POWER RELATIONS BETWEEN ACTORS IN COFFEE AGROFORESTRY IN RURAL WEST JAVA: A POLITICAL ECOLOGY STUDY

Received : 07-11-2025 Revised : 17-12-2025 Accepted : 18-12-2025

Evi Sri Rezeki[1], Oekan S. Abdoellah[2], Dede Mulyanto[3]

[1,2,3,] Department of Anthropology, Faculty of Social and Political Sciences, Universitas Padjadjaran, Indonesia

evi22002@mail.unpad.ac.id[1]

ABSTRACT

This article examines the coffee agroforestry system in West Java not merely as an environmental conservation strategy, but as an arena of contested power relations. The study aims to analyze power relations in the form of social relations of land and tree production, labor, and capital through a political ecology and actor-oriented framework. Drawing on an ethnographic approach, the research is based on participatory observation and in-depth interviews with farmers, laborers, environmental activists, policymakers, and local capital providers. The findings show that tree ownership functions as a primary claim over space amid tenure insecurity. Relations between formal landowners, cultivators/farmers, and laborers are not only hierarchical but also ambivalent. Farmers deploy everyday forms of resistance and survival strategies such as intercropping vegetables, refusing to pay profit-sharing or rent, ceb-cul arrangements, pruning coffee trees, and killing shade trees. The study concludes that coffee agroforestry is not simply a conservation practice, but a contested socio-political space. It calls for greater recognition of farmers' rights and more equitable redistribution of power.

Keywords: Power Relations; Coffee Agroforestry; Social Relations Of Production; Political Ecology; Ethnographic.

ABSTRAK

Artikel ini mengkaji sistem agroforestri kopi di Jawa Barat tidak hanya sebagai strategi konservasi lingkungan, tetapi juga sebagai arena kontestasi kekuasaan. Penelitian ini bertujuan menganalisis relasi kuasa dalam bentuk relasi sosial produksi lahan serta pohon, tenaga kerja, dan modal menggunakan kerangka pemikiran ekologi politik dan berorientasi aktor. Pendekatan etnografis penelitian ini didasarkan pada observasi partisipatif dan wawancara mendalam dengan petani, buruh tani, aktivis lingkungan, pemangku kebijakan, dan pemodal lokal. Hasil penelitian menunjukkan bahwa kepemilikan pohon berfungsi sebagai klaim utama atas ruang di tengah ketidakpastian tenurial lahan. Relasi antara pemilik lahan formal, penggarap, dan buruh bukan hanya bersifat hirarkis, tetapi juga bersifat ambivalen. Petani kecil mengembangkan berbagai bentuk perlawanan sehari-hari dan strategi bertahan hidup seperti tumpangsari sayuran, menolak membayar bagi hasil dan sewa, sistem ceb-cul, pemangkasan pohon kopi, dan mematikan pohon penaung. Studi ini menyimpulkan bahwa agroforestri kopi bukan sekadar praktik konservasi, tetapi ruang sosial-politik yang diperebutkan. Studi ini menyarankan pengakuan yang lebih besar terhadap hak-hak petani kecil dan kebijakan redistribusi kuasa yang adil.

Kata kunci: *Agroforestri Kopi; Relasi Sosial Produksi; Relasi Kekuasaan; Ekologi Politik; Etnografi*

[2,3,] Universitas Padjadjaran, oekan@unpad.ac.id, dedemulyantounpad@gmail.com

INTRODUCTION

In various rural regions of Indonesia, river watersheds (*Daerah Aliran Sungai/DAS*) represent intersections between conservation agendas, local economic needs, and state development programs. However, many watersheds have experienced ecological degradation, with critical areas continuing to increase despite rehabilitation programs, including in the Citarum watershed (Fadhil, Hidayat, and Baskoro 2021). Girilarang Village a pseudonym located in the upper Citarum watershed, faces interrelated ecological and economic crises: climate change, environmental degradation, population growth, poverty, and declining agricultural productivity (Abdoellah 2021; Abdoellah et al. 2021; Kinasih and Wulandari 2021; Saeful 2020). Dominant discourses often blame local farming practices for degradation (Hakim 2021; Miardini, Gunawan, and Murti 2016; Multazam 2024), while overlooking structural factors and large-scale land control by plantation and forestry companies over two centuries, which have contributed to environmental degradation, population growth, and restricted land access (Hakim 2018; Indrarto et al. 2013; Peluso 2006; Saeful 2020).

Limited land ownership has driven Girilarang farmers to open forest and plantation areas for horticulture, chosen for quick economic returns and subsistence needs (Hakim 2021; Kinasih and Wulandari 2021; Saeful 2020). Since the early 2000s, government and corporations have launched programs regulating farmers' land access: Community-Based Forest Management: *Pengelolaan Hutan Bersama Masyarakat* (PHBM), *Citarum Harum* (Presidential Regulation No. 15/2018), and coffee-vegetable intercropping within state plantation PTPN VIII Afdeling Cikembang as conservation and asset-protection strategies. All three programs regulate farmers' land access through coffee-based agroforestry (Abdoellah et al. 2021; Saeful 2020).

Agroforestry combines perennial and annual crops spatially or temporally (Abdoellah 2021). Studies show it addresses three challenges: (1) ecological soil and water conservation, biodiversity, and carbon sequestration (Lestari and Premono 2014; Naharuddin 2018; Widiyanto 2013; Wienhold and Goulao 2023); (2) socio-economic providing livelihoods, diverse seasonal income, and aligning with local values (Do, Luedeling, and Whitney 2020; Roslinda, Prisila, and Mariani 2023); and (3) food security through crop diversity (Mbow et al. 2014; Sudomo et al. 2023).

Despite these advantages, numerous studies have shown that agroforestry can shape power relations and complex resource control structures. Issues hindering adaptation and sustainability include: (1) land tenure separation of land and tree ownership, tenure insecurity (Abdoellah et al. 2021; Gunawan et al. 2023; Suryanata 1994, 2002), and land privatization (Li 2020); (2) tree tenure overlapping claims and monoculture promotion (Folefack and Darr 2021; Schroeder and Suryanata 2004; Suryanata 1994; Trujillo 2008); (3) cheap, vulnerable labor (Li 2020; Petchers and Harris 2008); (4) limited capital access fostering dependence on unfavorable informal relations (Schroeder and Suryanata 2004; Suryanata 1994, 2002); (5) marginalization and gender inequities (Kinasih and Wulandari 2021; Schroeder and Suryanata 2004;

Weeber 2016); and (6) increasing social stratification (Hefner 1999; Li 2020; Suryanata 1994, 2002).

Agroforestry involves productive resources land and labor managed within social communities, and is thus not neutral from power relations shaping socio-economic outcomes (Abdoellah 2021). This study employs a political ecology approach, emphasizing that "degradation" and "conservation" are not neutral but imbued with political interests (Peluso 2006; Robbins 2012). From this perspective, environmental issues framed as rescue efforts actually serve to dispossess local producers, emerging from political-economic processes across scales from the macro to the micro (Blaikie 1985; Blaikie and Brookfield 1987; Robbins 2012).

Following Peluso (2006), Suryanata (1994, 2002,2004), (Hefner 1999), Robbins (2012), and Li (2020), this study views agroforestry not merely as a conservation technology but as a political arena where state, corporate, and farmer interests intersect. Unlike those studies, this research analyzes power relations within social relations of production in coffee agroforestry specifically regarding land and trees, labor, and capitalhich are regulated, negotiated, and contested. The study reinforces arguments by Suryanata (1994, 2002,2004) and Li (2020) that resource control is central to land management dynamics, where overlapping rights over land and labor become sources of social tension.

Using Girilarang Village as a case, this study examines land use transformation through coffee agroforestry and its socio-economic impacts that often contradict sustainable conservation objectives. Although coffee is promoted as environmentally suitable and economically valuable (Gunawan et al. 2023; Kinasih and Wulandari 2021), its implementation creates challenges for smallholders: competition for space and light between coffee and cash crops, shade tree effects, and separation of land and tree ownership generate tensions and disputes (Abdoellah et al. 2021; Suryanata 1994). This study investigates coffee agroforestry as a contested arena that both shapes and is shaped by local power relations, with implications for equitable resource access and rural livelihood sustainability.

Based on the background outlined above, this study aims to describe the various forms of social relations of production in coffee-based agroforestry, particularly those related to land ownership and control, labor, and capital.

METHODS

This study employed a qualitative ethnographic approach to examine power relations shaping social relations of production among coffee agroforestry farmers in Girilarang Village. Field research was conducted through repeated visits in May 2023, September 2023, and September-October 2024.

The selection of informants in this study was conducted gradually using purposive sampling, with careful consideration of attributes related to the local economic system and agrarian production patterns in Girilarang Village. Informants were therefore selected based on their livelihoods and social status. In total, 32 informants were interviewed, while 14 individuals were directly observed.

The informants were grouped into three broad categories. First, micro-level actors, consisting of coffee farmers, vegetable farmers, mixed coffee–vegetable farmers, and agricultural laborers directly involved in

cultivation and land management practices. Second, meso-level actors, representing local economic agents, include local financiers such as middlemen, traders, farmer-traders, as well as farmer groups and post-harvest managers who play a role in the circulation of capital and agricultural outputs. Third, macro-local actors, comprising those with authority over land governance and policy, including Perhutani, PTPN, village government officials, environmental NGOs, as well as activists and community facilitators. Data were collected through in-depth interviews and participant observation, using interview guides and observation protocols as the main research instruments, with a focus on informants' production-related activities.

Data processing and analysis involved organizing field notes derived from participant observation, informal conversations, interviews, and visual documentation. All interviews were transcribed, field notes were organized, and documentation files were organized with reference to specific locations. The next stage involved coding and categorization based on major thematic areas, such as land tenure relations, control over coffee trees, labor stages and labor organization, access to capital, access to markets, and agroforestry knowledge. The researcher also identified specific local terms used by community members, for example, production-stage terms such as *ngajir, nyoblak, ngaleper*.

Once the major thematic categories were established, the analysis proceeded with taxonomic analysis, systematically organizing categories within each theme to identify patterns of social differentiation. At this stage, the researcher mapped how informants distinguished different forms of land control, labor relations, and categories of capital.

Secondary data from the literature review and documentary sources were integrated with primary data according to the major thematic categories, in order to situate ethnographic findings within a broader political-economic context. In this way, the analysis not only explains production practices at the village level but also situates them within wider processes of agrarian change, state control over resources, and farmers' dependence on capital and markets. The researcher then systematically interpreted the entire body of data into a coherent descriptive narrative and linked it to the conceptual framework employed in this study.

To ensure data validity and credibility, this research employed source triangulation, methodological triangulation, and prolonged engagement in the field. Source triangulation was conducted by comparing information obtained from micro-, meso-, and macro-level actors. Methodological triangulation was achieved by combining participant observation, in-depth interviews, and document analysis, including the Citarum Harum program documents and village administrative records. Through this approach, findings were not derived from a single experience or interaction but were corroborated across multiple situations and perspectives.

THEORETICAL FRAMEWORK

Coffee-based agroforestry is often promoted as a sustainable farming system integrating ecological

objectives with livelihood improvement. Yet power dynamics determine who accesses land and trees, controls labor and capital, and captures production surplus. A political ecology approach particularly Neo-Marxist and actor-oriented perspectives provides a critical framework for understanding power relations manifested in social relations of production.

A. Political Ecology and Power over Resources

Political ecology bridges ecological analysis and political economy to explain society–environment relations within power frameworks (Blaikie and Brookfield 1987; Robbins 2012; Watts and Peet 2004). Rejecting neutral technocratic views, it emphasizes that environmental degradation and conservation are inseparable from power relations among local actors, the state, and global markets.

Robbins (2012) argues degradation occurs when environmentally unsustainable production systems shift toward resource overexploitation, responding to state interventions or market integration, intensifying poverty and exploitation cycles. Conservation represents resource control appropriated from local producers through efforts preserving "sustainability," "community," or "nature," often undermining local livelihoods, production systems, and socio-political organizations.

B. Neo-Marxist Political Ecology and Social Relations of Production

Neo-Marxist political ecology emphasizes that resource management is embedded in global capitalism's structural inequalities. Class relations are central to production and conservation, where policies often reinforce powerful actors' dominance and vulnerable groups' exclusion (Bryant and Bailey 1997; Hakim 2018; Watts and Peet 2004). Harvey (2003) terms this "accumulation by dispossession"—appropriating public resources for capital accumulation. Agroforestry production becomes an exploitation site when resource control is unjust, deepening inequalities and reinforcing exploitative social relations rather than supporting sustainability (Bernstein 2020; Harvey 2003).

C. Actor-Oriented Approaches to Power Relations

Actor-oriented political ecology views power as emerging from social interactions through everyday strategies and negotiations (Benjaminsen and Svarstad 2018; Long 2001; Svarstad, Benjaminsen, and Overå 2018). Power encompasses not only domination but also the capacity to mobilize economic, social, political, and symbolic capital to shape environmental management outcomes (Bryant 1998). This approach illuminates how smallholders, capital providers, and state institutions interact within coffee agroforestry systems.

RESULTS AND DISCUSSION

A. Coffee Cultivation: A History of Exploitation and Marginalization in Priangan–Upper Citarum

This subsection departs from the assumption that state policies on land and population have been key factors shaping the dynamics of coffee cultivation in the Priangan–Upper Citarum region. Within a political ecology framework, the history of coffee is understood as part of a politicized environment, in which landscape transformations are always entangled with the political–economic relations that regulate them (Bryant and Bailey 1997; Mulyanto 2022). This reading is crucial to ensure that current coffee agroforestry practices do not reproduce the unequal social relations rooted in the colonial era.

By the 17th century, the rapid growth of coffee demand in European markets drove the Dutch to compete in a trade previously monopolized by Arab merchants. The VOC introduced coffee cultivation in Priangan in the early eighteenth century, extending into the Upper Citarum region by the 1720s, including Girilarang village. By 1726, Javanese coffee had dominated European markets and generated colonial profits for more than two centuries (Breman 2014; Indarto 2014; Mulyanto 2022). Table 1 presents the periodization of land, labor, and capital control in the Priangan–Upper Citarum area (1677–1942) across six historical phases.

Table 1. History of Land, Labor, and Capital Control in Priangan–Upper Citarum (1677–1942)

Period and Year	Land	Labor	Capital
Mataram–Early VOC ±1677–1710	Land under royal ownership (hak dominium), with access mediated through regent/*menak* patronage. Farmers did not possess permanent ownership rights.	Corvée labor for regents and the VOC, with tribute in the form of agricultural produce (including the early introduction of coffee).	Royal political-bureaucratic capital and VOC trading networks monopolized exports.
VOC Coffee Monopoly 1711–1799	Home gardens and forests were converted into coffee plantations under mandatory cultivation quotas. Land ownership remained under the control of the regents–VOC.	Tenant farmers were required to plant and deliver coffee, bearing the risks of crop failure.	VOC trading capital, river depot infrastructure, and transport networks for export.
Daendels (French)–Raffles (British) 1800–1830	Expansion of coffee plantations into steep slopes, resettlement of villages to facilitate control.	Mandatory cultivation of 500–1000 trees per household, forced labor for road and infrastructure construction.	Colonial state capital for military and infrastructure, financed through production levies.
Priangan System/Cultuurstelsel ±1830–1870	Coffee agroforestry replaced by large-scale monocultures. The state held full control over production land.	Organized forced labor by regents, mobilization of village labor, price monopoly by the colonial government.	Colonial state capital, centralized distribution and export networks through ports.

Agrarian Liberalization 1870–1900	European private estates through long-term *erfpacht* (leasehold rights), independent estates owned by wealthy farmers, and rental of land to tenants.	Permanent and seasonal wage laborers, tenant farmers on leased land, indebtedness to moneylenders.	European private capital, Chinese traders, and indigenous elites; investment in new export crops (cinchona, tea, rubber).
Late Colonial Period 1900–1942	Large-scale planned estates (tea, cinchona, rubber, and coffee) supported by irrigation and transport infrastructure.	Permanent contract labor under strict supervision, seasonal migrant labor with low daily wages.	European private capital integrated into global markets, Chinese merchant capital in local trade; political and security support from the colonial state.

(Data compiled from Breman 2014; Indarto 2014; Mulyanto 2022)

The history of coffee cultivation reveals capitalism as the driving force that integrated coffee into global commodity chains, centralized profits in the hands of colonial and capitalist elites, and transformed farmers into laborers. For more than two centuries, shifting power relations governed access to land, the mobilization of labor, and the circulation of capital. These dynamics demonstrate how state policy, market interests, and local actors became entangled in producing a landscape marked by exploitation and marginalization.

The period between 1720 and 1942 exemplifies what Harvey (2003) terms "accumulation by dispossession," characterized by recurring patterns: farmers' marginalization through the loss of access rights and dependence on wage labor; exploitation through surplus extraction, price monopolies, and land rent; and control through spatial regulation, village bureaucratization, and market integration. Colonial political-economic policies also drove a transformation of production that intensified the extraction of natural resources: (1) the shift from coffee-based agroforestry to large-scale monocultures; (2) the expansion of dryland cultivation with introduced crops (such as cassava and potatoes); and (3) forest timber exploitation leading to deforestation, biodiversity erosion, and massive environmental degradation after 1870 (Mulyanto 2022).

At the point of ecological degradation, conservation became a rhetoric of control an instrument to maintain authority over resources and labor (Bryant and Bailey 1997; Mulyanto 2022). Although large capital holders were the main agents of degradation, colonial reports blamed dryland farmers, a political strategy to legitimize state intervention (Brookfield 1997; Mulyanto 2022). Conservation programs such as terracing and agroforestry in the Upper Citarum failed to succeed because they imposed additional burdens on farmers: terracing was rejected for being costly and reducing initial yields, while private estates were exempted; agroforestry faltered due to high labor costs, low incentives, and its incompatibility with subsistence needs. For the colonial administration, both policies functioned as techniques of control and sedentarization to render farmers more taxable and governable (Mulyanto 2022). As noted by Robbins (2012), Blaikie and Brookfield (1987), and Bryant and Bailey (1997), the socio-ecological costs of

degradation were borne by communities and the environment, not by capital interests.

It can be concluded that the current environmental degradation in the Upper Citarum is the outcome of a long historical dynamic. In this context, the coffee agroforestry system promoted in the name of conservation resembling colonial agroforestry policies must be critically examined to avoid reproducing the unequal patterns of colonial power relations. To do so, the following subsections analyze the social relations of production to land, labor, and capital.

B. Social Relations of Production in Relation to Land

a. Dynamics of Land Control: Land Occupations vs. Conservation as Control

The land tenure system in West Java is a colonial legacy. Post-independence nationalization (1953) transferred Dutch plantation lands to state control rather than returning them to local communities (Peluso 2006). Management rights were passed to state-owned enterprises (*Badan Usaha Milik Negara*/BUMN) in forestry and plantations, creating tenure inequalities in Girilarang Village, where corporate-controlled areas vastly exceed community-owned land.

Residents of Girilarang Village distinguish three land types: (1) *tanah jami*—privately owned ancestral land with National Land Agency certification; (2) plantation land—state land managed by PTPN VIII and PT Lonsum; and (3) forest land—state land under Perhutani management. Categories (1) and (2) operate under Right of Cultivation (*Hak Guna Usaha*/*HGU*). Protected forests, classified as *leuweung nagara* (state forest), fall under the Ministry of Environment and Forestry (*Kementerian Lingkungan Hidup dan Kehutanan*/KLHK). Land distribution is shown in Figure 1.

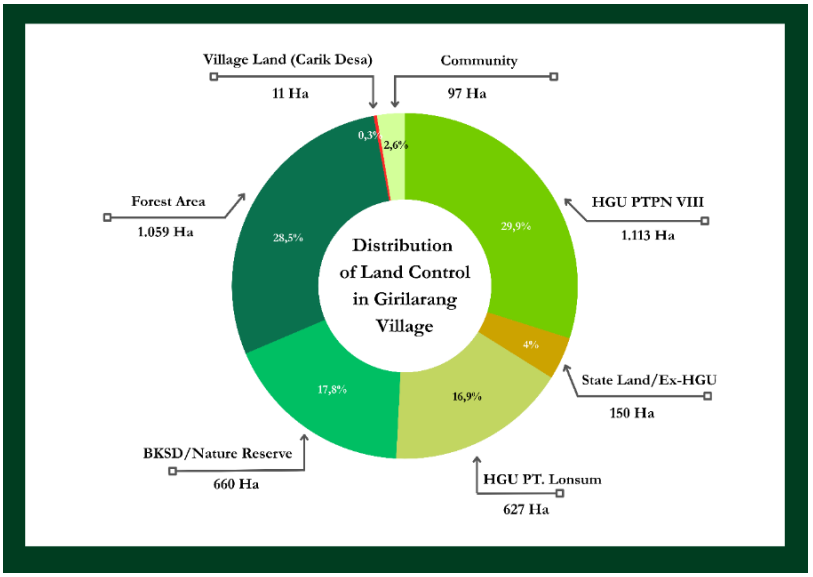

Figure 1: Distribution of Land Control in Girilarang Village

Source: Girilarang Village Profile, 2024

Girilarang's population of 15,851 comprises 4,818 households (HH): 3,802 landless agricultural labor

households and 523 farming households. With 79% relying on agriculture, limited community-owned land already allocated for settlements and farming creates fundamental problems. This scarcity drives villagers to seek alternative cultivation plots.

Vegetable farming in Upper Citarum–Girilarang Village originated from colonial-era subsistence needs, with households cultivating horticultural crops in home gardens and estate interspaces. The 1970s Green Revolution introducing high-yielding varieties, chemical inputs, mechanization, and transport infrastructure massively expanded dryland cultivation and productivity (Mulyanto 2022; Suryanata 1994). Market integration shifted cultivation from tubers to high-value commodities like potatoes and cabbage (Hefner 1999).

The high economic value of horticultural crops especially potatoes combined with the scarcity of community-owned land led to widespread forest clearing, resulting in degradation. In response to rising degradation, the West Java Provincial Government in the mid-1980s restricted access to forest areas in Bandung Regency. This policy was based on the technocratic assumption that excluding local communities would restore ecosystems. In practice, however, the policy failed to achieve its conservation goals and instead provoked resistance from local communities whose livelihoods depended on the forest. At the same time, the degradation revealed the inability of forestry institutions to effectively monitor and manage forest resources (Gunawan et al. 2023).

The 1997/98 economic crisis exacerbated conditions. Large-scale exploitation was triggered by a government program that provided access to capital in the form of the Farmer Business Credit (*Kredit Usaha Tani/KUT*). According to farmer organization leaders, KUT in the post-crisis era was intended for smallholders was dominated by "pseudo-farmers" capitalized individuals without land or experience who cleared forest and expired PTPN concession areas. Farmers reported that the uniform horticultural production created oversupply and price collapses, leaving only experienced farmers viable while triggering an environmental crisis.

In response, the government launched *Citarum Bergetar* (2002) for reforestation and conservation control, requiring farmers to withdraw from conservation areas and adopt agroforestry. *Forum Petak* facilitated the 3A scheme: *Alih Komoditas* (commodity shift to coffee, castor, avocado), *Alih Profesi* (profession shift to livestock), and *Alih Lokasi* (relocation to Koleberes, Cianjur opposed by Cianjur residents). This program reshaped Girilarang's agrarian landscape, making coffee-based agroforestry central to land management and institutionalizing farmers as Perhutani partners through *Lembaga Masyarakat Desa Hutan*/LMDH (Village Forest Community Institution) under the PHBM policy.

Citarum Bergetar initiated a series ICWRMIP (2008), *Citarum Bestari* (2013–2016), and military-overseen *Citarum Harum* (2018–2025) all maintaining coffee-based agroforestry. Constant program restructuring reflects persistent local resistance to land access loss. In 2013, peasant movements conducted Participatory Rural Appraisal (PRA), concluding that poverty stemmed from unequal land access. They opened 25 hectares of abandoned post-1998 PTPN land to establish *Kampung Rakyat* (People's Village),

but the state reclaimed it through Citarum Harum for seed nurseries.

Unequal land tenure creates power dynamics between state forestry enterprises and farmers. Under coffee-based agroforestry, land remains state property, enterprises manage, and communities cultivate. Conservation policies function as a tacit ideology of national control (Dove and Kammen 2001 in Robbins 2012). The state monopolizes land authority under ecosystem protection pretexts, placing farmers in subordinate positions: land is "lent" through specific schemes without long-term rights guarantees and under eviction threats. Joint forest management schemes are essentially control forms, with conservation discourse legitimizing spatial control rather than purely ecological endeavor (Robbins 2012), sparking farmer land occupations.

This parallels cases examined by Weeber (2016): Kenya's Tana River Delta green projects (biofuel, conservation) displaced communities; Chiapas, Mexico tourism and conservation initiatives removed indigenous groups. Conservation claims enable land control while generating resistance. Unlike Girilarang's everyday resistance practices, Kenyan and Chiapas struggles were reinforced by transnational advocacy networks Nature Kenya and East African Wild Life Society provided legal access, litigation funding, and national-international networks.

b. Agroecological vs. Agroeconomic: Competition among Commodities and Farmers' Survival Strategies

Situated at an elevation of 1,400–1,600 meters above sea level, with daily temperatures ranging from 15–20°C and land slopes exceeding 50%, Girilarang Village offers ideal agroecological conditions for Arabica coffee. Coffee cultivation involves five main stages: land preparation, planting, maintenance, harvesting, and post-harvest processing. In agroforestry systems, maintenance includes the integration of shade trees to support both conservation and productivity (Puspitawati, Hasanah, and Febryani 2020).

In terms of typology, the form of agroforestry practiced in Girilarang Village is the tumpangsari (intercropping) system. Abdoellah (2021) explains that this pattern is generally implemented on state land by farmers living near production forests or plantations through cooperative arrangements. The tumpangsari system is inherently temporary, as it only lasts until the forestry or plantation crops mature. This condition often generates anxiety among farmers over the potential loss of land access.

On forest lands, tenant farmers cultivate coffee and vegetables alongside shade trees in 1x3 or 1x4-meter alley formations. Agroforestry also requires farmers not to cut down forest trees. The spacing of shade trees must be adjusted to provide the level of shade required by coffee: about 35–66% for young plants and 30–50% for mature, productive plants. A study by Supriadi and Pranowo (2015) shows that managing the spacing and density of shade trees helps determine optimal shading for coffee, ensuring that tree characteristics, age, and shading effects do not create competition among commodities. However, the dominant Perhutani-managed species pine and eucalyptus create significant production challenges.

Farmers reported that pine and eucalyptus created difficulties in coffee production, causing slower growth and lower yields. Pine reduces light intensity and its leaf litter hampers pollination, while eucalyptus's extensive root system competes intensely for water and nutrients, thereby reducing resource availability for coffee (Hakim 2021).

On PTPN VIII plantation land, coffee-vegetable intercropping occurs almost without shade trees (Figure 2), despite their crucial role in preventing overbearing and protecting coffee plants. Here, coffee paradoxically functions as shade for horticultural crops requiring open land.

A) Intercropping on forest land; B) intercropping on plantation land; C) intercropping on private land.

Figure 2: Comparison of intercropping systems across different land types
Source: Field Research

This competition among commodities is further exacerbated by planting patterns. Referring to the 1x3 meter alley system, one hectare should ideally contain 2,500 to 3,000 coffee trees. In practice, however, farmers almost always deviate from this spacing arrangement. Based on in-depth interviews, planting density is polarized: farmers committed to coffee cultivation plant at high densities, while those prioritizing vegetables plant below the minimum threshold. Both represent forms of land-use efficiency aligned with their primary crop choices.

This complexity reveals how power relations operate through land and tree ownership rules. Land status determines farmers' sovereignty over cultivated trees, leading them to prioritize crops they own and from which they gain immediate benefits. On state-controlled lands, farmers favor vegetables, often thinning or secretly killing coffee or shade trees through *di-gramoxone* pouring herbicide on roots to cause rapid withering.

This situation resembles findings by Folefack and Darr (2021) in Cameroon, where cocoa landowners often clashed with fruit producers who inherited fruit trees (safout, bush mango, ndjansang) within cocoa plots. Conflicts arose because landowners resisted planting fruit trees to protect cocoa yields, while tree owners sought to expand their crops but lacked land. Compared with Westphal's (2008) in the Meseta de los Pueblos, Nicaragua, the diversification of shade trees emerged from smallholder initiatives aimed at strengthening household economic resilience. A similar pattern is evident in *tanah jami* in Girilarang, where coffee is cultivated alongside vegetables and shade trees such as avocado and citrus. In both Nicaragua and *tanah jami* systems, farmers care for coffee and shade trees alike because both belong to them.

By contrast, in Girilarang, coffee is often not positioned as a primary commodity but rather as a strategic means of gaining and maintaining land access under state conservation schemes. This reveals the asymmetry of power relations: the state acts as the sole authority over forests through conservation regulations, while farmers are granted only limited access under conditional arrangements. Farmers cannot fully treat coffee as an economic commodity since their land status does not guarantee ownership; instead, coffee functions as a "marker of presence" legitimizing cultivation rights. Under such unequal conditions, strategies like maintaining some coffee trees, thinning, or secretly killing trees with *gramoxone* constitute what Scott (1985 in Benjaminsen and Svarstad 2018) describes as everyday forms of resistance. Through these practices, farmers not only survive threats of eviction but also renegotiate their power relations with the state.

c. Contractual Institutions as a Pathway to Land and Tree Control

The limited ownership of land has given rise to contractual institutions governing access to land through social and production relations. Agrarian contracts occur between landholders and cultivators, whereby cultivators obtain rights to manage the land for a specified period. Control over trees may also be arranged through contracts between cultivators and capital providers. In Girilarang Village, where coffee-based agroforestry is relatively new and institutional arrangements remain fluid, contracts take shape through profit-sharing, leasing, and pawning (*gadai*).

1. Profit-Sharing

Profit-sharing is a system in which agricultural yields are divided between cultivators and landholders. This arrangement exists in formal PHBM partnerships on forest land. Farmers are granted access to land on the condition that they cultivate coffee as both a commodity and a conservation crop, intercropped with timber species. The contract has no time limit. Coffee harvests are divided, with 70% for farmers and 30% for Perhutani. However, in practice, this ratio is negotiable, especially in years of low yields.
Farmers interviewed reported that they often refuse to remit their profit shares. Some argued that since they are already providing environmental conservation, it is the state that ought to compensate them. Others admitted to giving only a token payment, referred to as "*uang rokok*" (cigarette money), when collection officers came. These actions reflect resistance against the unequal power relations between the state as forest authority and farmers as cultivators. By refusing to remit shares, farmers invert the logic of conservation: they perceive themselves as protecting forests through coffee agroforestry, and therefore believe the state should compensate them for their ecological services. This reasoning redefines their position not as tenants of state land, but as providers of ecological benefits. Meanwhile, the practice of giving "uang rokok" represents a hidden transcript of resistance (Scott, 1985 in Benjaminsen and Svarstad 2018) whereby farmers maintain social relations to avoid open conflict while simultaneously undermining

state control through only symbolic contributions.

2. Leasing

Leasing essentially constitutes an agreement between two parties for the use of land over a specified period, with upfront cash payments made at the beginning of the contract. In Girilarang, lease terms are annual, with prices varying by location, land accessibility, and negotiation. Steep, remote plots far from water sources tend to be cheaper, while flat land near settlements commands higher prices.

In Girilarang's coffee intercropping system, leasing is formalized through PTPN's Community Empowerment Program (*Pemberdayaan Masyarakat Desa sekitar Kebun/Hutan, PMDK*), which grants villagers access to cultivate vegetables intercropped with plantation-owned coffee. According to village officials and farmers, lease costs are around IDR 5 million per hectare or IDR 200,000 per patok per year, though these figures remain negotiable. Compared to leasing on private land, which costs IDR 500,000 per patok per growing season (3-4 months), plantation leases appear cheaper. However, farmers often avoid leasing plantation land for three reasons: (1) limited capital among smallholders; (2) heavy labor required to clear residual tea or cinchona plants; and (3) the perception that plantation land, as ex-HGU (expired concession), should be "free land." The refusal of Girilarang farmers to accept plantation lease contracts has led to much land being taken over by outsiders, sparking repeated episodes of resistance. Activists recounted instances when peasant movements "expelled" outside cultivators and reclaimed the land. Yet PTPN's intervention, backed by police forces, triggered new cycles of contention. In this context, intercropping coffee with vegetables has emerged as a temporary compromise, easing tensions without resolving underlying inequalities

Tensions reemerged when plantation authorities attempted to attract "large farmers" in Girilarang to lease land. Informants reported that while the rental price was affordable, large farmers declined due to fear of conflict with smallholders already cultivating the plots. At the same time, smallholders intercropping vegetables with plantation coffee refused to pay rent as a form of resistance against unequal power relations between the plantation and cultivating communities. In line with Scott (1985 in Benjaminsen and Svarstad 2018), such actions represent everyday resistance: practices of noncompliance that nonetheless effectively challenge dominant power. In Girilarang, this resistance is expressed not only through rejecting lease contracts but also through sabotage and the theft of coffee cherries. These acts are morally justified by the community on the grounds that they are the ones who nurture and protect the coffee trees. Thus, such practices are not merely violations of rules but symbolic efforts to invert power relations and assert their claims over production outcomes.

3. Pawning

Gadai (pawning) is a loan contract in which a certain plot of cultivated land is pledged as collateral. The landowner receives cash and hands over the land to the lender for cultivation until repayment is made. During the pawn period, the land and all agricultural yields belong entirely to the lender. This practice is common in Girilarang Village, particularly when farmers are in urgent need of funds.

In addition to land, harvests such as coffee can also be pawned through ijon contracts, locally referred to as cangkol, especially near harvest season. For example, one farmer pawned the harvest from 3,000 coffee trees to cover his child's graduation expenses. He received IDR 30 million from a trader, although he only needed IDR 20 million. The selling price of the coffee could not increase even if market prices rose, as it was already bound by contract. According to the farmer, he did not consider this a loss, since it was reasonable for the trader who helped him to profit. The remaining IDR 10 million was repaid during the following harvest. This pawning of coffee harvests resembles Suryanata's (1994) findings on "tree sharecropping" in East Java, where trees served as instruments to legitimize claims to land without formal rights. However, unlike apple tree sharecropping, which created a new social stratification of "apple lords," Girilarang has no "coffee lords," as coffee has not yet become a leading crop for farmers.

The social relations of production over land in Girilarang Village reveal agrarian inequalities that position farmers as cultivators of state land without ownership security, leaving them vulnerable to land loss due to policy changes or conflicts of interest. Various contracts—profit-sharing, leasing, and pawning—generate layered agrarian relations dependent on control over land and trees. The presence of these contractual institutions also creates opportunities for wealthy farmers from outside the village to gain land access, often triggering social tensions. This stands in contrast to Mexico, where agrarian reform gave rise to ejido and turned farmers into landowners (Trujillo 2008).

C. Social Relations of Production in Relation to Labor

a. The Ambivalence of Smallholders

The main livelihood of Girilarang villagers is agriculture, which is dominated by farm laborers. This situation shapes an agricultural labor structure that is layered through wage labor relations between cultivators and laborers, as well as the use of family labor. There are two categories of cultivators: (1) individuals or households with access to relatively large plots of farmland who therefore require additional labor to manage their land; and (2) individuals or households with access to small plots of farmland (1–6 patok). Meanwhile, farm laborers are households without land or with only narrow plots, thus selling their labor to meet household needs.

Smallholders occupy an ambivalent position: they cultivate their own land by relying on family labor, but during intensive stages such as harvesting and land preparation, family labor is often insufficient, forcing them to also employ laborers. Petchers and Harris (2008) note that 70% of the world's coffee producers

are small-scale family farmers who generally depend on household members for daily production activities. At the same time, these smallholders also work as laborers for larger-scale cultivators in order to meet their daily needs and production capital requirements.

b. Wage Systems and Classification of Farm Laborers

Labor in Girilarang is bound within a wage system that employs two different measures: (1) daily wages based on working time, with duration commonly measured in units of sabedug—from six in the morning until twelve noon, marked by the bedug drum that signals the Duhur prayer. Wages vary depending on the type of work and the perceived difficulty of the task. If work extends beyond standard hours, additional overtime pay is provided per hour; (2) piece-rate wages based on output volume or land area managed. Common units include sapatok (approximately 400 m^2) for land size, sakarung (±50 kg), and sakilo (1 kg) for weight. For example, transporting harvested crops is paid at IDR 200–500 per kilogram depending on distance to road access and whether transport is manual (*ditunjal*) or mechanized (*ojeg gunung*). Such piece-rate work usually requires the mobilization of large numbers of laborers and rapid completion. This wage system applies to both horticultural and coffee commodities.

In general, the classification of coffee agroforestry laborers in Girilarang falls into two groups: casual laborers and seasonal laborers. Casual laborers work flexibly and may negotiate wages directly, while seasonal laborers are hired only during the coffee harvest. Although not permanent workers, both casual and seasonal laborers are selected individuals who often remain the same over time, based on kinship ties or trust.

This classification of farm labor reflects the power relations between landholders/cultivators and workers, which Mulyanto (2022) and Gunawan et al. (2023) describe as a patron–client pattern. Casual laborers appear flexible because they can negotiate wages, but they remain bound within patron–client relations rooted in closeness and trust, which reinforce dependency. Seasonal laborers are more vulnerable since they work only during harvest time and have low bargaining power. This pattern illustrates that power is not only present in land control and production outcomes, but also in labor relations, where patrons control access and continuity of work, while laborers negotiate their livelihoods from a subordinate position.

c. Smallholder Capital Management Strategies and the Vulnerability of Farm Laborers

Coffee cultivation in Girilarang involves a complex labor system with a division of tasks according to production stages. The organization of labor can be seen in Table 2.

Table 2. Labor Production Relations in Coffee Agroforestry Cultivation

No	Stages	Labor Classification	Wage System	Unit	Wage Range (IDR)	
					Male	Female

1.	**Land Preparation**					
	Setting up planting structures (*Ngajir*)	a, b	e	g	40-50.000	
	Land cleaning (*Nyasap/Ngoréd*)	a, b	e	g	40-50.000	
	Hoeing (*Macul*)	a, b	e	g	40-50.000	30-50.000
	Plot marking (*Ngagurat/Ngagarit*)	a, b	e	g	40-50.000	
2.	**Planting**					
	Digging planting holes (*Nyoblak*)	a, b	e	g	40-50.000	
	Applying organic/manure fertilizer (*Nandon*)	a, b	e	g	40-50.000	
	Planting seedlings (*Melak*)	a, b	e	g		30-50.000
	Watering (*Nyébor*)	a, b	e	g	40-50.000	
3.	**Maintenance**					
	Applying growth enhancers (*Ngobat*)	a, b	e	g	40-50.000	
	Weeding (*Ngesrik*)	a, b	e	g	40-50.000	30-50.000
	Loosening the soil (*Nyukcruk/Nyukeruk*)	a, b	e	g	40-50.000	
	Applying chemical fertilizer (*Ngemés*)	a, b	e	g	40-50.000	
	Removing water shoots (*Nyeték*)	a				
	Pest spraying (*Ngobat*)	a, b	e	g	40-50.000	
	Applying flower stimulant (*Nyemprot*)	a, b	e	g	40-50.000	
	Scrubbing moss (*Nyikat*)	a, b	e	g		30-50.000
	Pruning shade trees (*pruning*)	a, b	f	Tree	100.000	
4.	**Harvesting**	a, c	e	g	40-50.000	30-50.000
5.	**Post-Harvest**					
	Transporting the harvest	b	f	Kg	500	
	Marketing	d		Kg	13-16.000	

Notes: a = family labor, b = casual laborers, c = seasonal laborers, d = self-managed, e = daily wage, f = piece-rate, g = duration (*ngabedug*)

Source: Field Research, 2025

In the practice of coffee agroforestry in Girilarang, both on state forest land and privately owned plots, cultivators generally rely on family labor. Hired labor, whether casual or seasonal, is only employed at specific stages. Based on interviews with farmers, this is due to the characteristics of coffee, which does not require continuous intensive care, and its annual harvest cycle, which encourages farmers to minimize capital expenditures. In daily production activities, farmers mostly depend on family labor; hence, the presence of permanent laborers is considered inefficient.

The use of casual labor is generally concentrated in the early stages of cultivation, such as land preparation and planting. In routine maintenance, such as pest spraying, replanting, and weeding, casual labor may be employed, though only partially. One of the highest-paid jobs is pruning shade trees, which demands

technical skills and carries high risks. However, this work is rarely undertaken due to limited capital, even though dense shading reduces coffee productivity.

Coffee harvesting is carried out by family members and seasonal laborers under the ngabedug system. Although the piece-rate system (IDR 1,000-2,000/kg) is known, farmers prefer the daily wage system because piece-rate harvesting often results in unselective picking that damages trees, leading to higher wage costs. Only in post-harvest transport is the piece-rate system applied, given the perishable nature of coffee cherries that quickly ferment if not processed immediately. Meanwhile, cherries are sold fresh to middlemen at IDR 13,000-16,000/kg (2023-2024), due to limited processing facilities. This situation is described by Trujillo (2008), as a surge in labor demand during harvest that raises labor costs and reduces profitability, particularly amid volatile markets. Labor shortages during this critical period also risk crop losses. These findings align with Trujillo's (2008) study in Mexico, which shows that labor demand in coffee agroforestry peaks at harvest, while other stages such as planting and pruning remain more flexible.

Coffee cultivation tasks in Girilarang are also shaped by gendered perceptions. Certain tasks such as deep digging, guarding fields, or pruning are considered masculine, while harvesting is more associated with women. As Kinasih and Wulandari (2021) note, although most agricultural work is now considered gender-neutral, wage disparities remain: male laborers receive higher pay and are the only ones provided with additional benefits such as cigarettes and coffee. Mulyanto (2022) further observes that within the logic of efficiency, women are often preferred as laborers because they are cheaper, despite their more limited availability. This reflects the capitalist logic of cost efficiency for profit accumulation. Such practices show how capitalism exploits social inequalities by positioning women in low-wage work, thereby expanding surplus for capital holders while reproducing the subordination of female laborers within the production structure.

The organization of labor in Girilarang's coffee agroforestry system reveals patterns of exploitation as described by wage labor relations, alongside patron–client ties between cultivators and casual laborers, in which laborers are denied social security in exchange for low wages. According to Petchers and Harris (2008), coffee farm laborers are the most vulnerable actors, as cultivators may at any time cut production costs by reducing labor and wages when faced with capital shortages.

D. Social Relations of Production in Relation to Capital

a. Limited Access to Formal Capital and Smallholders' Dependence on Capital Providers

In the coffee agroforestry system of Girilarang, capital is a key prerequisite to initiate and sustain cultivation, particularly since coffee can only be harvested after a minimum of two years, requiring farmers' endurance. Capital does not only take the form of cash but also includes land, consumable inputs, seedlings, production tools, and access to markets. Many farmers reported that they initially received free seedlings from the government under the agroforestry program. Beyond that, however, no further

support was provided.

Ironically, although the coffee agroforestry program was promoted by the state, access to formal capital is nearly nonexistent. According to farmers, they cannot obtain bank loans such as *Kredit Usaha Rakyat (KUR)* because they lack collateral such as land certificates or licensed motor vehicles—and because coffee is a perennial crop, unlike vegetables which generate faster turnover. Similar difficulties in accessing formal credit are also experienced by agroforestry farmers in Central Sulawesi (Li 2020), Cameroon (Folefack and Darr 2021), Nicaragua (Westphal 2008), and Honduras (Petchers and Harris 2008).

In this situation, smallholders employ a range of survival strategies. Many cases show that they cope with capital shortages by borrowing from relatives, selling valuable items, renting out part of their land, or cutting labor costs by relying on family members. When they cannot access capital, farmers often resort to the local practice of ceb-cul planting coffee without regular maintenance—leaving it to nature. Quite a few eventually relinquish their cultivation rights to relatives or other farmers. The situation in Girilarang resembles findings by Gunawan et al. (2023) in Mekarwangi and Lebak Muncang, where poor farmers often surrender their management rights through the informal practice of *ngaleper*, meaning "to transfer or take over" cultivation plots due to capital constraints.

The absence of access to formal credit opens space for non-formal financing shaped by interactions between two actors: capital providers and cultivators. Capital providers may include large farmers, collectors, or traders who have access to production inputs. Cultivators, by contrast, are smallholders lacking sufficient resources to farm independently. Smallholders' dependence on capital providers is marked by contracts of leasing and pawning, as well as by their entry into labor circuits. Capital providers can extend their control through loans, input provision, and dominance over crop distribution. In this way, they may control land and trees without direct involvement in production.

One noteworthy non-formal financing practice is tree pawning contracts (*cangkol*). Here, a capital provider advances money to a farmer prior to harvest as a form of pre-purchase of yields. According to a coffee collector, this practice is common among both small and large traders. However, in 2022, he suffered losses when several farmers who had received advances sold their harvests to other collectors. As a result, he decided to stop practicing cangkol in 2023. A larger trader experienced similar cases but, given his greater financial capacity, managed to offset losses with overall profits.

The strategy most frequently adopted by smallholders is intercropping coffee with vegetables. On state forest land, this practice is technically illegal, yet Perhutani cannot prevent it. If coffee farmers themselves do not engage in intercropping with vegetables, they often share land with horticultural farmers without paying rent or sharing profits. This practice persists because it offers dual benefits: vegetable farming subsidizes coffee production costs, while vegetable care indirectly maintains the coffee. It is possible that this practice was adopted from intercropping patterns on plantation land. Yet behind this lies a matter of power relations: coffee becomes the "secondary tenant" in a system where its care is undervalued.

This situation resonates with Harvey's (2003) notion of "accumulation by dispossession," in which the value of farmers' labor is absorbed by land authorities controlling the harvest. Such authorities overlap between state actors, corporations, large farmers, and among smallholders themselves. Drawing from Scott (1985 in Benjaminsen and Svarstad 2018), intercropping strategies may also be read as everyday resistance, whereby farmers exploit structural gaps to survive without directly confronting state power. Thus, this practice is not merely a technical adaptation but illustrates how coffee agroforestry becomes an arena of negotiation, accumulation, and resistance under the regime of state conservation.

b. Strategies of Individual Accumulation

Farmers interviewed stated that they could live relatively well from coffee farming if they had at least 2 hectares of land unlike vegetables, which can still yield profits even on smaller plots. According to Mulyanto (2022), a minimum of 2 hectares per household is required for farming to be economically viable, meaning sufficient to cover production costs, household needs, and the risks of crop failure. However, the majority of farming households in Girilarang are dominated by smallholders, accounting for 87.5% (see Figure 3). In other words, farm sizes that are too small render production inefficient and insufficient to sustain livelihoods. For this reason, coffee farmers pursue various production strategies to accumulate capital.

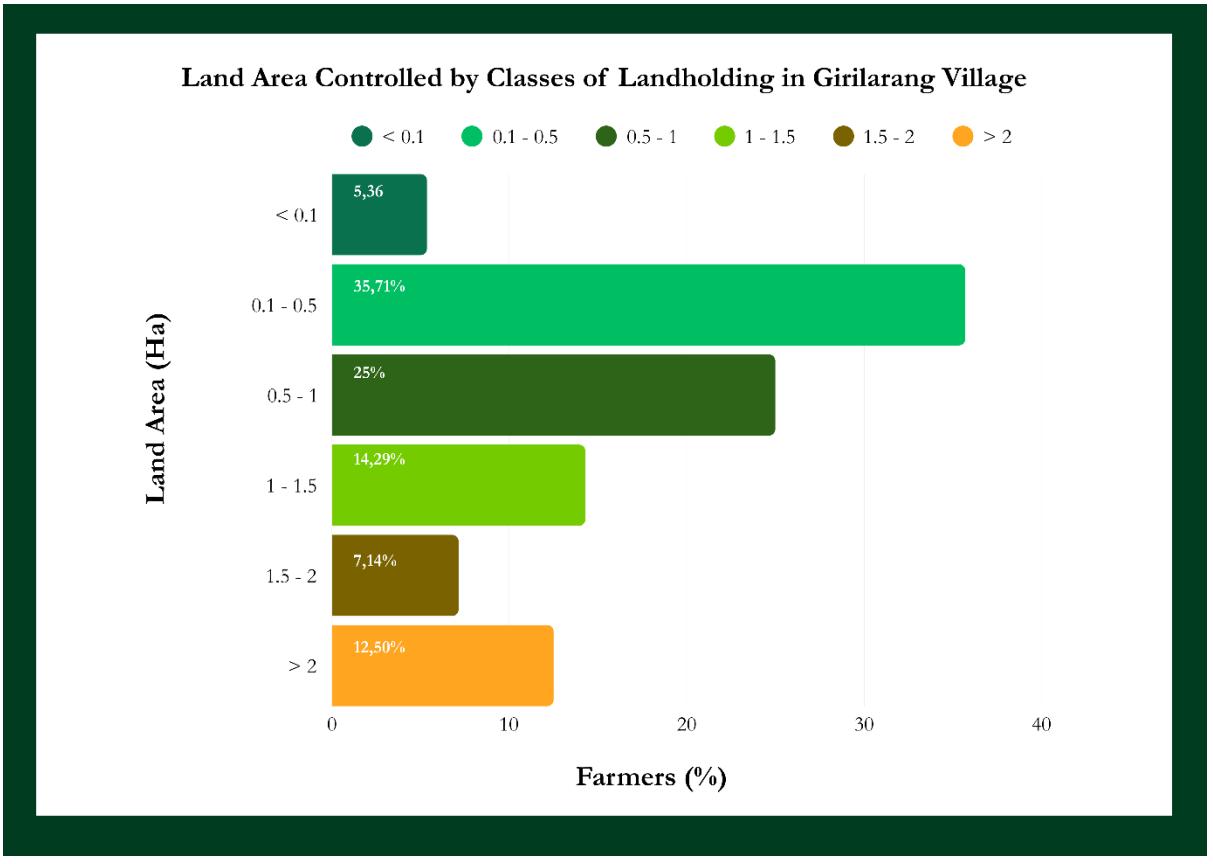

Figure 3: Land Area Controlled by Classes of Landholding in Girilarang Village

Source: adapted from Saeful 2020

Access to capital becomes the key differentiator between farmers who are able to expand and those who can only manage coffee trees under the *ceb-cul* system. For example, one farmer once suffered losses because poor drainage caused many of his trees to be submerged and die. Yet he continued to improve the spatial layout of his plantation independently. With a routine fertilization scheme and special treatments, his harvest now reaches 11-12 tons per year. By contrast, another farmer practicing ceb-cul failed to intercrop vegetables due to the density of timber and coffee trees. With limited capital and difficulty maintaining the plot, he eventually *ngaleper* (transferred his cultivation rights) to his relative.

The ngaleper phenomenon illustrates that coffee agroforestry, as noted by Suryanata (1994; 2002), essentially becomes a strategy of individual accumulation. In many cases, farmers who transfer their cultivation rights are later employed as laborers by those who take over their land to maintain the coffee trees. For instance, one farmer successfully expanded his coffee business from upstream to downstream owning plantations, acting as a collector, processing coffee, and marketing finished products directly to consumers. He managed to secure additional capital from the bank. His initial holding of 2 hectares grew to 7 hectares through taking over land from other coffee farmers who had ngaleper. He then employed those same dispossessed farmers as laborers.

The practice of *ngaleper* creates opportunities for farmers with capital access to accumulate land while simultaneously absorbing the labor of smallholders who have lost their cultivation rights. As Suryanata (1994; 2002), argues, under the pressures of the market and capital requirements, coffee agroforestry loses part of its sustainability potential while deepening unequal power relations in access to resources. Thus, the mechanism of individual accumulation through ngaleper not only reproduces structures of inequality but also shifts agroforestry from a shared subsistence system into an instrument of land capitalization.

CONCLUSION

Coffee-based agroforestry in Girilarang Village functions both as a strategy for ecological conservation and as an instrument of state control over natural resources. It constitutes an arena of power contestation within the social relations of production involving land and tree tenure, labor, and capital among four main actors: land owners/controllers, cultivators, agricultural laborers, and capital holders. Within this structure, ownership of coffee trees becomes a key instrument for asserting spatial claims. The state, through state-owned forestry and plantation enterprises, occupies a dominant position as the primary landholder, while farmers remain vulnerable to eviction or land-use conversion. Cultivators exercise authority over laborers but remain dependent on both the state and capital holders. Capital holders, in turn, are able to control land through contractual arrangements without direct involvement in cultivation. Agricultural laborers occupy the most subordinate position, further reinforced by gender-based inequalities. Nevertheless, these power relations are not absolute: farmers and laborers demonstrate agency through everyday forms of resistance and survival strategies that renegotiate dominant power

relations.

Theoretically, this study contributes to agrarian change and political ecology scholarship by demonstrating how agroforestry simultaneously reproduces and renegotiates unequal social relations of production. The policy implication advanced is the need for a redistribution of management authority, particularly by granting farmers greater autonomy in selecting economically valuable shade tree species in order to achieve both ecological and economic justice. The main limitation of this study lies in the long-term nature of coffee production; therefore, further research is needed to trace the dynamics of social relations of production once agroforestry systems enter full production, approximately five to seven years after establishment.

REFERENCES

Abdoellah, Oekan S. 2021. *Agroforestri & Pembangunan Perdesaan Berkelanjutan Di Indonesia: Aspek & Prospeknya*. 1st ed. Jakarta: Jakarta: PT Gramedia Pustaka Utama.

Abdoellah, Oekan S., Indri Wulandari, Sunardi, Teguh Husodo, and Yusep Suparman. 2021. "Pemahaman Petani Terhadap Sistem Agroforestry Di Kecamatan Kertasari Kabupaten Bandung." *ETHOS: Jurnal Penelitian Dan Pengabdian Kepada Masyarakat* 9(2):296–306. doi:10.29313/ethos.v9i2.7671.

Benjaminsen, Tor A., and Hanne Svarstad. 2018. "Political Ecology." Pp. 391–96 in *Encyclopedia of Ecology*. Vols. 1–4, edited by B. Faith. Elsevier.

Bernstein, Henry. 2020. *Dinamika Kelas Dalam Perubahan Agraria*. Edisi Revisi. Yogyakarta: Yogyakarta: INSISTPress.

Blaikie, Piers. 1985. *The Political Economy of Soil Erosion in Developing Countries*. Essex: Essex: Longman.

Blaikie, Piers, and Harold Brookfield. 1987. *Land Degradation and Society*. 1st ed. edited by P. Blaikie and H. Brookfield. London: London: Methuen.

Breman, Jan. 2014. *Keuntungan Kolonial Dari Kerja Paksa, Sistem Priangan Dari Tanam Paksa Kopi Di Jawa 1720-1870*. Jakarta: Jakarta: Yayasan Pustaka Obor Indonesia.

Brookfield, Harold. 1997. "Landscape History: Land Degradation in the Indonesian Region." Pp. 27–59 in *Paper Lanscapes: Exprolations in the environmental history of Indonesia*, edited by BOOMGAARD PETER, F. COLOMBIJN, and D. HENLEY. Leiden: Leiden: KITLV Press.

Bryant, Raymond L. 1998. "Power, Knowledge and Political Ecology in the Third World: A Review." *Progress in Physical Geography: Earth and Environment* 22(1):79–94. doi:10.1177/030913339802200104.

Bryant, Raymond L., and Sinead Bailey. 1997. *Third World Political Ecology*. London: London: Routledge.

Do, Hoa, Eike Luedeling, and Cory Whitney. 2020. "Decision Analysis of Agroforestry Options Reveals Adoption Risks for Resource-Poor Farmers." *Agronomy for Sustainable Development* 40(3):1–12. doi:10.1007/s13593-020-00624-5.

Fadhil, Muhammad Yahya, Yayat Hidayat, and Dwi Putro Tejo Baskoro. 2021. "Identifikasi Perubahan Penggunaan Lahan Dan Karakteristik Hidrologi DAS Citarum Hulu." *Jurnal Ilmu Pertanian Indonesia* 26(2):213–20. doi:10.18343/jipi.26.2.213.

Folefack, Achille Jean Jaza, and Dietrich Darr. 2021. "Promoting Cocoa Agroforestry under Conditions of Separated Ownership of Land and Trees: Strengthening Customary Tenure Institutions in Cameroon." *Land Use Policy* 108:1–8. doi:10.1016/j.landusepol.2021.105524.

Gunawan, Budhi, Oekan Soekotjo Abdoellah, Firman Hadi, Gianrico Juan Alifi, Riky Novalia Suhendi, Inas Yaumi Aisharya, and Wahyu Gunawan. 2023. "From Laborers to Coffee Farmers: Collaborative Forest Management in West Java, Indonesia." *Sustainability (Switzerland)* 15(9). doi:10.3390/su15097722.

Hakim, Agus Lukman. 2018. "Kajian Kebijakan Sumberdaya Alam Berbasis Pada Ekologi Politik." *The Indonesian Journal of Public Administration (IJPA)* 4(2):1–11. doi:10.52447/ijpa.v4i2.1290.

Hakim, Luchman. 2021. *Luchman Hakim - Agroforestri Kopi Mendorong Taman Hayati dan Wisata Kopi*. 1st ed. Malang: Malang: MNC Publishing.

Harvey, David. 2003. *The New Imperialism*. Oxford: Oxford University Press.
Hefner, Robert W. 1999. *Geger Tengger: Perubahan social dan perkelahian politik*. Yogyakarta: Yogyakarta: LKiS.
Indarto, Prawoto. 2014. *The Road to Java Coffee*. Jakarta: Jakarta: Specialty Coffee Association of Indonesia.
Indrarto, Giorgio Budi, Prayekti Murharjanti, Josi Khatarina, Feby Ivalerina, Rahman Justitia, Muhar Nala Prana, Ida Aju Pradnja Resosudarmo, and Efrian Muharrom. 2013. *Konteks REDD+ Di Indonesia: Pemicu, Pelaku, Dan Lembaganya. Working Paper 105*. Bogor.
Kinasih, Salma Rizkya, and Indri Wulandari. 2021. "Pembagian Kerja Berdasarkan Gender Dalam Pengelolaan Agroforestri Di Hulu DAS Citarum." *Umbara* 6(1):29. doi:10.24198/umbara.v6i1.33414.
Lestari, Sri, and Bambang Tejo Premono. 2014. "Penguatan Agroforestri Dalam Upaya Mitigasi Perubahan Iklim: Kasus Kabupaten Bengkulu Tengah Provinsi Bengkulu." *Jurnal Penelitian Sosial Dan Ekonomi Kehutanan* 11(1):1–12. doi:10.20886/jpsek.2014.11.1.1-12.
Li, Tania Murray. 2020. *Kisah Dari Kebun Terakhir: Hubungan Kapitalis Di Wilayah Adat*. Tangerang Selatan: Tangerang Selatan: Marjin Kiri.
Long, Norman. 2001. *Development Sociology: Actor Perspectives*. London and New York: London: Routledge.
Mbow, Cheikh, Meine Van Noordwijk, Eike Luedeling, Henry Neufeldt, Peter A. Minang, and Godwin Kowero. 2014. "Agroforestry Solutions to Address Food Security and Climate Change Challenges in Africa." *Current Opinion in Environmental Sustainability* 6(1):61–67. doi:10.1016/j.cosust.2013.10.014.
Miardini, Arina, Totok Gunawan, and Sigit Heru Murti. 2016. "Kajian Degradasi Lahan Sebagai Dasar Pengendalian Banjir Di DAS Juwana." *Majalah Geografi Indonesia* 30(2):134–41. doi:10.22146/mgi.15633.
Multazam, Zuhri. 2024. "Remediasi Tanah Dan Lahan Terdegadasi." in *Dasar-dasar Ilmu Tanah*. Hei Publishing.
Mulyanto, Dede. 2022. "Degradasi Lahan Dan Perubahan Budidaya Lahan Kering Di Kawasan Citarum Hulu, Jawa Barat: Sebuah Studi Ekologi-Politik." Universitas Padjadjaran, Bandung.
Naharuddin, N. 2018. "Sistem Pertanian Konservasi Pola Agroforestri dan Hubungannya dengan Tingkat Erosi di Wilayah Sub-DAS Wuno, Das Palu, Sulawesi Tengah." *Jurnal Wilayah dan Lingkungan* 6(3):183. doi:10.14710/jwl.6.3.183-192.
Peluso, Nancy Lee. 2006. *Hutan Kaya, Rakyat Melarat: Penguasaan Sumberdaya dan Perlawanan di Jawa*. edited by N. Fauzi. Jakarta: Jakarta: Konphalindo.
Petchers, Seth, and Shayna Harris. 2008. "The Roots of the Coffee Crisis." Pp. 43–66 in *Confronting the Coffee Crisis: Fair Trade, Sustainable Livelihoods and Ecosystems in Mexico and Central America*, edited by C. M. Bacon, V. E. Méndez, S. R. Gliessman, D. Goodman, and J. A. Fox. Cambridge: Cambridge: The MIT Press.
Puspitawati, Noviy Hasanah, and Ayu Febryani. 2020. "The Strategy of Processing Coffee Farming System in Temas Mumanang Village Permata District of Bener Meriah Regency Nanggroe Aceh Darussalam." *Anthropos: Jurnal Antropologi Sosial Dan Budaya (Journal of Social and Cultural Anthropology)* 5(2):206. doi:10.24114/antro.v5i2.14214.
Robbins, Paul. 2012. *Political Ecology*. second. Malden, MA: Malden, MA: John Wiley & Sons Ltd.
Roslinda, Emi, Fransiska Wiwi Prisila, and Yeni Mariani. 2023. "The Patterns of Agroforestry and Its Contribution to the Community Income." *Jurnal Sylva Lestari* 11(3):543–57. doi:10.23960/jsl.v11i3.749.
Saeful, Zulfi. 2020. *Masalah Penguasaan Lahan di Hulu Citarum: Beberapa Catatan Awal*. 03/WP-CTR/2020. Seri Working Paper Citarum. Bandung.
Schroeder, Richard A., and Krisnawati Suryanata. 2004. "Gender and Class Power in Agroforestry Systems: Case Studies from Indonesia and West Africa." Pp. 273–88 in *Liberation Ecologies: Environment, development, social movements*, edited by R. Peet and M. Watts. London: London: Routledge.
Sudomo, Aris, Budi Leksono, Hesti Lestari Tata, Anita Apriliani Dwi Rahayu, Aziz Umroni, Heny Rianawati, Asmaliyah, Krisnawati, Ali Setyayudi, Marcellinus Mandira Budi Utomo, Levina

Augusta Geraldine Pieter, Arini Wresta, Yonky Indrajaya, Syed Ajijur Rahman, and Himlal Baral. 2023. "Can Agroforestry Contribute to Food and Livelihood Security for Indonesia's Smallholders in the Climate Change Era?" *Agriculture* 13(1896). doi:10.3390/agriculture13101896.

Supriadi, Handi, and Dibyo Pranowo. 2015. "Prospek Pengembangan Agroforestri Berbasis Kopi di Indonesia." *Perspektif* 14(2):135–50.

Suryanata, Krisnawati. 1994. "Fruit Trees under Contract: Tenure and Land Use Change in Upland Java, Indonesia." *World Development* 22(10):1567–78.

Suryanata, Krisnawati. 2002. "Dari Pekarangan Menjadi Kebun Buah-Buahan: Stabilisasi Sumber Daya Dan Diferensiasi Ekonomi Di Jawa." Pp. 330–61 in *Proses Transformasi Daerah Pedalaman di Indonesia*, edited by T. M. Li. Jakarta: Jakarta: Yayasan Obor Indonesia.

Svarstad, Hanne, Tor A. Benjaminsen, and Ragnhild Overå. 2018. "Power Theories in Political Ecology." *Journal of Political Ecology* 25:350–63.

Trujillo, Laura. 2008. "Coffee-Production Strategies in a Changing Rural Landscape: A Case Study in Central Veracruz, Mexico." Pp. 69–98 in *Confronting the Coffee Crisis: Fair Trade, Sustainable Livelihoods and Ecosystems in Mexico and Central America*, edited by C. M. Bacon, V. E. Méndez, S. R. Gliessman, D. Goodman, and J. A. Fox. Cambridge: Cambridge: The MIT Press.

Watts, Michael, and Richard Peet. 2004. "Liberating Political Ecology." Pp. 3–43 in *Liberation Ecologies: Environment, development, social movements*, edited by R. Peet and M. Watts. London and New York: London: Routledge.

Weeber, Stan. 2016. "Nodes of Resistance to Green Grabbing: A Political Ecology." *Environment and Social Psychology* 1(2):116–29. doi:10.18063/esp.2016.02.006.

Westphal, Silke Mason. 2008. "Coffee Agroforestry in the Aftermath of Modernization: Diversified Production and Livelihood Strategies in Post-Reform Nicaragua ." Pp. 179–206 in *Confronting the Coffee Crisis: Fair Trade, Sustainable Livelihoods and Ecosystems in Mexico and Central America*, edited by C. M. Bacon, V. E. Méndez, S. R. Gliessman, D. Goodman, and J. A. Fox. Cambridge: Cambridge: The MIT Press.

Widiyanto, Ary. 2013. "Agroforestry Dan Peranannya Dalam Mempertahankan Fungsi Hidrologi Dan Konservasi." *Al-Basia* 9:55–69. https://www.researchgate.net/publication/300142098.

Wienhold, Karl, and Luis F. Goulao. 2023. "The Embedded Agroecology of Coffee Agroforestry: A Contextualized Review of Smallholder Farmers' Adoption and Resistance." *Sustainability* 15(6827). doi:10.3390/su15086827.