms the environment and the economy of small corn producers.

5.3. Cocoa

Producer diversity in the cocoa value chain is greater than in the other two chains analyzed. Beyond differences in farm size and organization (organized vs. unorganized producers), cocoa farmers also vary in the type of cocoa they cultivate — fine flavor vs. regular cocoa, as well as in their production methods, with some following conventional practices and others adhering to organic standards.

Figure 6 outlines the cocoa value chain from the context of small and medium-scale producers. As around 88 % of national cocoa production is exported (MIPRO n.d.), the figure focuses on that market. Producers sell to intermediaries, collection centers, or directly to exporters, with market power concentrated on these buyers, especially in the latter two. Collection centers carry out a significant portion of the cacao fermentation and drying process within the value chain (González 2012). The following subsection distinguishes between conventional and organic cocoa.



* In 2003, the Consultative Council for the Cocoa Agro-industrial Chain was created as an instrument for coordination between the public and private sectors related to the production, marketing, and industrialization of this product (https://faolex.fao.org/docs/pdf/ecu40934.pdf).

Figure 6

Schematic diagram of the cocoa value chain, cocoa-growing territory of Los Ríos

Source: authors' own work.

5.3.1. Conventional cocoa

In the conventional cocoa value chain, although there is also disconnection between producers and buyers, with an extensive value chain (González 2012),[11] some exporters are increasingly playing a positive role in shaping producers' decisions by providing training in good management practices. This trend is driven by the growing international demand for environmentally friendly cacao:

> […] where we sell our cocoa, the market where they deliver also demands higher quality, so they're encouraging us to work more with machetes, with fewer inputs, with organic products. We're working on that […]. They're going to provide us with talks, training […]. Just the other day, they came by and left us organic fertilizer to apply (Mrs. Paola, cocoa producer, Mocache, Los Ríos, 4th round).

Especially among non-associated producers, key challenges in the marketing of conventional cocoa include: *a)* no price differentiation between fine flavor and regular cocoa (Castro Naranjal Collection, CCN-51), despite the former's higher quality; *b)* tare deductions by buyers, and *c)* price variability.[12]

Fine flavor cocoa commands a premium in international markets, but this rarely reaches small farmers in Ecuador, as the margin is absorbed by upstream value chain actors (Díaz-Montenegro *et al.* 2018). The lack of price differentiation by intermediaries and collection centers fails to offset fine flavor cocoa's lower yields compared to CCN-51, leading to a decline in its cultivation and a rise in CCN-51 production (Castillo 2013).[13] In addition, in the study regions, many corn

[11] According to González (2012), there can be between two and four intermediaries between cocoa production and exporters.

[12] See Appendix 2, Table A2.2, for citations on the challenges in cocoa marketing among non-associated conventional producers.

[13] Still, it is worth highlighting governmental efforts to sustain fine flavor cocoa production between 2013 and 2021 through the National Fine Flavor Coffee and Cocoa Reactivation Project (PRCC). This initiative rehabilitated or renewed more than 200,000 hectares of fine amora cocoa, increased productivity, and enhanced the capacities of some collection centers (Rimisp 2023).

farmers have gradually shifted to CCN-51 cacao, due to its lower input and maintenance requirements compared to corn:

> Now I am growing cocoa. I used to grow corn. I made the switch last year […]. I told myself: «I was getting older and couldn't keep working like that anymore» […]. Cocoa requires less work because, once it's properly planted, you don't have to keep cutting the weeds, just clear away the debris and throw some water on it; it's easier and less expensive […]. With corn, you must apply urea over and over again (Mrs. Roxana, corn and cocoa producer, Ventanas, Los Ríos, 2nd round).

To promote fine flavor cacao cultivation, Díaz-Montenegro *et al.* (2018) propose a multidimensional policy strategy, that includes developing a differentiated national value chain, enhancing small farmers' asset endowment, and implementing income diversification measures.

It is worth highlighting the collaborative efforts in the cocoa sector, that led to its designation in 2019 as a priority for advancing the Sustainable Development Goals and strengthening the national economy. A Competitive Improvement Plan was established, focusing on dialogue and strategic priorities, such as quality, productivity, institutional development, and credit. The Cacao Cluster Foundation was also created to promote sustainability in the value chain, with support from the government and international organizations. However, these efforts have yielded limited results, due to poor representation of primary producers, weak leadership, and a centralized rather than territorial approach (Rimisp 2023).

5.3.2. Organic cocoa

International organic certifications, Fair-Trade, and other certification schemes play a key role in fostering closer interaction between exporters and producers. For organic cocoa, producer organizations are fundamental for small

farmers' participation. However, maintaining certification relies heavily on farmers' adherence to organic practices, where a single lapse can affect the entire group, making this a highly sensitive issue observed during fieldwork:

> [The association] is suspended; it's not allowed to export again, since six-seven months ago. An audit found some non-conformities, not just among farmers but also right there [in the association] […], for failing to implement live barriers […]. They still haven't received the certification back (Mrs. Marcela, cocoa producer, Mocache, Los Ríos, 4th round).

Cocoa productivity is heavily influenced by the variety planted, fertilization, cleaning, pruning, and irrigation. These factors are especially challenging for small organic producers, many of whom lack irrigation and do not fertilize, resulting in very low yields (Castillo 2013). For these producers, the premium price of organic cocoa does not offset the higher labor costs they incur (Acebo 2016). Consequently, despite closer buyer-producer ties due to organic certification, producers express dissatisfaction, and plantations show a clear need for improvement:

> In conventional cocoa they use chemicals […]. It yields about 32 qq/year per hectare […], while organic cocoa — without foliar fertilizer — barely reaches 10 qq/year, if we're exaggerating. We sell it for $100, but it doesn't compensate […]. In organic cocoa we use a scythe, which means more labor, whereas in conventional cocoa the work is simplified (mixed focus group of organic cocoa farmers, Mocache, Los Ríos, 2nd round).

5.4. Common problems

There are additional challenges common to all these value chains. They include limited access to public credit and the roles of both the State and producer organizations.

As noted in Section 3, access to public credit is highly restricted for producers in the studied value chains. In addition to limited availability, systemic issues undermine its effectiveness. The public credit system is characterized by stringent requirements, which some credit agents exploit to demand unofficial payments from farmers, fueling corruption. Moreover, loans are often delayed, disrupting productivity and planning, and amounts are typically insufficient to support infrastructure improvements, leaving producers trapped in subsistence farming:[14]

> Loans are not disbursed on time either […]; it's just a scam. If you go to the [public bank], all the men working there act as if they own the place […]. They marginalize you, and some even ask for bribes […]. That's why small producers often turn to loan sharks, because it's faster, but they may end up paying with their lives, because they get killed (mixed group of rice farmers, Palestina, Guayas 2nd round).

The public sector shows perhaps the greatest disconnection, both among its own institutions — such as between central and local governments or among different ministries — and with key value chain actors, like producers and industrialists. Although the MAG has led numerous plans and projects, their reach in the study areas has been minimal. Producers show strong psychological dependence on the public sector, especially the central government, holding it responsible for poor outcomes, while repeatedly calling for its involvement. However, when interventions do occur, they are often marred by inefficiency and corruption:[15]

> From [former president] nothing arrived. They offered us kits […], but many times they included liquids we didn't recognize or used, and they

[14] For additional citations on issues related to public credit, see Appendix 3, Table A3.1.

[15] For additional citations on limitations of the State and producer demands, see Appendix 3, Table A3.2.

were overpriced. They only sent seeds, two small bottles of liquid, and six bags of urea […]. I didn't like it either, because they gave us the worst brand available (focus group of women corn growers, Ventanas, Los Ríos, 2nd round).

Beyond producers, other value chain actors also noted the State's absence in agriculture and the inefficiency of price-setting policies, which fail to incentivize productivity. The observed State dependency, despite its limitations, is consistent with Van Bers *et al.* (2019, p. 5), who argue that in developing countries «economic scarcity and an undeveloped private sector have the counterintuitive effect of concentrating political and economic power in the state, despite the relatively weak state capacity, while simultaneously driving politics into the informal sector». This overreliance on the State limits the role of the private sector and civil society. A clear example is the weak associative capacity among agricultural producers, who often join associations solely to access State benefits and leave once those expire:

We had an association called Santa Rosa del Recreo, but members became discouraged when urea was no longer available […]. People started leaving, saying: «I'm not getting any benefits anymore» (Mrs. Carolina, rice producer, Daule, Guayas, 1st round).

Distrust, complacency, dependence on State paternalism, and disconnection among actors in the agricultural chain help explain why many producers are often unwilling to pursue shared goals that could bring greater benefits:

[Buying inputs together] was initially proposed by MAG. They came and offered some training […] but no, the colleagues aren't very united. They also proposed building a storage facility to sell our products

collectively and even buy from other farmers. INIAP[16] also had a project for us to market seeds […], but again, the colleagues aren't very united (Mrs. Juana, rice producer, Palestina, Guayas, 2nd round).

Mistrust, rooted in past experiences with poorly managed associations, hinders the development of a shared vision and collective action:

Ecuadorians don't trust associations, because past administrations have mismanaged them […]. That discourages farmers from joining. We must work on the institutional framework (mixed focus group of cocoa producers and other sector participants, Milagro, Guayas, 4th round).

Farmers haven't learned to take ownership and empower themselves within the association […]. They see the association as someone else's business […]. They don't see it as everyone's association (mixed focus group of cocoa producers and other sector participants, Milagro, Guayas, 4th round).

In summary, the critical points hindering the development and transformation of the studied agricultural chains and their related food systems can be grouped into four interrelated points, all reflecting weak governance: *a)* market power concentration; *b)* disconnection among value chain actors; *c)* factors limiting farmer associativity and its effectiveness, and *d)* rural credit deficiencies, leading to reliance on informal lenders. Table 3 summarizes these factors by value chain.

[16] National Institute for Agricultural Research.

Main critical points	Rice	Corn	Conventional cocoa	Organic cocoa
1. Concentration of market power	Market power concentrated in the hands of input suppliers, promoters, rice millers, and wholesalers	Market power concentrated in the hands of input suppliers, collection centers, and animal feed industry	Market power concentrated in the hands of collection centers and exporters	Market power concentrated in the hands of exporters
	Small producers lack agency			
2. Disconnection among actors at all levels of the value chain	Lack of coordination among chain actors, regarding quality, price or sustainability in the production process Imperfect information generates opportunistic behavior and reinforces market power	Lack of coordination among value chain actors, to guide production decisions; risk-sharing is absent Industrialists push for lower prices, while small producers do not receive the official price	Extensive value chain, limited coordination among actors regarding quality and price, absence of price differentiation between cocoa varieties. Efforts for value chain integration exist, but primary producers are poorly represented	Greater but still insufficient connection among value chain actors, leading to low productivity and farmer dissatisfaction with prices
	Lack of governmental support, centralized rather than territorial approach			

3. Factors limiting farmer associativity and its effectiveness	Limited coordination among producers	Challenges in farmers' commitment and coordination	Limited coordination among producers	Instances of farmers' lack of commitment
	Ethical misconduct among association leaders, leading to mistrust and hindering collective action; complacency; dependence on State paternalism			
4. Deficiencies in rural credit provision, leading to reliance on informal lenders	Promoters take advantage of the limited availability and inefficiencies of public credit, further reinforcing the market power of actors in point 1	Limited availability and inefficiency of public credit force farmers to rely on input providers or buyers for credit, reinforcing the market power of actors in point 1	Limited availability and inefficiencies of public credit restrict credit access and hinder infrastructure upgrades, limiting small producers' growth	

Table 3

Critical points – summary by value chain

Source: authors' own work.

Revisiting our conceptual framework, Table 3 aligns with it as follows: point 1 addresses power asymmetry arising from market power concentration and constrained agency of small producers, point 2 pertains to communication gaps among actors, and point 3 underscores the limited collective agency of small producers. Together, points 1 to 4 reflect a weak institutional framework that sustains market failures and offers insufficient incentives for actors to comply with regulations, define shared goals, and collaborate in achieving them.

5.5. Possible leverage points

Identifying leverage points involves determining where in the chain interventions would be most effective, who can lead transformative processes, and through what types of actions. In Figures 3, 5 and 6, the actors highlighted in gray are those with the capacity or power to drive transformation — provided they are willing and have a project for change. These actors, summarized as follows, include representatives from the public and private sectors, Academia and NGOs:

- Central government (mainly, the Ministry of Agriculture)
- Formal credit providers
- Local governments
- Producer organizations
- Industrialist/exporter organizations
- NGOs and academic institutions

However, the previous analysis revealed multiple disconnections within the chains, suggesting that lasting change is unlikely when driven by a single actor or level. The analysis pointed to shortcomings in central government actions, market and institutional failures, limiting credit access, and barriers to producer associations that constrain organizational potential. Instead, joint action is needed to strengthen governance and enable meaningful transformation. As Leeuwis *et al.* (2021) note, despite the high uncertainty and lack of consensus in

food systems, the interdependence among actors allows for significant change when key players reach sufficient agreement and coordination around shared goals.

A potential option for joint action is the consultative councils, established for each value chain as platforms for public-private dialogue (see footnotes to Figures 3, 5 and 6). Although intended to bring key stakeholders to the discussion table, they have failed to promote meaningful dialogue or collaborative problem-solving to improve the fluidity of transactions and food system outcomes. According to agro-industrial stakeholders interviewed for this study, these councils lack representativeness (as they are held at the national level, with participation determined by MAG), meet infrequently (once or twice a year), and focus narrowly on minimum prices and import quotas rather than on policies that could drive systemic change.

To avoid the shortcomings observed in the advisory councils in uniting key actors for value chain and food system transformation, four criteria are proposed below, along with international examples, where these criteria have been successfully met.

5.5.1. Territoriality

Consultative councils operate at the national level, making their policy recommendations often disconnected from local realities and with limited impact. Instead, initiatives should originate within the territories to reflect their specific characteristics (Berdegué *et al.* 2020). These territorial initiatives should incorporate a diverse range of actors and establish a stable institutional framework, independent of the government in power. Nonetheless, support from the State and other extra-territorial actors remains essential to provide resources, legitimacy, and incentives (Berdegué *et al.* 2015).

The bio-districts experience illustrates the value of joint action among diverse actors for sustainable territorial development. This initiative began in 2009 in Southern Italy, promoted by the Italian Association for Organic Agriculture, and by 2019 34 bio-districts had been established across the country.

These local production systems prioritize organic farming and integrate agricultural activity with the territory's economic, environmental, and socio-cultural dimensions. Their governance involves public and private actors, including consumer associations, local governments, and producer organizations. In 2017, bio-districts gained official recognition in Italian legislation, and some regional governments introduced regulations to support them (Guareschi *et al.* 2020).

5.5.2. Active and collaborative pursuit of innovation (for efficiency, sustainable production, and value addition)

Schejtman and Berdegué (2004) underscore the crucial role of innovation in driving productive transformation, which, alongside institutional reform, is essential for fostering rural territorial development. They emphasize that innovation must be systemic, not isolated from the broader context surrounding production units. Similarly, Bitzer and Bijman (2015) propose a «triple-co» approach to innovation: collaborative (multi-actor participation), complementary (technological, organizational, and institutional innovations), and coordinated (across value chain stages).

Innovation platforms (IPs) exemplify spaces that foster multi-actor interaction and promote innovation at the territorial level under fair conditions for all stakeholders. Implemented in several developing countries — particularly in Africa — to support agricultural research for development, IPs represent a shift from purely technological innovation to a collaborative, system-wide approach that integrates both technological and institutional change (Schut *et al.* 2016). These spaces, however, face the challenge of moving beyond isolated experiments, to drive paradigm shifts, foster learning, and build lasting capacities. Their success has relied on organizational and financial support from international organizations, NGOs, Academia, and governments *(ibid.).*

Another valuable initiative is the Science and Technology Backyards (STBs), developed in 2009 by scientists in northern China. STBs bridge the gap between researchers and small-scale producers to collaboratively generate sustainable innovations. Today, over 100 STBs operate nationwide, combining «top-down» approaches with «bottom-up» initiatives (FAO 2022, Jiao *et al.* 2019). The model integrates government support through policies and

regulations that promote technological advancement, as well as private enterprises that contribute financing, benefit from innovations and help accelerate technology transfer. Producer communities also play a crucial role in disseminating knowledge and engaging diverse producer groups (Jiao *et al.* 2019).

5.5.3. Fair distribution of benefits

Stanco *et al.* (2020) examined a case of sustainable innovation in the Italian wheat chain, led by a processing company and involving the joint participation of producers, logistics providers, Academia, and the government. The initiative's success was linked to research-driven innovation, multi-actor collaboration, access to public policy, and effective governance. A key governance element was the fair distribution of value along the chain, ensured by well-defined contracts that incentivized participation, especially from farmers. This case underscores the importance of governance mechanisms that promote equitable distribution of value along the chain to enable innovation *(ib.).*

Another way to promote equitable participation among value chain actors is through agrifood chain organizations (ACOs), or interprofessional organizations. By institutionalizing cooperation, they help reduce transaction costs and enhance benefit distribution (Cadilhon and Dedieu 2011). A study by Oyarte and Quintana (2023) analysed ACOs in Colombia and France, where legal frameworks have enabled successful cooperation within the productive sector. Financing — crucial to organizational functioning — is clearly defined in both cases: through parafiscal funds in Colombia and the extension procedure in France, a self-regulation mechanism that makes sector contributions mandatory. These organizations can exist at various geographical scales.

5.5.4. Joint definition of risk management mechanisms

Recognizing that producers have historically borne most of the agricultural risk — affecting their decision making — and that such risks can be transmitted directly or indirectly across the value chain (Jaffee *et al.* 2010) underscores the need to integrate risk management into any effort to transform supply chains and

food systems. Risk transmission may be short-term, via low productivity and poor product quality, affecting processors and consumers, or medium to long-term, through environmental degradation, climate change, and health impacts from the misuse of agrochemicals.

The case of Uruguay's rice export chain stands out for its collective risk coverage. Palmer (2012) describes this case; although he does not explicitly refer to risk management, his account shows how coordination and constant communication among producers, processors, researchers, and exporters have enabled effective mitigation or transfer of production, market, finance, logistics, and environmental risks. The result is a high-yield system that operates without government protection, reducing uncertainty for the different actors and fostering stability and shared prosperity.

While none of the examples cited under the four proposed criteria are without challenges, they demonstrate the potential of strong governance, grounded in continuous dialogue and cooperation among value chain actors, to enable the design and implementation of sustainable and equitable innovation. They also underscore the need for action at both territorial and national levels, and the crucial support of governments, international organizations, NGOs, and Academia in launching and/or sustaining such initiatives.

6

Summary and conclusions

Food systems worldwide have produced undesirable outcomes, including food insecurity and climate change. Their transformation is widely recognized as a challenge by governments and Academia. Yet, efforts have often focused on isolated actions or single components — such as production or consumption, resulting in failure or limited impact. Literature emphasizes governance and a systems approach as essential, to achieving significant change in food systems. This article examined the governance of three agricultural value chains central to

the food systems of the Ecuadorian provinces of Guayas and Los Ríos, providing insight into the context in which many producers operate.

Data gathered through focus groups, life stories of women producers, and interviews with key actors in the rice, corn, and cocoa value chains reveal governance weakness across these chains. The observed production and trade conditions both stem from and reflect weak governance structures, contributing to the food system's unfavorable outcomes. Consistent with our conceptual framework, the analysis identified four critical points that characterize this weak governance:

1. Market power concentration: an inequitable distribution of power and rents, exacerbated by the lack of agency among small-scale producers.
2. Disconnection or lack of coordination: poor communication and collaboration across all levels of the value chains, leading to inefficient decision-making.
3. Barriers to producer association: mistrust, complacency and State paternalism discourage collective action, weakening producers' ability to advocate for their interests.
4. Deficiencies in rural credit provision: limited access to formal credit forces reliance on informal lenders, further strengthening the market power of dominant actors in the value chains.

Underlying these issues is a weak institutional framework, marked by poor rule enforcement and limited incentives for cooperation, which perpetuate market failures.

Addressing these complex issues for value chain and food system transformation requires a systemic perspective. This involves the need to strengthen governance by fostering dialogue among chain actors and generating a shared vision, while also establishing clear rules to reduce transaction costs, create incentives, and ensure fair distribution of wealth and risk. Four criteria have been proposed in this study to promote effective stakeholder interaction:

- Territoriality: initiatives should emerge from the territories, involving diverse local and external actors, aiming to build a stable institutional framework for production, independent of the government in power.
- Active and collaborative pursuit of innovation: innovation is crucial for competitiveness, and it must be approached systemically. Successful outcomes depend on coordination along the value chain and the integration of technological, organizational and institutional innovations.
- Fair distribution of benefits: governance is strengthened when profits are fairly distributed across the value chain. Clear contracts or legal frameworks create incentives for the participation of all actors.
- Joint definition of risk management mechanisms: as risks are transmitted across the value chain, joint management is essential for food system transformation. Risk-sharing leads to benefits for all participants.

Transformation requires leadership, but a single actor cannot succeed alone. Broad stakeholder involvement in agrifood chains is essential for profound changes that drive economic development, social welfare, and environmental sustainability. However, effective collective efforts take time and must be seen as medium- to long-term processes.

Further research should build on this analysis by delving more deeply into how supply chain actors perceive market power, and how power dynamics influence decision-making, profit distribution, and overall chain performance. A closer comparative analysis should also examine the factors driving differences in stakeholder behavior across chains.

7

Conflict of interest

The author declares that there is no conflict of interest, of any kind, affecting the objectivity of this manuscript.

8

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9

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