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Brewing Resistance: Indigenous Knowledge and the Contestation of Colonial Powers Through Value Chains for Coffee—A Literature Review

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Abstract

Through a literature review, we examine how Indigenous Knowledge (IK) is addressed in studies of value chains (VCs) for coffee and the types of knowledge recognized. We undertake a decolonial critique of capitalocentric paradigms, prioritizing place-based ontologies and relational socioecological practices to rethink coffee quality and value creation. Indeed, "quality" and "value" are grounded in the lived experiences of those who sustain the land—Indigenous and peasant communities. Actors' epistemologies sustain coffee VCs through context-specific responses to systemic, epistemic, and ideological crises while asserting governance models for their well-being alongside dominant frameworks. Although research on coffee VCs has been extensive, it rarely engages these knowledge systems through a decolonial lens. Consequently, the political and epistemic significance of place-based and relational knowledge in shaping coordination mechanisms—such as quality and value—remains insufficiently theorized and empirically overlooked. Emerging interdisciplinary research on actors' positionalities frames VCs not as neutral commodity exchanges but as contested political arenas where situated knowledge systems actively reshape and re-signify the value of coffee. This paper moves beyond listing Indigenous practices or diagnosing the still-colonial industry structures. It demonstrates how IK-based practices constitute situated responses to coloniality's multiple dimensions. Therefore, we foreground not only critique but agency, as observed in agroecological practices, narratives of cultural identity, community-based governance, or cooperative management.

Keywords Indigenous knowledge, coffee, value chains, decolonial lens

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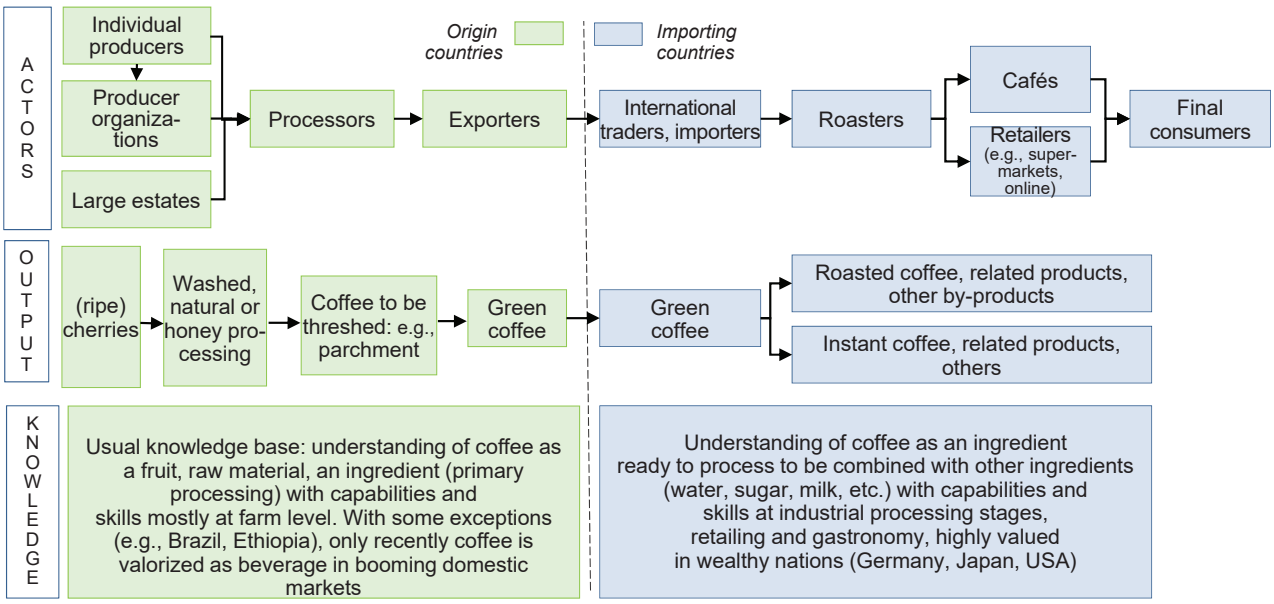
1. Introduction

This paper focuses on Indigenous communities located in coffee origin countries, whose relational systems interweave cultural plurality and ecological management—dimensions often overlooked in coffee value chains (VCs) research. VCs are not just a means of exchanging goods across borders between dominant and less powerful actors. VCs connect people in unprecedented ways across culture, class, age, gender, race, ethnicity, citizenship, and religion, and have shaped new and interconnected networks of social relations embedded in norms and values specific to different origins, occupations, and business regimes (Reinecke et al., 2018). Moreover, the quality of coffee is mostly measured by its material quality attributes, which are communicated, though not always, through labels (e.g., Organic/Fairtrade) or at the moment of consumption (Daviron & Ponte, 2005), without considering the narratives and positions of the producers who primarily grow and process this product (Quiñones-Ruiz & Giraldo-Liévano, 2022). Based on a literature review on Indigenous knowledge (IK), this paper seeks to answer the following questions: How is IK addressed in research on VCs for coffee? What types of IK are recognized as relevant to the coffee chain?

A VC, defined as "the sequence of productive (value-added) activities leading to and supporting final consumption" (Sturgeon, 2001, p. 11), encompasses diverse actors and processes, from smallholder farmers to consumers (see Figure 1). Of the world's approximately 12.5 million coffee farms, about 95% are smallholders concentrated in 20 countries where the climate and soil are (still) suitable for growing coffee (Bozzola et al., 2021). Yet, despite their pivotal role in sustaining the coffee industry, approximately 5.5 million small producers live below the international poverty line of $3.20 a day (Bozzola et al., 2021, p. 2). This paradox underscores the urgent need to examine how VCs for coffee integrate socioecological dimensions, particularly those shaped by IK, to address interconnected crises such as climate change adaptation, biocultural conservation, and livelihood resilience (Bulitta & Duguma, 2021; Harvey et al., 2021; Naylor, 2022). By centering IK, this analysis aims to explore how situated knowledge systems—shaped by cultural, ecological, and historical contexts—transcend capitalocentric frameworks (Gibson-Graham, 1996) of value by engaging in community-based relations and collective goals.

Fig. 1 *The Illustrative Example of the Fragmented Knowledge-Based Value Chain for Coffee*



Note. Source: Adapted from Quiñones-Ruiz & Salcedo-Montero (2023).

The next section outlines theoretical concepts following a decolonial lens. Subsequent sections detail the literature review methodology (e.g., selection criteria, data categorization, and analysis), present results through a decolonial lens, and conclude with discussion and implications.

2. Proposed Decolonial Analytical Framework

2.1 IK From a Decolonial Lens

The IK is a place-based epistemology in which "meaning and values are rooted in the land and are closely related to a 'sense of place'" (Berkes, 2012, p. 6). IK is relational (Toledo, 2001) in that it "refers to systems of monitoring, recording, communicating and learning about the relationships between humans, nonhuman plants and animals, and ecosystems that are necessary for any society to survive" (Whyte, 2017, p. 157). IK is also dynamic and evolving as it "is generated in the immediate context of the livelihoods of people" and "undergoes constant modifications as the needs of the communities change" (Agrawal, 1995, p. 25). Kincheloe & Steinberg (2008, as cited in Breidlid, 2016, p. 62) argued that "Indigenous knowledge is not a monolithic concept … not everyone who identifies with a particular Indigenous culture produces knowledge the same way, nor do different Indigenous cultures produce the same knowledge." IK—place-based, relational, and dynamic—is further rooted in ancestral ties and collective identity (Huffaker, 2021). As such, IK is understood both as an epistemological framework coexisting with capitalocentric systems and as a locus of agency contesting modernity's homogenizing narratives (Ndlovu-Gatsheni, 2020).
Given that this paper understands IK through the lens of decoloniality, key concepts such as the coloniality of power (Ndlovu-Gatsheni, 2020; Quijano, 2000) and pluriversality (Escobar, 2020; Naylor, 2022) guide our analytical framework. This section outlines the conceptual framework through an analysis of three dimensions of coloniality, namely labor, knowledge, and being. It then examines how quality and value are achieved within coffee VCs.

The modern narrative has derived from the establishment of patterns of power, referred to as the coloniality of power (Ndlovu-Gatsheni, 2020; Quijano, 2000). This concept helps in investigating "how the current 'global political' was constructed, constituted, and configured into a racially hierarchized, Euro-American-centric, Christian-centric, patriarchal, capitalist, heteronormative, hegemonic, asymmetrical, and modern power structure" (Grosfoguel, 2007, as cited in Ndlovu-Gatsheni, 2020, p. 35). It further reveals how colonial frameworks persist in shaping today's global systems of power and value. For the analytical purposes of this paper, the coloniality of power will be approached from three different axes, namely, coloniality of labor, coloniality of knowledge, and coloniality of being (see Table 1).

Coloniality of labor. This facet of coloniality derives from two fundamental axes of the established model of power (Quijano, 2000). One is the codification of the differences, and the other is the control of labor. The first one emerged through the idea of race (Quijano, 2000). This materialized between conquerors and the conquered during the historical encounters of different epistemologies and implied "a supposedly different biological structure that placed some in a natural situation of inferiority to the others" (Quijano, 2000, p. 534). The second one is anchored in an articulation of all historically known forms of labor control: "slavery, serfdom, petty commodity production, reciprocity and wages" as the basis to produce commodities for the world market (Quijano, 2000, p. 535). This results in the control of labor and its resources and products. Thus, coloniality of labor, while historically rooted, remains structurally ongoing. The racialized and spatially fragmented division of labor, coupled with disproportionate control over resource allocation and commodity distribution, persists as an enduring structural force shaping global regimes of power and capital accumulation (Quijano, 2000). In the case of coffee, these dynamics manifest in what has been coined as the coffee paradox (Daviron & Ponte, 2005): the coexistence of a coffee crisis in origin countries and a boom in importing regions (e.g., North America, Western Europe).

Coloniality of knowledge. This dimension of coloniality is introduced to question epistemological issues, the politics of knowledge production, and who generates what knowledge and for what purposes (Quijano, 2000). It enables an understanding of "how endogenous and Indigenous knowledge has been pushed to what is now understood as 'the barbaric margins of society'" (Ndlovu-Gatsheni, 2020, p. 35). This dimension shows that the systematic exclusion of certain knowledge systems generates structural imbalances across the industry—from policy design and market

access to quality assessment and value distribution. This can be illustrated by how standards and policies regulating the coffee industry (Glasbergen, 2018; Mutersbaugh, 2005; Naylor, 2017; Ponte, 2002; Raynolds, 2009) are set and governed by actors in importing countries.

Coloniality of being. This concept refers to the pertinent questions surrounding the making of modern subjectivities and issues of human ontology (Wynter, 2003). It allows us to be aware of how "humanity was questioned as well as the processes that contributed to the 'objectification'/'thingification'/'commodificati on'" of the racialized (Ndlovu-Gatsheni, 2020, p. 36). Such objectification inside the value chain extends to an ontological fragmentation, as many agents come to understand themselves solely through their assigned supplying role within the chain, or as functional parts of a system that obscures their cultural and epistemic contributions. The decoloniality of being aims to reclaim agency and ontological sovereignty (Ndlovu-Gatsheni, 2020).

The modern narrative has led to multidimensional crises, understood not only as disruptions but as systemic contradictions. According to Ndlovu-Gatsheni (2020), the crises of the modern world are threefold: systemic, epistemological, and ideological. In VCs for coffee, these crises illustrate the consequences of the three axes of the coloniality of power: The systemic crisis, which for instance has materialized in a permanent price crisis for origin countries, and which is explained by "the coffee paradox," represents the coloniality of labor.[1] The epistemic crisis has its origin in the colonization of knowledge and is perceived in its asymmetry (i.e., lack of diverse epistemologies) within industry regulations. The ideological crisis manifests itself as a cultural subordination to a single narrative. It stems from the colonization of the subjectivity of those who are outside the center of discourse, as seen in VCs for coffee, which are shaped by Eurocentric regulations, neoliberal trade policies, and standard quality metrics. Our paper suggests that in response to these crises, IK-based practices constitute a pluriverse, that is, a world where many worlds fit (Escobar, 2020), which allows us to see the globe in its multiplicity and "to see the heterogeneity of peoples, places, and practices, and be attentive to human and non-human worlds" (Naylor, 2022, p. 3). While many of these IK-based practices have a long history, we propose that their persistence, adaptation, and renewed visibility in the midst of contemporary crises represent not simply continuity, but a form of decolonial agency. Interpreted as responses to the persistent coloniality of labor, knowledge, and being, these practices simultaneously assert ways of valuing, producing, and relating through coffee—making them both historically grounded and politically relevant in the current global context.

2.2 Quality and Value in VCs for Coffee

The knowledge and interactions of actors along the coffee VC jointly create quality and generate value at different nodes (Quiñones-Ruiz & Salcedo-Montero, 2023). Value is realized through the achievement of quality attributes in coffee. The quality attributes (material, symbolic, and in-person service, see Figure 2), already defined and embedded in the coffee quality conventions, are achieved based on the knowledge of the (chain and non-chain) actors involved.

Table 1 Proposed (De)colonial Analytical Framework

The overarching coloniality of power	Crises in VCs for coffee	Decolonial response from origin countries (pluriverse in practice)
Coloniality of labor	The coexistence of a coffee crisis and boom along the fragmented VCs for coffee: producers in origin countries and industrial processors in importing countries	Establishment of robust collectives (e.g., cooperatives, associations) that aim to face the paradoxes by self-governing their resources and goals as groups
Coloniality of knowledge	Knowledge asymmetry in the global coffee governance (e.g., settings of standards, value and quality definition, policy making)	Ecological practices are closely linked to the land and to traditions of living in community
Coloniality of being	Reduction of agents to functional economic roles, limiting their cultural, ontological, and epistemic identities in their relationship with coffee	Indigenous groups reclaim epistemic authority through agency, rights, and the resurgence of relational existence

Such knowledge consists of practices embedded in crop management, the safeguarding of ethical and cultural values, and in-person service interactions that shape how coffee is valued. Overlooking the roles and positions of each actor obscures how quality is co-constructed through labor, knowledge, and interaction, and how that co-construction generates value (Quiñones-Ruiz & Salcedo-Montero, 2023).

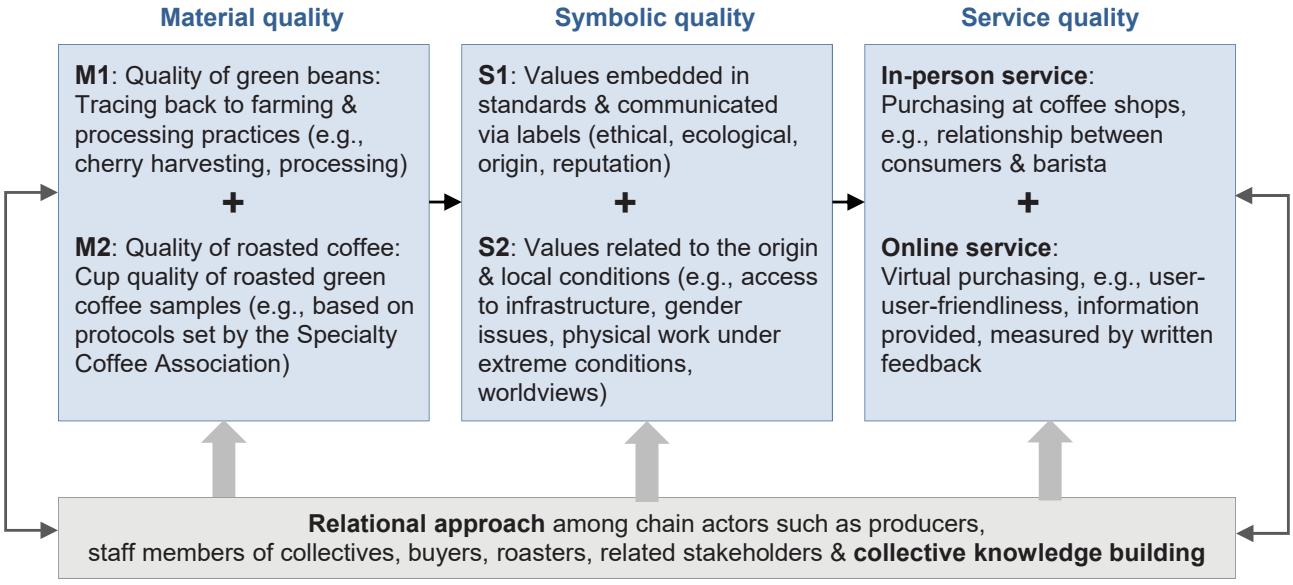
Overlooking the historical roles and knowledge of actors veils how value is captured and distributed (Quiñones-Ruiz & Salcedo-Montero, 2023). It means that if producer knowledge is not considered, their ability to influence quality conventions and capture value is much more limited. For example, conventional notions of quality emphasize cup scores—the tasting techniques used by cuppers to evaluate coffee attributes (e.g., aroma, body) as defined by the Specialty Coffee Association (SCA, n.d.)—the SCA is the largest coffee trade association to set standardized protocols for grading and evaluating coffee. Recently, the SCA has added an affective form for the cupper's impression of quality for a given coffee and the extrinsic attributes, which provides additional information about the symbolic attributes that contribute to the value of specialty coffee in terms of growing, processing, trading, and certification (SCA, 2024). The updated system of evaluation is rather additive than transformative. It simplifies the intersecting positions and situated knowledge of the producers, since it still lacks depth in understanding coffee as a social phenomenon and political act that is constantly transformed by the knowledge and conditions of the producers. Therefore, it can be nurtured and redefined through producers' epistemologies, for example, concerning land stewardship, collective governance, and cultural identity, which also add value to the cupped coffee.

3. Methodology

The literature review identifies key themes and emerging debates by synthesizing how IK is addressed in the study of VCs for coffee and the types of knowledge recognized. It shows shifts in the epistemological frameworks that both define the problems and propose actions that lead to liberatory practices (Darder, 2018). Research on IK in VCs for coffee provides insights into the politics of quality and value creation, highlighting how Indigenous communities exercise agency by reconfiguring dominant narratives and practices in response to contemporary crises.

It is worth noting that the literature available is shaped by structural biases in academic publishing—including the dominance of Western epistemologies in defining coffee quality and value, the underrepresentation of Indigenous or racialized researchers and oral traditions, and the prioritization of scientific validation over community-driven narratives. Domi-

Figure 2 Linking Quality Attributes for Coffee With a Relational Approach and Knowledge Building



Note. Source: Adapted from Quiñones-Ruiz & Salcedo-Montero (2023).

nant literature "not only excludes and defines fields of knowledge but crowds out any other ways to know, indeed any other language, terminology, theoretical and philosophical diversities" (Darder, 2018, p. xii). The review does not include oral histories, producer-led governance documents, and non-indexed Indigenous knowledge-sharing platforms since no empirical work carried out by the authors was considered for this paper. Acknowledging this highlights the need for methodological pluralism in the study of VCs.

The literature review follows a mixed inductive and deductive approach. In the inductive stage, papers were grouped based on recurring thematic patterns, such as IK in coffee production (e.g., agroecological practices, soil fertility, pest management), IK and economic structures (e.g., cooperatives, knowledge-sharing, market access), and IK, quality, and value creation (e.g., perception of coffee quality and value). Concerning the deductive stage, papers were analyzed based on two guiding questions: How is IK addressed in research on VC for coffee? And what types of IK are recognized as relevant to the coffee chain? This approach allows for a comparative analysis of prevailing discourses surrounding IK in the context of coffee VC research.

Regarding the selection criteria, a total of 73 papers were selected through a search conducted in SCOPUS, Web of Science, and Google Scholar (October 2023 to November 2024). The search string was "Indigenous Knowledge" AND "Coffee," the languages covered were English and Spanish, and the source types were peer-reviewed journal papers (majority) and doctoral dissertations and master's theses (selected cases).

The papers were included for the literature review if they explicitly discussed IK in coffee production or VCs, examined IK's role in shaping coffee quality and value, or engaged with epistemic power structures, including IK in coffee knowledge production. Similarly, the articles were excluded if they focused solely on agronomic or technical aspects without addressing IK, mentioned "Indigenous" without linking it to knowledge production in coffee, or were opinion pieces or unverified sources. Finally, for the data categorization and analysis, a thematic analysis was applied and structured into three analytical stages, namely: 1. Descriptive coding, which was done through a categorization by methodology, region, and key themes of the articles. 2. Conceptual analysis, in which papers were classified under the following categories: IK in Coffee Production (agroecology, soil fertility, pest control), IK and Economic Structures (collectives, associations, trade, horizontal governance), IK and Value/Quality Discourses (identity narratives, cultural valuation). 3. Thematic synthesis, which identified underlying patterns and connections between the papers reviewed and the analytical framework. The analysis highlighted the relevance of the discussion about pluriverses and the geopolitics of knowledge production for the sustainability of the coffee industry in view of the multiple crises.

4. Results of the Literature Review

4.1 Resisting Coloniality of Labor: Producers set Collectives (e.g., Cooperatives, Associations, Informal Producer Groups) to Attain Economic Sovereignty

Responses to the coloniality of labor were visible in cases where producer organizations reclaim agency through collective governance models. For instance, the collective *Unión de Comunidades Indígenas de la Región del Istmo* (UCIRI) in Mexico illustrates a transition from suppliers to stakeholders via moral—not bureaucratic—ties. They based their organization–stakeholder relationships on a moral commitment to community development. This fosters long-term collaborations through social integration. "It shows how stakeholder salience may develop through organization–stakeholder relationships that essentially aim to address stakeholders' needs" (Davila & Molina, 2017, p. 24). Similarly, responses to the control of labor based on the difference were found through the resistance to extractive patterns and racialized labor hierarchies. To illustrate this, the Zapatista and allied Indigenous groups in Mexico embody ongoing struggles to protect their territories from the impacts of rampant growth. For example, the Zapatistas have networks that constitute experimental transitions to low input and innovative community agriculture and medicine. It includes the production of food, use of agroecological, and other low-input technologies, "cultivation of mixed crops, production of cosmetics, fruit preserves, herbal soaps, artisanal metal work, woodwork, textiles, clothing, and art (music, literature, paintings, murals, theater, and films)" (Nirmal & Rocheleau, 2019, p. 475). The Zapatistas embody an example of autonomy over the resources with a political orientation, in which economic profit is not in the center. For instance,

> they recently diverted over 10 tons of rice, beans, maize, sugar, coffee as well as 60,000 toasted corn tortillas from the five *caracoles* (districts), with a value of 290,000 Mexican pesos (about 14,000 US dollars), to support the teacher's strike blockades in Chiapas in 2015. (Nirmal & Rocheleau, 2019, p. 476)

Moreover, as a way to respond to the outcomes of the racialized and spatial division of labor and the unequal control of the resources, or to the coffee paradox, Ugandan Indigenous coffee producers' organizations demonstrate "the mutual adjustment between human actors and market devices in co-constructing sustainability" (Onyas et al., 2018, p. 19). They have co-constructed a performative definition of solidarity in which they interplayed with social and economic sustainability initiatives. Besides strengthening the social cohesion based on social proximity among farmers' groups, they developed a price-saving model to put aside at least UGX 100 (approx. 0.027 USD) per kilo of parchment coffee sold, managed by the Saving and Credit Cooperatives (Onyas et al., 2018). These strategies strengthen the localized economic circulation and community-centered decision-making, privileging other values rooted in the communal life. In this same direction, the Philippine organization called Coffee for Peace shows how it is possible to shift the roles assigned to agents in the coffee chain by re-signifying what coffee itself means. Specifically, coffee was linked to inter-ethnic reconciliation (Bautista, 2020). It shows how organizations (such as Coffee For Peace and Peacebuilders Community Inc.) came together to develop a sense of community and source of income in which coffee was the unifying narrative. Initially, the coffee was traded as an end product (roasted coffee), but as the business grew and developed, they also began to manage the agricultural stage themselves. The members declared that "the values of the business were farmers, environment and peacebuilders," where peace was their product and coffee was just a tool (Bautista, 2020, p. 41). Likewise, some owners of coffee plantations in Soconusco and Chiapas, Mexico, have a broader approach to the coffee chain (Lyon, 2013a). They have created *Café Museo* and *La Ruta del Café* as ways to achieve economic diversification through coffee tourism in their coffee plots. Specifically, producers aim to increase brand awareness among consumers (Lyon, 2013a).

These approaches tend to reconfigure the fragmented value chain for coffee through cultural and relational dimensions, which re-define what is appreciated and needed. To illustrate this point further, in Oromia and Southern Nations, Nationalities, and Peoples' Region States, coffee goes beyond achieving material quality for producers. Due to harvesting costs, producers get together to collect coffee in a non-selective picking way. They are aware that this coffee would be produced at the cost of material quality decline. This type of coffee is called *buni* and is mostly sold to local collectors. Producers unite to find ways to face the high harvesting and labor costs (Megerssa et al., 2012). These types of practices validate local knowledges and needs, as well as the self-determined work. Finally, as a way to explore practices rooted in the culture that respond to current demands, members of Indigenous coffee cooperatives in Bachajón, Chilon, Ocosingo, Sitalá, and Pantelho in Chiapas, Mexico, use a value chain integration approach, for example, "access to inputs like improved coffee plants and agricultural training, a specialized product, an international network of coffee shops and customers" instead of Fairtrade certification to address the impact of green coffee bean price volatility on producers' household economies (Pitts, 2019, p. 106). This indicates that what they are valuing is more oriented to the relational trait or the in-person service that occurs when there is control or integration of all nodes of the chain.

IK integrates cultural and relational dimensions in the labor dynamics and valuation along the nodes of the VC for coffee. Therefore, it contests what is understood as the coloniality of labor and the divisions of roles based on the functioning of capitalist structures. IK validates social and economic forms of organization where profit is not at the center. For example, producers experiment with transitioning to low-input agriculture (Nirmal & Rocheleau, 2019) or integrate the value chain from production to consumption, instead of implementing certification schemes (Pitts, 2019). Through the non-strict adoption of capitalist wage dependency and price-dictated production models, Indigenous producers develop simultaneous economic forms that validate self-determined work, localized economic circulation, and community-centered decision-making (Bautista, 2020; Lyon, 2013a; Megerssa et al., 2012). The communities also assert quality as relational trait: in-person service that honors ancestral stewardship, symbolic value rooted in Indigenous identity, and material practices that prioritize ecological balance over extraction (Lyon, 2013a; Nirmal & Rocheleau, 2019; Pitts, 2019).

The above-mentioned cases define their own goals and exercise autonomy, rather than following externally imposed objectives—a key aspect of decolonial and Indigenous governance, such as the UCIRI and the Zapatistas in Mexico (Davila & Molina, 2017; Nirmal & Rocheleau, 2019). As Escobar (2020) argues, such practices reflect pluriversal proposals as they are "seeded with diversity—epistemic, social (in terms of race/ethnicity, gender, generation, class, and territorial base) and 'cultural' (ontological)" (Escobar, 2020, p. 148). This diversity is clearly present across the reviewed cases: in the Philippines, where coffee facilitates reconciliation across Indigenous groups; in Mexico, where tourism and vertically integrated VCs embed culture and identity in production; and in Ethiopia, where producer decisions such as the acceptance of buni beans reflect relational quality norms and local market realities.

Within this pluriversal design, labor is not simply an economic function but an integrated part of social, spiritual, and ecological relations. In fact, Gibson-Graham (2008) urges us to recognize diverse economies that move beyond capitalist labor structures, while Naylor (2022) highlights the importance of decentering Western knowledge frameworks to recognize the sovereignty of local labor practices. These horizontal governance models—cooperatives, producer associations—shall expand the understanding of quality as a terrain that transcends material attributes (e.g., bean size, cupping scores) to encompass symbolic, relational, and embodied dimensions (Quiñones-Ruiz & Salcedo-Montero, 2023). While the reviewed papers may not explicitly frame these practices as responses to coloniality, this paper interprets them as such, based on the analytical framework employed. These cases demonstrate that Indigenous communities are not simply "resisting" market forces but actively constructing economies grounded in solidarity, autonomy, and economic and environmental sustainability, where coffee is not just a commodity but a relational, cultural, and/or political act.

4.2 Resisting Coloniality of Knowledge: Socioecological Schemes as Epistemic Authorities

In response to the coloniality of knowledge, several cases in the reviewed literature illustrate how IK responds to the crises deployed by dominant epistemologies through situated understandings and management of coffee. For example, some practices are embedded in relational ontologies, such as the cultural regulations (*seera*) that prohibit the mass cutting of *baabbo* trees on coffee farms in three kebeles in Woinadega and Dega agroecological zones in the Gedeo community in Ethiopia (Maru et al., 2019). There, farmers foster the productivity of coffee with the presence of tree baabbo species such as Millettia ferrunginea (*Dhadhatto*), Vernonia amygdalina *(Ebicha*), Cordia africana (*Wodessa*), *Ode'e* (*Ficus elastica*), and *Qillixxa* (*Ficus vasta*). This is an example of epistemic authority to regulate coffee production since farmers have a well-founded IK of tree conservation in which baabbo trees are key, and in which the socioeconomic aspect of the local community is centered around tree conservation and protection (Maru et al., 2019). Similarly, Indigenous farmers in San José El Paraíso, Mexico, manage coffee within the local rules and uses (*usos y costumbres*) of the community (Juárez-López et al., 2017). For example,

> in *montaña*, where we registered the highest tree species richness, basal area, and density, deforestation is prohibited and hunting is regulated because inhabitants of San José El Paraíso have selected them as community conservation areas. *Ladera* and *chahuite* are regulated differently: both are considered productive areas for coffee and other crops, including corn and beans. (Juárez-López et al., 2017, p. 774)

This case illustrates how community-based knowledge systems not only manage ecosystems effectively but also reflect a distinct epistemological order, one that repositions authority over land and sustainability. The last two cases contrast with externally imposed policy frameworks that often generalize and establish land-use categories and disregard embedded social and ecological knowledge.

Further, communities in India apply Indigenous Technical Knowledge (ITK) in their coffee crop employing practices rooted in traditional ecological wisdom. They have a systematic awareness and application of ITK, categorized by the tribes' adaptive strategies to local conditions. For example, some of the clearly specified rotational technologies comprise: covering coffee plants with the *Samai* tree during frost, pruning during the months of April to June after harvest, pruning of branches, raising silver oak in coffee plantations, encouraging pruning by using hands only and not by using sickles, and spade digging twice every year in coffee plantations (Nisha & Arunachalam,

2018, p. 5813). These techniques demonstrate an internal logic and precision grounded in place-based experience and intergenerational transmission. Such systems are rarely explicitly recognized within dominant policy frameworks or certification schemes, which tend to favor standardized metrics and universal models of "best practice." In fact, if we consider the new Extrinsic Attribute Form by the SCA, ITK could be included. However, its inclusion may not necessarily reshape vertical relationships, how the evaluation system itself is designed, and who defines what quality and value are. As a result, the epistemic foundations of ITK are often excluded from narratives about quality and sustainability, reinforcing power asymmetries in how knowledge is validated and whose expertise is considered legitimate in the coffee sector. Similarly, the Tosepan Titataniske Cooperative from the Sierra Norte of Puebla, Mexico, maintains agroforestry systems "through the combination of species belonging to the 13 main *Nahuat* plant families or 'life forms' (Beaucage, 2009), each playing a specific role in the agroforestry dynamics as well as in the subsistence strategy of households" (Toledo & Moguel, 2012, p. 366). The fact that life forms are included in the agroforestry systems shows a different approach to what is valued and cared for in the crop.

The above-presented underscores that quality is not merely a material attribute but a cultural and epistemological construct, shaped by those who have the authority to define and measure it. For instance, the ethnopedological Indigenous knowledge of Tzotzil farmers identifies ecological successions through floristic and structural characteristics inherent to the vegetation (e.g., identification of chronological sequences such as grassland, shrubland, early successional forest). This knowledge prompts them to restore soil fertility, provide crop variety in the households, and optimize crop energy efficiency in terms of time. These attributes respond to the coloniality of knowledge manifested through standards that privilege, for instance, the productivity of the crop. In fact, of those interviewed, 96% had a tree stratum with two or more species, there was not a single coffee plantation without shade, and people preferred unimproved coffee varieties inherited from their ancestors (Bandeira et al., 2002).

Finally, the case of traditional pest management practices in agroecological zones in sub-Saharan Africa (Abate et al., 2000) illustrates an example of resisting the coloniality of knowledge. Pests may have religious significance; for example, outbreaks of locusts, grasshoppers, caterpillars, rats, and birds are often seen as a punishment after which any wrongdoing or negligence in society must be corrected, for instance, by offering gifts to the poor. Some farmers (e.g., in Sudan, Niger) use the charms of local religious leaders to drive away pests, and in Zimbabwe ancestors are consulted to stop a plague of the African armyworm *Spodoptera exempta* (Abate et al., 2000). As such, these knowledge systems contest the epistemic authority of modern agronomic science, which often isolates pest control as a technical problem requiring standardized, chemical-based solutions. Recognizing these practices as responses to the coloniality of knowledge highlights the need to value ontological pluralism in global sustainability discourse and to rethink the modernist assumptions that underpin dominant models of crop management and policy design.

Indigenous agroecological practices embody relational ontologies that sustain knowledge systems while redefining quality and value in ways that transcend capitalocentric logics. The place-based, culturally rooted socioecological systems presented above assert sovereignty over local epistemologies, or epistemic authority (Zinsli, 2023), by understanding the attributes of the coffee through biodiversity outcomes, cultural identity, or relational care of land. This might frame value beyond the economic exchange (Naylor, 2022). For example, the Gedeo community in Ethiopia practices land stewardship governed by *seera* (cultural rules), specifically conserving baabbo trees. Therefore, they sustain soil fertility (to achieve material quality) and reinforce cultural identity (symbolic quality), while value emerges through intergenerational knowledge exchange (Maru et al., 2019). Similarly, the Tzotzil farmers in Mexico cultivate 96% shade-grown coffee using ancestral varieties, blending material quality (agroforestry resilience) with ethnopedological labor to create value through ecological reciprocity rather than market extraction (Bandeira et al., 2002).

These practices reflect ontologies where humans are part of—not separate from—ecological cycles and where they assert authority over their land and knowledges.

While these may appear as locally adapted agroecological practices, their significance under a decolonial lens lies in the epistemic and ontological foundations on which they are built. Rather than emerging from

top-down agronomic science or technical development interventions, these practices reflect relational, place-based, and spiritual understandings of agriculture. Their persistence and adaptation constitute a form of epistemic resistance to the colonial legacy of marginalizing IK systems in favor of modern scientific models. For instance, the decolonial comprehension of quality and value in sub-Saharan African pest management systems deals with moral-social imbalances (Abate et al., 2000) that position spirituality as inseparable from material outcomes. Furthermore, in San José El Paraíso, Mexico, the communal zoning (*montaña* vs*. ladera)* regulation of land use through collective norms links subsistence labor with values as autonomy (Juárez-López et al., 2017). Meanwhile, Mexican communities balance conservation and production through cultural frameworks that prioritize relational care over extractivism (Juárez-López et al., 2017; Nirmal & Rocheleau, 2019).

Collectively, the epistemic, social, and cultural diversity of the agroforestry systems foster pluriversal designs (Escobar, 2020). This diversity allows interepistemic conversations that expand dominant understandings of key mechanisms of VCs for coffee, such as quality and value. Material quality may be oriented toward maintaining biodiversity and soil health, while symbolic quality might embed cultural and spiritual meanings in coffee management—often reflected in relational labor practices like communal pruning. It is worth mentioning that the IK-based practices rarely fall into a single category of quality, as they often blend material, symbolic, and relational dimensions, reflecting the interconnected nature of the responses to the contemporary crises. Likewise, value emerges not only through economic exchange but also through non-monetary dimensions such as intergenerational knowledge transmission and ecological reciprocity. By centering these practices, Indigenous communities assert epistemic authority, resisting the reduction of coffee to a commodified "product" and instead positioning VCs as sites of relational value creation.

4.3 Resisting Coloniality of Being: (Re)claiming Own Identity and Value

The coloniality of being, which addresses the ontological hierarchies underpinning modern power structures, is manifested in the coffee sector through the ways producers and communities are positioned—and often limited—within VCs. The practices identified in this review challenge such fragmentation by reclaiming identity, agency, and cultural meaning, thus asserting a broader sense of being beyond economic functionality. For instance, IK incorporates cultural narratives into the understanding of coffee that goes beyond its quality material metrics in the case of Guatemalan coffee producers who implemented a coffee tour and, with it, an improved cooperative's organizational capacity, a more diversified managerial structure, extensive training opportunities, and new professional positions:

> In the introduction to the coffee tour, guides tell the guests, "Coffee is more than a drink; it's a culture." Thus, at the very beginning, the coffee tour sends visitors the message that this touristic experience is as much about ethnicity and culture as it is about agriculture. (Lyon, 2013b, p. 192).

Similarly, farmers from Bali within the *Subak Abian*, an Indonesian traditional social organization, follow Hindu philosophy of *Tri Hita Karana* in their cooperative. In this philosophy, there are three causes of happiness that are obtained when one has a good relationship with God, people, and the environment:

> First, the relationship with God or *parahyangan* is actualized in the building of *Pura Subak Abian* as a ceremonial place. Second, the relationship with people or *pawongan* is actualized in monthly meetings and mutually help (*gotong royong*) among members of *Subak Abian*. Last, the relationship with environment or *palemahan* is actualized in the farming practices in a sustainable way. (Wijaya, 2019, p. 4)

Coffee farmers in Kintamani don't use chemical inputs to show a good relationship with the environment, and their traditional organization of farming spins around mutual help (*gotong royong*). This has fostered the setting of a larger organization to achieve bigger goals, like the Geographical Indication for Kintamani Arabica Coffee (Wijaya, 2019). This specific case shows how ontological sovereignty is restored by adapting economic activities to the collective cosmovision, not the other way around.

Moreover, understanding and responding to the coloniality of being in coffee VCs also requires attention to how human subjectivities and ontologies are shaped—or constrained—by cultural and market log-

ics. In contrast to frameworks that reduce producers to economic agents, this review shows how, in some cases, the coffee production is embedded in deeper systems of meaning, where the crop is not merely a commodity but a relational and symbolic practice. For instance, wild coffee in the Gimbo Wordea zone in Ethiopia "serves as a center for Indigenous cultural worshipping practices, rituals, marriage, and memorial ceremonies. Coffee is the center for creating community-based local communications and neighborhood gatherings" (Melesse & Belachew, 2018, p. 44). This relationship between people and coffee extends beyond conventional economic transactions, as it functions to foster social cohesion, bring individuals together, and reinforce a collective sense of community (Melesse & Belachew, 2018). The coloniality of being is also contested through agricultural practices that embed cultural identity and ontological meaning in exchanges or transactions. Rather than seeing farming as an exclusively productive act, the cases presented ground their value systems in historical, spiritual, and political attachments to land, food, and community. For example, the *Campesinos Ecológicos de la Sierra Madre de Chiapas* cooperative in southern Mexico and the *Promotora de Desarrollo Cooperativo de Las Segovias* in northwest Nicaragua (Guzmán Luna et al., 2022) manage diversified farms that integrate farm animals and a variety of crops alongside coffee production. The motivations behind these farming practices are deeply rooted in cultural values and long-standing connections between agricultural livelihoods and the cultivation of milpa plots:

> In that regard, milpa is a traditional system that, beyond the ecological and nutritional complementarity between the species, is the foundation of the Mesoamerican diet and an expression of a historical process of biocultural co-evolution. This reflects the cultural attachments to certain diets that appear as resistance toward industrial food. (Guzmán Luna et al., 2022, p. 13)

This ontological stance is further exemplified by the Zapatistas in Mexico, who "pursue a parallel full-time social project of dignity, solidarity and resistance, convening and coordinating efforts to resist mega-development projects and the growth-driven policies that produce them" (Nirmal & Rocheleau, 2019, p. 475). Agricultural production is seen as an economic activity but also as a political tool that enables the community to assert sovereignty over their land, labor, and knowledge systems while creating transnational solidarities that challenge the coloniality embedded in VCs. Specifically, the Zapatistas and *the Consejo Nacional Indígena* have reconvened and initiated a process to bring Indigenous communities throughout Mexico into the national political sphere and popular media" (Nirmal & Rocheleau, 2019, p. 477).

As seen, in the VCs for coffee, the economic, ecological, and sociocultural meanings of coffee shape not only agricultural practices and the formation of organizations but also the construction of identities. The practices spotted in this paper as resisting the coloniality of being are deeply intertwined with those challenging the coloniality of labor and knowledge, reflecting the inseparability of these dimensions in Indigenous responses to systemic, epistemic, and ideological crises.

Besides integrating social practices rooted in rituals and communal identity that "are directly tied to the sustainability of local biodiversity" (Wana et al., 2023, p. 2795), IK in coffee also generates income that directly supports health, education, food security, and broader livelihood sustainability (Tilden et al., 2023). Such practices expand the economic rationale that measures material quality in scores or symbolic quality in conventions (e.g., certifications) because they are based on cultural-spiritual meanings and communal labor that simultaneously reinforce ecological stewardship, collective autonomy, and cultural resilience. Coffee goes beyond a cash crop: For example, for Ethiopian farmers, coffee is steeped in tradition (Yitayal & Achame, 2014; Weyesa & Tilahun, 2021). By framing coffee as a practice of relationality rather than a mere commodity, IK challenges colonial-capitalist conventions of quality (e.g., cupping scores, yield per hectare) and understands value far beyond through reciprocity, autonomy, and pluriversality (Escobar, 2020). Table 2 briefly presents the literature review of the results section.

Table 2 Examples of IK-Based Decolonial Practices

The overarching coloniality of power	Decolonial response from origin countries
Coloniality of labor	Mexican Zapatistas producer groups (Nirmal & Rocheleau, 2019) Unión de Comunidades Indígenas de la Región del Istmo cooperative, Mexico (UCIRI; Davila & Molina, 2017) Chiapas coffee cooperative (Pitts, 2019) Ugandan co-creation of sustainability (Onyas et al., 2018) Coffee for Peace, Philippines (Bautista, 2020) Café Museo and La Ruta del Café (Lyon, 2013a) Coffee producers in Oromia and Southern Nations, Nationalities and People's Region States in Ethiopia (Megerssa et al., 2012)
Coloniality of knowledge	Mayan ecological succession knowledge (Bandeira et al., 2002) Mexican management of trees (Juárez-López et al., 2017) Ethiopian agroecological zones and trees (Maru et al., 2019) Indigenous Technical Knowledge (IKT) from communities in India (Nisha & Arunachalam, 2018) Mexican agroforestry systems (Toledo & Moguel, 2012) Pest management in Africa (Abate et al., 2000)
Coloniality of being	Coffee tradition-based tourism in Guatemala (Lyon, 2013b) Bali's Subak Abian knowledge in social organization and collective marketing (Wijaya, 2019) Ethiopian coffee ceremonies (Melesse & Belachew, 2018) Mexican cooperatives and food sovereignty (Guzman Luna et al., 2022) Zapatistas political narrative (Nirmal & Rocheleau, 2019)

5. Discussion

Through the decolonial lens, we show how IK operates as forms of resistance and agency in VCs for coffee. Rooted in the conceptual lens of the coloniality of power (Quijano, 2000), the paper unpacks how crises in coffee VCs—structurally tied to the coloniality of labor, knowledge, and being (Escobar, 2020; Ndlovu-Gatsheni, 2020)—are actively confronted by IK practices that reconfigure the quality attributes and value. By depicting the conceptual framework illustrated in Table 1, this review shows how IK-driven practices produce material, symbolic, and in-person service attributes of coffee and therefore, value. Explicitly, producers' associations restructure economic governance and modify labor dynamics (Davila & Molina, 2017; Nirmal & Rocheleau, 2019; Pitts, 2019), agroecological systems embed cultural and ecological knowledge (Abate et al., 2000; Maru et al., 2019; Nisha & Arunachalam, 2018; Toledo & Moguel, 2012), and Indigenous-led narratives reassert ontologies of interdependence (Lyon, 2013ab; Nirmal & Rocheleau, 2019). These practices demonstrate how IK is central to value creation, not as a supplement to global trade, but as a transformative force that redefines the core principles of valuation, quality, and sustainability. Rather than framing IK as an "alternative," the literature points to the coexistence of pluriversal economies that expand the very notion of how an economy can be imagined (Gibson-Graham, 2008; Escobar, 2020).

The literature shows how each community acts as a legitimate center of knowledge production. Their knowledge systems are not peripheral but grounded in situated ontologies where land, labor, and value are relationally and spiritually intersected. This recognition contributes to broader discussions on the coloniality of knowledge and underscores the importance of situating knowledge production within its geopolitical contexts: It matters who produces knowledge and for what purposes, so that it reveals whose perspectives are legitimized and how standards are defined in the coffee VC. As Escobar (2020) suggests, local economies offer insights for designing pluriversal infrastructures for an "ethics of interexistence" (Escobar, 2020, p. xvii). Therefore, solidarity-based coffee exchanges or gendered socionatural spaces are relational economies that unsettle capitalist universality by foregrounding reciprocity, mutual aid, reproductive labor, and community-based value creation (Naylor,

2022; Worthen et al., 2024). The redefinition of quality and value thus emerges from IK systems along the coffee nodes integrating cultural, ecological, and relational dimensions. Rather than being based solely on material attributes such as yield, bean size, or humidity, quality is reframed through symbolic and spiritual ties to land and community. Within these frameworks, labor is no longer solely economic but becomes a social, spiritual, and ecological relation. Gibson-Graham (2008) calls for the recognition of diverse economies beyond capitalist norms, while Naylor (2022) emphasizes the importance of decentering Western frameworks to acknowledge the sovereignty of local labor practices. For example, Indigenous communities pursue transitions toward low-input agriculture (Nirmal & Rocheleau, 2019) or develop integrated VCs from production to consumption without relying on external certification schemes (Pitts, 2019). Similarly, the Gedeo community in Ethiopia conserves baabbo trees under cultural rule systems (*seera*), which maintain soil fertility (material quality) while reinforcing symbolic value through ancestral knowledge (Maru et al., 2019), and Tzotzil farmers in Mexico produce 96% shade-grown coffee using ancestral varieties, blending agroecological resilience with ethnopedological labor that prioritizes ecological reciprocity (Bandeira et al., 2002). As Zinsli (2023) notes, these practices assert epistemic authority, showing that Indigenous criteria for value and quality are rooted in biodiversity, intergenerational knowledge, and spirituality.

We offer a perspective in which the VC for coffee is not only regarded as a neutral supply chain but as a political arena of epistemic and ontological negotiation. This is done by acknowledging decolonial conceptions of quality in African pest management systems (Abate et al., 2000), tying value to collective norms rather than merely prices (Megerssa et al., 2012), or harmonizing conservation and production through relational frameworks rejecting extractivism (Juárez-López et al., 2017). These diverse knowledge systems foster pluriversal economies where epistemic, systemic, and ideological pluralities coexist and dialogue (Escobar, 2020), creating interepistemic understandings of value and quality. Therefore, material quality shall also be oriented toward soil health or biodiversity, while symbolic quality likewise emerges through cultural meaning and spiritual care embedded in labor practices. Moreover, value shall be redefined as reciprocity, ecological stewardship, and non-monetary exchange, including intergenerational knowledge and community cohesion (Naylor, 2022).

The integration of IK into VCs remains a highly contested and uneven process, not due to explicit opposition, but because of structural asymmetries and the limited transformative scope of actors' involvement in governing coffee VCs. While the epistemic significance of IK is increasingly recognized—as evidenced by its inclusion in reports from institutions such as the Intergovernmental Panel on Climate Change (IPCC), or its potential inclusion in the Extrinsic Attribute Form by the SCA—its incorporation into public policy and certification systems often occurs in tokenistic or procedural ways, without granting meaningful epistemic authority to Indigenous actors. These frameworks tend to translate IK into technocratic categories that align with dominant (often Western) standards of sustainability, productivity, or traceability, thus risking the co-optation or dilution of IK's relational, place-based meanings. For example, standardizing IK for "sustainability" metrics may dilute its relational essence into universalist frameworks, reproducing coloniality under the guise of inclusion. Similarly, power asymmetries persist: Indigenous participation in VCs rarely translates into redistributive economic justice (e.g., profit-sharing, land sovereignty). These tensions underscore the need to distinguish between tokenistic inclusion and epistemic justice, where IK among other epistemologies might redefine the very parameters of quality and value.

6. Conclusion

IK in coffee VCs is not a relic of the past but rather a dynamic, evolving praxis that actively reconceptualizes agroecological sustainability, economic organization, and value creation through cultural identity and community self-determination. The review consistently addressed IK as grounded in place-based, relational epistemologies that respond to global crises using the resources, skills, and knowledges available within each community. In fact, the IK-driven practices in coffee management practices were presented as responses to systemic, epistemic, and ideological crises within VCs for coffee given their relevance in its economic, ecological, and social dimensions. Coffee is not only treated as a cash crop but also as a cultural good, embedded in rituals, social relations, and collective memory. Its associated knowledge is framed as flexible, adaptive, and contemporary. In relation to the threefold crises outlined in the analytical framework—rooted in the coloniality of labor, knowledge, and being—IK emerges as a set of responses devel-

oped by diverse communities across the globe (with a prominence of cases from Mexico and Ethiopia). These responses include: 1) associative, organizational, and democratic practices, which promote horizontal participation and collective decision-making aligned with community-defined aims, 2) agroecological practices, which align epistemologies with sustainability and stewardship of living systems, and 3) cultural and narrative-based practices, which draw from identity, memory, and ontological ties to coffee.

Nevertheless, the recognition of IK in formal policy spaces or as a quality and value generator remains contested. While its epistemic relevance is increasingly acknowledged, the translation of IK into practical policies often risks simplification or co-optation. Therefore, a meaningful integration of IK requires not only inclusion but a transformation of the systems and values that understand and govern VCs. Therefore, we suggest three pathways for research and action. First, the knowledge that is recognized as pertinent for coffee VCs shall be co-constructed and participatory. Indigenous and other (non-Indigenous) actors such as peasants also act as co-designers of research agendas that validate place-based epistemologies and redefine meanings such as quality and value (e.g., integrating communal governance as symbolic quality understandings and assessment). Second, it is essential that standards are designed in such a way that they reflect IK-driven conceptions of quality (e.g., soil health as reciprocity beyond yield efficiency, terroir as ancestral heritage beyond Eurocentric cupping scores), opening a path for pluriversal attestation systems. Finally, it is crucial to amplify narratives that frame coffee (and other agrifood products) as sites of cultural resurgence and enable producers to capture value on their terms.

By recentering IK in debates about quality, value, and governance, this paper advocates VCs for coffee as pluriversal designs. This is not merely a call for inclusion, but a demand to redefine the parameters of "sustainability" and "value," grounding them in the lived realities of those who sustain the land, namely, Indigenous, *campesinos*, and peasants. It is crucial to avoid romanticizing IK; its indigeneity does not inherently equate to ethical or ecological virtue, and critical engagement is needed to address power asymmetries within and beyond Indigenous communities. The decolonization of coffee VCs begins when pluriversal knowledge systems cease to be a so called alternative and become an epistemic foundation of equitable trade.

Notes

[1] However, even as prices in origin countries peak, producers are not truly celebrating as input costs are also rising and the labor force is shrinking (Goodman, 2025).

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Statement of Authors' Contributions

The first author led manuscript writing under the supervision of the second author (PhD supervisor). Both authors contributed through joint conceptualization, analysis, and iterative revisions. The second author provided critical feedback on the theoretical framework, methodology, and reviewer responses throughout the writing process.

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