

Institutional Governance of Plantation Supply Chains under Ngawi's Downstreaming Policy

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Abstract

Ngawi Regency embodies a paradox of primary-sector abundance: on the slopes of Mount Lawu, output of coffee, cocoa, and clove keeps climbing, yet manufacturing contributes only 10.12% of Gross Regional Domestic Product while most of the harvest leaves the district in raw form. This study explains why an abundant upstream supply fails to spark local processing, and identifies the institutional reconfiguration needed for value added to be captured locally. Working within a qualitative, descriptive embedded case study, we read the supply chains through Elinor Ostrom's Institutional Analysis and Development framework, triangulating a documentary analysis of the Thematic Bureaucratic Reform Action Plan on Downstreaming and sectoral statistics against in-depth interviews with key informants. Value-added leakage is not a natural market anomaly; it is what dysfunctional rules-in-use produce. Weak boundary and aggregation rules keep collective economic institutions from forming; information rules are choked by the lack of an integrated upstream-downstream database; and payoff rules stay lopsided because long-term supply contracts are absent. The going practice individual, standing-crop sales, the tebasan system settles into a suboptimal equilibrium that pins farmers to a weak bargaining position. Downstreaming can succeed only through a simultaneous reconfiguration of the rules-in-use spatial clustering, stronger village-level aggregator institutions, an integrated value-chain information system, and aligned cross-agency performance indicators making it, in essence, a task of institutional engineering rather than one of mere equipment provision.

Keywords: Downstreaming; IAD Framework; Institutional Governance; Plantation Commodities; Supply Chain



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Introduction

For a while now, bureaucratic reform in Indonesia has worn a different face. Ticking boxes on paperwork is no longer the point. What counts, more and more, is whether the state can actually untangle strategic problems that ordinary people feel in daily life. Circular Letter No. 6 of 2025 from the Minister for Administrative and Bureaucratic Reform put this in black and white, naming the downstreaming of leading regional commodities as one pillar of Thematic Bureaucratic Reform (Kementerian PANRB, 2025). None of it came out of nowhere. The idea reaches back to Law No. 3 of 2014 on Industry and Government Regulation No. 14 of 2015 on the National Industrial Development Master Plan, both of which make the value added to local natural resources the very axis of economic transformation (Republik Indonesia, 2014; 2015). And the logic is old, not new. It echoes Hirschman's (1958) theory of linkages and the newer arguments of structural economics: to break a low-value trap, a region has to lean less on primary produce and more on manufacturing (Lin, 2012; Rodrik, 2004).

Ngawi one of the country's rice granaries, tucked into the Mataraman corner of East Java shows the paradox in sharp relief. We call it the paradox of primary-sector abundance. Along the rim of the Mount Lawu slopes, across the Sine, Ngrambe, Jogorogo, and Kendal subdistricts, the strategic estate crops keep expanding. Coffee climbed from 322.70 tonnes in 2021 to 454.74 tonnes in 2025; cocoa almost doubled, from 124.94 to 235.57 tonnes; and clove jumped from 135.90 to 231.99 tonnes across the same years (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). Plenty upstream, then. Yet none of it turns into secondary-sector prosperity. Manufacturing chips in only 10.12% of GRDP, while agriculture, forestry, and fisheries still tower at 32.04% (Badan Pusat Statistik Kabupaten Ngawi, 2026).

What is really going on is a wholesale bleeding of value raw material leakage, on a large scale. Coffee slips out as green bean *asalan*, unsorted and unhulled, the *kopi ose* that never got graded; cocoa is sold dry, no standardized fermentation; and the clove buds, *cengkeh kering*, are trucked straight to factories elsewhere, never once distilled into essential oil on home ground (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). Read this against value-chain analysis (Porter, 1985; Kaplinsky & Morris, 2001) and the governance of global value chains (Gereffi, Humphrey, & Sturgeon, 2005), and the picture is stark: local producers are pinned to the lowest-value node in the chain. The fat margins? They go to processors sitting well outside the region (Humphrey & Schmitz, 2002; Trienekens, 2011).

So a fair question follows. Why does such an abundant upstream supply fail to light a spark under local processing? The agrifood-transformation literature in developing countries offers a clue. Bottlenecks like this are rarely a matter of agronomy alone; far more often, their roots sit in an institutional architecture that quietly shapes what each actor is nudged to do (Reardon, Barrett, Berdegúé, & Swinnen, 2009; Swinnen & Maertens, 2007; World Bank, 2008; Budi et al., 2025). New institutional economics puts it bluntly: institutions the formal and informal rules of the game are the chief determinant of economic performance (North, 1990; Williamson, 2000; Acemoglu & Robinson, 2012). High transaction costs, no vertical coordination, collective action that never gels together these harden into structural clogs that keep smallholders penned in a subordinate spot (Coase, 1937; Williamson, 1985; Olson, 1965; Ménard, 2004).

To its credit, the Thematic Bureaucratic Reform Action Plan on Downstreaming for Ngawi has already named several culprits: key performance indicators (KPIs) frozen in an upstream-production mindset, data scattered across agencies, post-harvest technology lagging behind, and cooperatives and village-owned enterprises (BUMDes) that never quite grew up (Pemerintah Kabupaten Ngawi, 2026). What the document stops short of doing is framing the trouble in institutional-theoretical language the sort of framing that would let you point, with precision, to where governance actually cracks. That is the gap the Institutional Analysis and Development (IAD) framework of Ostrom (2005; 2011) is built to fill: it hands us a systematic grammar for taking apart how exogenous variables, rules-in-use, and the action arena combine to produce patterns of interaction and, in the end, policy outcomes.

Up to now, Indonesian work on downstreaming has mostly circled the macroeconomic, fiscal, and production-technical angles. Institutional-governance studies of smallholder estate supply chains at the district level are thin on the ground and ones leaning on IAD, thinner still. IAD, after all, has usually been reserved for common-pool resources: irrigation, forests, fisheries (Ostrom, 1990; Schlager & Ostrom, 1992; Agrawal, 2001). Turning it loose on agro-industrial supply chains where the knot is not resource depletion but a failure of coordination and aggregation is a corner few have poked into (McGinnis, 2011; Cole, 2017; Heikkila & Andersson, 2018). That is where our contribution sits.

With that in view, the article sets itself three tasks. First, to map the exogenous variables and the configuration of rules-in-use that give shape to the action arena of the Lawu-slope estate supply chain. Second, to read the patterns of interaction among actors and the outcomes they throw off. Third, to sketch recommendations for reworking the institutions so the value stops leaking away. Two research questions fall out of this: how does the configuration of rules-in-use steer actor behavior across the coffee, cocoa, and clove chains in Ngawi; and what sort of institutional reconfiguration would let the value added finally be captured close to home.

Literature Review

The Institutional Analysis and Development (IAD) Framework

IAD is a metatheoretical tool, born in the Workshop in Political Theory and Policy Analysis, for asking how institutions bend individual behavior and collective outcomes alike (Ostrom, 2005; Ostrom, 2011; Polski & Ostrom, 1999). Its beating heart is the action arena the social space where actors meet inside a given action situation. Three clusters of exogenous variables mold that arena: biophysical or material conditions, the attributes of the community, and the rules-in-use that happen to hold (Ostrom, 2011; McGinnis, 2011). Out of the interaction come patterns of interaction, weighed afterward against chosen evaluative criteria and all the while, feedback loops quietly reshape the exogenous variables again (Imperial, 1999; Cole, 2017).

IAD's sharpest conceptual move is splitting the rules-in-use into seven types, each pressing directly on the shape of the action situation (Ostrom, 2005; Ostrom, Gardner, & Walker, 1994). They run as follows: boundary rules, deciding who gets in; position rules, handing out roles; choice rules, marking what one may do; aggregation rules, setting how decisions are made together; information rules, governing what flows and what stays open; payoff rules, pinning down costs and benefits; and scope rules, drawing the limits of the outcomes (Crawford & Ostrom, 1995; McGinnis, 2011). On top of that, Crawford and Ostrom's (1995) grammar of institutions sorts institutional statements into three: strategies, norms, and rules.

Ostrom (1990) also laid down eight design principles for institutions that govern resources sustainably principles a later meta-analysis by Cox, Arnold, and Villamayor-Tomás (2010) went on to validate. They were minted for common-pool resources, yes. But several still speak to the robustness of supply-chain institutions: clear boundaries, cost and benefit shared

in proportion, collective-choice arenas, monitoring, and a recognized right to organize (Ostrom, 2009; Andersson & Ostrom, 2008; Poteete, Janssen, & Ostrom, 2010). And the polycentricity view tacks on a warning good governance tends to want many interlocking centers of decision, not one lone command (Ostrom, 2010; Aligica & Tarko, 2012).

Institutional Economics, Transaction Costs, and Vertical Coordination

New institutional economics lays a foundation that fits IAD hand in glove. North (1990) reads institutions as rules of the game that pare down uncertainty and structure incentives hence a chief driver of long-run economic performance (Williamson, 2000; Acemoglu & Robinson, 2012; Winoto, 2025). Transaction-cost theory explains why actors reach for one governance form over another market, hierarchy, or hybrid according to how often they transact, how uncertain things are, and how specific the assets get (Coase, 1937; Williamson, 1985). In farm supply chains, asset specificity and shaky quality actually shove hybrids like contracts and cooperatives to the front as tools of vertical coordination (Ménard, 2004; Swinnen & Maertens, 2007).

The embeddedness of economic dealings inside social relations is a reminder we tend to forget: markets never run in an institutional vacuum (Granovetter, 1985). Social capital networks, norms, trust; what Javanese village life calls *guyub*, a settled sense of togetherness smooths cooperation and shaves the collective cost of transacting (Putnam, 1993). But when collective institutions are weak, the smallholder eats the high transaction costs and does the obvious thing: sells fast to a middleman. The agrifood-transformation literature has met this story many times over (Reardon et al., 2009; Barrett, 2008).

Value-Chain Governance and Collective Action by Farmers

Porter's (1985) value-chain approach, alongside global commodity-chain analysis, gives us a way to trace where the value added lands across the nodes (Gereffi et al., 2005; Bair, 2009; Gibbon & Ponte, 2005). Moving up that chain hinges on upgrading of process, of product, of function, or across whole chains (Humphrey & Schmitz, 2002; Kaplinsky & Morris, 2001). For smallholder estate crops, though, upgrading asks for post-harvest investment and quality standardization a load that is punishing to carry alone (Trienekens, 2011; Webber & Labaste, 2010).

Which is exactly why collective action becomes the price of admission to higher-value markets for smallholders (Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009; Hellin, Lundy, & Meijer, 2009). Olson (1965) said something worth remembering here: big groups with a shared interest are, oddly, the ones most likely to flop at organizing once selective incentives go missing. Cooperatives and contract farming can lift farmer welfare through price and market guarantees yet whether they deliver rides on institutional design and, plainly, on trust (Bellemare, 2012; Eaton & Shepherd, 2001; Key & Runsten, 1999). In this light, IAD is the right lens, since it trains its eye on the very rules that either open the door to collective action or bolt it shut (Poteete et al., 2010; Meinzen-Dick, 2007).

Line the literature up and a gap shows through. Indonesian studies of downstreaming rarely reach for an explicit institutional framework to cut open smallholder estate chains at the district scale, and IAD applications still lean heavily toward common-pool-resource questions. This article steps into that gap by treating the supply chain as an action arena molded by rules-in-use so the breakdown of downstreaming can be diagnosed sharply, right down to the individual rule type (Ostrom, 2005; Cole, 2017; Heikkila & Andersson, 2018).

Method

The study is qualitative, built as an embedded single-case study of how the estate-commodity supply chains on the Mount Lawu slopes in Ngawi are governed (Yin, 2018; Creswell & Poth, 2018). We went with a case study for a simple reason: institutional-governance phenomena are contextual and current at once, and that demands a close reading of how actors relate to one another in a real setting (Yin, 2018). The unit of analysis is the configuration of rules-in-use and the patterns of interaction inside the action arena of the coffee, cocoa, and clove chains. We put IAD to work as both theoretical lens and data-analysis frame, following the institutional-analysis guidance of Polski and Ostrom (1999) and McGinnis (2011). Four steps carried the analysis: (1) pinning down the exogenous variables biophysical conditions, community attributes, rules-in-use; (2) laying out the action arena with its actors and action situation; (3) tracing the patterns of interaction; and (4) weighing the outcomes against efficiency, equity, accountability, and sustainability (Ostrom, 2011; Imperial, 1999).

Data came from two wells. The first was secondary: the Thematic Bureaucratic Reform Action Plan on Downstreaming for Ngawi, sectoral statistics from the Central Statistics Agency and the technical offices, and the regulations that surround them (Pemerintah Kabupaten Ngawi, 2026; Badan Pusat Statistik Kabupaten Ngawi, 2026; Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). The second was primary: in-depth interviews with key informants, picked purposively for their hands-on stake in the supply chain and in policy governance. Those informants ran from farmers and farmer groups the ones growing coffee, cocoa, and clove in the core subdistricts to cooperative and BUMDes managers, small- and medium-enterprise (SME) extension officers and facilitators, and officials across the regional agencies. On the government side, we sat down with the Secretary and the Head of Planning at the Food Security and Agriculture Office, a Bappeda representative, and the Head of the PPM Division at Ngawi's Bappeda, plus the Industry and Manpower Office and the DPMPTSP. Analysis moved interactively condensing the data, displaying it, then drawing conclusions (Miles, Huberman, & Saldaña, 2014) with coding pinned to the seven IAD rule types. To keep the data honest, we triangulated across sources and methods, holding interview findings up against documents and statistics, and closed the loop with member checking (Creswell & Poth, 2018; Yin, 2018).

Result and Discussion

Production Profile and Supply-Chain Conditions

The Mount Lawu slopes are, for all practical purposes, the only home Ngawi's estate crops have, clustered in four subdistricts: Sine, Ngrambe, Jogorogo, and Kendal (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). That dependable upstream base is, honestly, a fine place to begin a downstreaming push a secured baseline supply, just as the agricultural value-chain literature keeps insisting (Webber & Labaste, 2010; Trienekens, 2011). Table 1 lays out how the three commodities have moved.

Table 1. Production of Lawu-Slope Plantation Commodities in Ngawi Regency, 2021–2025

Commodity (tonnes)	2021	2022	2023	2024	2025
Coffee	322.70	329.53	427.30	391.38	454.74
Cocoa	124.94	128.83	188.21	207.40	235.57
Clove	135.90	138.23	172.05	210.19	231.99

Source: Compiled from the Ngawi Regency Food Security and Agriculture Office (2026).

Production is up but two warning lights are blinking. The first: planted area for all three crops actually shrank in 2025. Clove land dropped from 1,521.80 ha (2024) to 1,277.80 ha, cocoa from 1,350.30 ha to 1,293.30 ha, and coffee from 1,092.20 ha to 1,006.13 ha. More output on less land is not the triumph it looks like; it hints at squeezing the mature, bearing trees harder than may hold up over time (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). The second: almost the whole harvest is sold raw to buyers from out of town. That is precisely what parks farmers at the lowest-value node right in step with the literature on smallholder subordination inside value chains (Gereffi et al., 2005; Humphrey & Schmitz, 2002; Barrett, 2008).

“When we harvest, the collectors from outside usually take it away on the spot. They set the price, and we have no other choice, because there is no one here to buy it up and process it.”

(Informant I-1, coffee farmer, Kendal Subdistrict)

The leakage is not something outsiders alone can see. The district's own production authority admits it, granting that the upstream bounty has never been matched by the muscle to process it locally (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026).

“We keep pushing coffee, cocoa, and clove production on the Lawu slopes, and the yields rise every year. The problem is that almost all of it leaves Ngawi in raw form, because upstream there is still no adequate processing or collection unit. Our core mandate is indeed production, but much of the value added ends up flowing out of the district.”

(Informant I-5, Secretary, Ngawi Regency Food Security and Agriculture Office)

Exogenous Variables: Reading the Determinants of the Action Arena Biophysical and Material Conditions

By their very nature, the Lawu-slope crops demand a post-harvest stage thick with technology. Coffee wants red-cherry picking petik merah, only the ripe gelondong merah then controlled drying, roasting, grinding; cocoa needs standardized fermentation; clove calls for distillation into essential oil (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026). In IAD's vocabulary, these material attributes fix the range of what is even technically doable inside the action situation (Ostrom, 2005; Schlager & Ostrom, 1992). Strip away the processing infrastructure, and the farmer's menu shrinks to one dish: sell raw. It gets worse. Ngawi's metal-goods and machinery subsector reads as nil (NA), so the district leans entirely on technology hauled in from outside an asset-specificity barrier, if we talk transaction costs (Williamson, 1985; Ménard, 2004).

Community Attributes

The producer community is mostly petani gurem micro-scale growers working their own patch with farmer groups that, for the most part, hold no legal standing (Pemerintah Kabupaten Ngawi, 2026). The social fabric is there. Gotong royong, the old habit of pitching in together, still runs through village life. But it has not been forged into an economic organization sturdy enough to shoulder the collective cost of transacting (Putnam, 1993; Granovetter, 1985). On the state's side, the tune is much the same: agencies work in sectoral silos, their performance indicators never quite talking to one another. Conditions like these choke the capacity for collective action just as Olson (1965) and the smallholder market-access literature would forecast (Markelova et al., 2009; Hellin et al., 2009).

Rules-in-Use

Of the three exogenous variables, the rules-in-use carry the most weight. The document review turns up three absences at a stroke: no cross-agency downstreaming roadmap, no integrated upstream-downstream database, and no formal supply contract linking farmer groups to industry (Pemerintah Kabupaten Ngawi, 2026). The agencies' KPIs, likewise, still tilt toward upstream production volume rather than downstream value creation (North, 1990; Williamson, 2000). It is a rule configuration of just this kind that sets the incentives for everyone in the action arena (Ostrom, 2011; McGinnis, 2011).

A Bappeda representative, sitting at the district's planning node, put a finger on the real fault line: this dysfunction grows out of missing cross-agency rules-in-use, not merely a shortage of technical means (Pemerintah Kabupaten Ngawi, 2026; McGinnis, 2011).

"To this day there is still no downstreaming roadmap that binds the agencies together. Each agency runs its own programs and targets, while upstream and downstream data are not on one shared base. As a result, interventions become partial and hard to coordinate from the planning side."

(Informant I-6, representative of the Regional Development Planning Agency (Bappeda), Ngawi Regency)

The Action Arena: Actors and the Action Situation

The supply-chain action arena throws together actors whose footing and resources are lopsided. Table 2 charts them actor, role, and interest along the lines of the IAD structure (Ostrom, 2005; McGinnis, 2011).

Table 2. Mapping of Actors in the Action Arena of the Lawu-Slope Plantation Supply Chain

Actor	Role/Position	Interests & Resources
Farmers / farmer groups	Upstream raw-material producer	Quick cash flow; weak capital & bargaining power
Out-of-district middlemen	Informal buyer/aggregator	Trading margin; capital & market access
Agriculture Office, Industry Office, DPMPSTP, Bappeda	Regulator & facilitator	KPI attainment; regulatory & budgetary authority
Cooperatives / BUMDes	Prospective collective aggregator	Not yet legally incorporated/active; latent social capital
Banks (KUR, Bank Jatim)	Financing provider	Risk mitigation; rigid collateral requirements
Processing industry / offtaker	Standby buyer (potential)	Assured supply & quality; not yet bound by contract

Source: Compiled by the authors from policy documents and Ostrom's IAD framework (2005), 2026.

The action situation repeats itself every harvest. The farmer faces a fork: sell raw and quick to a middleman a tengkulak, a bakul, whatever name the market uses or hold the crop back and process it. Weigh the biophysical conditions, the community attributes, and the rules-in-use as they stand, and the coldly rational individual move points to selling raw. Often the whole standing crop goes at once, the tebasan way. Efficient for the one farmer; suboptimal for the many (Olson, 1965; Ostrom, 1990).

"Honestly, we would love to have a strong cooperative to collect and process the cocoa together, but there is no legal entity yet and no capital yet. So in the end everyone goes it alone."
(Informant I-2, head of a cocoa farmer group, Sine Subdistrict)

Diagnosing the Seven Rule Types

Boil the finding down and it is this: the leakage of value added is what dysfunction across the seven rule types produces (Ostrom, 2005; Crawford & Ostrom, 1995). Table 3 sets out that diagnosis, tied back to the root causes the policy document itself records.

Table 3. Diagnosis of the Seven IAD Rule Types in the Lawu-Slope Plantation Supply Chain

Rule Type	Current Condition (Dysfunction)	Implication for the Outcome
Boundary	Membership of collective institutions is unclear; most farmers sit outside a legally incorporated cooperative	No supply aggregation forms; middlemen enter freely
Position	Farmers are locked in as sellers of raw material; no formal processor/aggregator position exists	Post-harvest value added is never claimed at the local level
Choice	The choice set narrows to standing-crop sales for want of processing facilities	Rational individual decisions lead to raw material leakage
Aggregation	Selling decisions are individual; there is no collective decision-making mechanism	Collective action fails (the Olson condition); bargaining power is weak
Information	No integrated upstream-downstream database; price and market information are asymmetric	Farmers depend on prices set by intermediaries
Payoff	No supply/offtaker contract; financing demands rigid collateral	Weak incentive to process; the largest margins flow out of the district
Scope	Agency KPIs are confined to upstream output, not downstream value added	No cross-agency orchestration occurs; interventions stay partial

Source: Compiled by the authors using Ostrom's (2005) rules-in-use framework and Crawford & Ostrom (1995), 2026.

Read the diagnosis and three rules do the heavy damage: aggregation, information, payoff. The failure of aggregation bears out Olson's (1965) thesis big groups short on selective incentives and formal institutions really do tend to fail at organizing (Markelova et al., 2009). Information asymmetry stacks the deck for the middleman, straight out of transaction-cost theory (Williamson, 1985; Ménard, 2004). And a missing payoff rule no supply contract to lean on explains why sinking money into processing looks so unappealing, whether you are a farmer or an SME operator (Bellemare, 2012; Eaton & Shepherd, 2001; Key & Runsten, 1999).

"The bank asks for a land certificate as collateral, but fermentation equipment and roasting machines are expensive. If there were a guaranteed buyer, maybe we would dare to invest."

(Informant I-3, SME facilitator/extension officer)

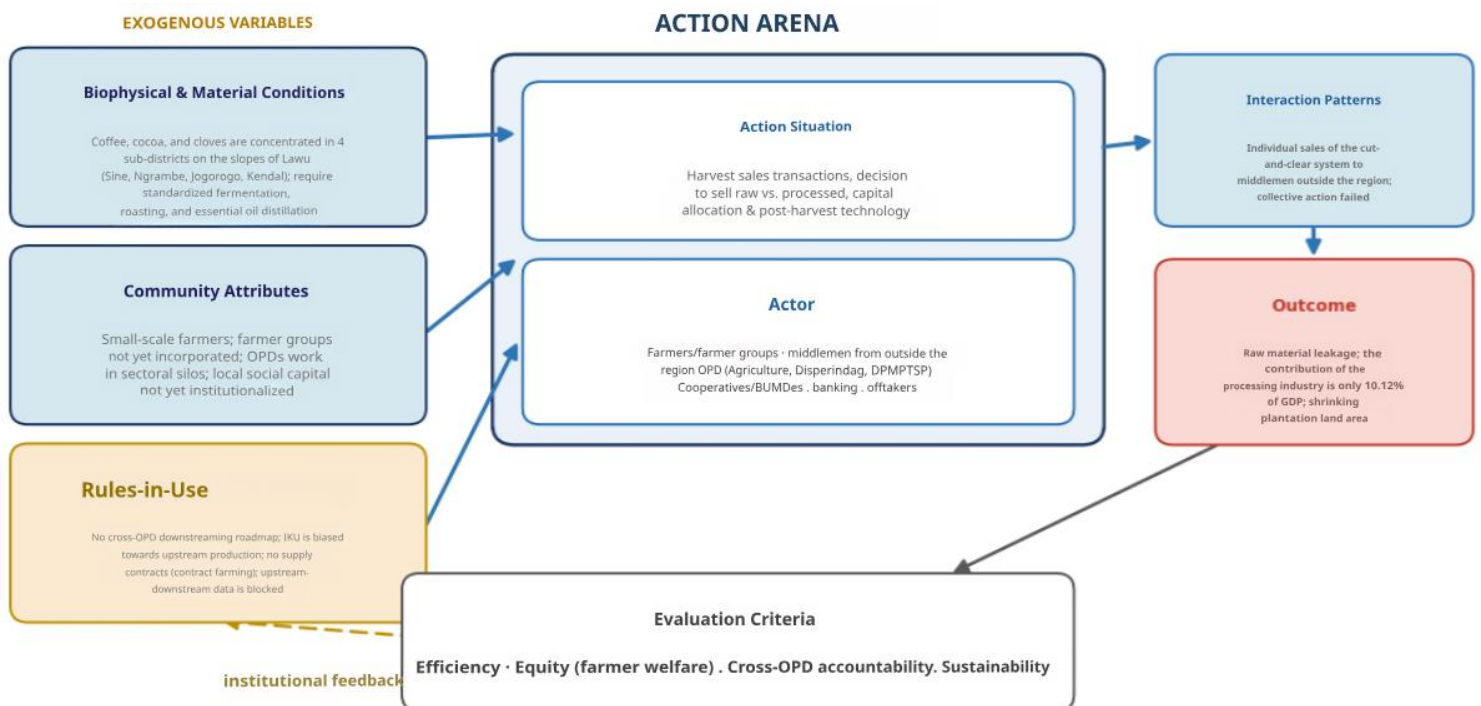
This lopsidedness in the information rules gets underscored from the planning-and-control side, which flags the missing integrated database as a wall in the way of monitoring downstreaming (Ostrom, 2005; Hess & Ostrom, 2007).

"The biggest obstacle lies in the information rules. We do not yet have an integrated upstream-downstream database, so when we monitor progress on the Thematic Bureaucratic Reform on Downstreaming, the production figures are available but the processing trail and market absorption cannot be traced. Without that data, controlling the program is difficult."
(Informant I-7, Head of the PPM Division, Bappeda, Ngawi Regency)

Patterns of Interaction and Outcome

That rule configuration breeds one pattern of interaction steady, yet corrosive: individual, standing-crop tebasan sales to out-of-district tengkulak. It is a suboptimal equilibrium. Each actor plays it smart at their own level, and still the sum of it all is a leakage of value added (Ostrom, 1990; Poteete et al., 2010). You can read the result at the macro scale: manufacturing musters only 10.12% of GRDP against agriculture's 32.04% (Badan Pusat Statistik Kabupaten Ngawi, 2026), with a shrinking estate footprint on top a sign that the appetite for the business is fraying (Dinas Ketahanan Pangan dan Pertanian Kabupaten Ngawi, 2026).

Figure 1 pulls the Institutional Analysis and Development (IAD) model together, wiring up the exogenous variables, the action arena, the patterns of interaction, the outcome, and the evaluative criteria feedback loops and all (Ostrom, 2011; McGinnis, 2011; Imperial, 1999).



Source: Adapted from Ostrom (2005; 2011) and McGinnis (2011); processed by the authors, 2026.

Figure 1. IAD Model of the Governance of Lawu-Slope Plantation Commodity Supply Chains

Outcome Evaluation and Theoretical Discussion

Held to the IAD criteria (Ostrom, 2011; Imperial, 1999), today's governance outcome comes up short on every one of the four counts. Efficiency? Raw material leakage marks a resource allocation that never optimizes local value added (Porter, 1985; Trienekens, 2011). Equity? Value drifts toward out-of-district intermediaries while farmer welfare thins (Barrett, 2008; Bellemare, 2012). Accountability? KPIs fragmented across agencies get in the way of shared accountability (North, 1990; Williamson, 2000). Sustainability? The shrinking land base whispers a risk of eroding the production base itself (Ostrom, 2009; Cox et al., 2010).

These findings feed the literature in at least three ways. One: they show the IAD framework usually kept for common-pool resources earning its keep on agro-industrial supply chains, where the real snag is a failure of coordination and aggregation, not resource depletion (Ostrom, 2005; McGinnis, 2011; Cole, 2017). Two: they confirm that IAD works shoulder to shoulder with transaction-cost and collective-action theory, since a missing payoff rule drives transaction costs up and knocks vertical coordination off the rails (Williamson, 1985; Ménard, 2004; Olson, 1965). Three: they press the case for polycentric governance downstreaming needs many aligned centers of decision, not a single command shouted from the top (Ostrom, 2010; Aligica & Tarko, 2012; Andersson & Ostrom, 2008).

The policy message is not subtle: rework the rules-in-use, and do it all at once. On boundary and position rules, standing up a legally incorporated producer cooperative or BUMDes as an aggregator would finally create the local processor slot that has sat empty (Markelova et al., 2009; Bijman & Iliopoulos, 2014). On information rules, an integrated upstream-downstream database would shave the asymmetry down (Hess & Ostrom, 2007). On payoff rules, contract farming and offtaker-based financing would rewrite the incentives outright (Bellemare, 2012; Eaton & Shepherd, 2001; Swinnen & Maertens, 2007). And on scope rules, aligning KPIs across agencies and clustering the Lawu-slope belt Geographical Indication and all, to pull value up (Bowen, 2010) would finally orchestrate the whole set of moves (Ostrom, 2010; Heikkila & Andersson, 2018).

"So far our programs have been measured by planted area and tonnage. There is still no shared target for how much actually gets processed and sold as finished products from Ngawi."

(Informant I-4, official, Estate Crops Division, Agriculture Office)

In the same breath, the program- and budget-planning side stresses that a scope rule hemming performance indicators to upstream output is exactly what jams cross-agency orchestration (North, 1990; Williamson, 2000).

"As long as performance indicators are still counted from production and planted area, the direction of budgets and programs will automatically flow upstream. If downstreaming is to succeed, there has to be a shared cross-agency indicator measuring how much is processed and sold as finished goods, and then it has to be budgeted in sync."

(Informant I-8, Head of Planning, Ngawi Regency Food Security and Agriculture Office)

These recommendations sit comfortably beside Ostrom's (1990) design principles, as validated by Cox et al. (2010): membership boundaries drawn clearly, costs and benefits shared in

proportion through contracts, a collective-choice arena built on cooperatives, and a recognized right to organize. Put that way, making downstreaming work on the Lawu slopes is at bottom a job of institutional engineering not just handing out equipment or pushing more tonnage upstream (North, 1990; Acemoglu & Robinson, 2012; Poteete et al., 2010).

Conclusion

This article has argued that the leakage of value added from Ngawi's Lawu-slope estate crops coffee, cocoa, clove is no natural market fluke. It is what a dysfunctional configuration of rules-in-use produces. Through Ostrom's IAD framework, we found three forces pulling in concert: biophysical conditions that demand technology-heavy processing, community attributes weighed down by thin collective institutions, and rules-in-use tilted toward upstream production. Between them they build an action arena that locks farmers into selling raw, one by one. And the diagnosis of the seven rule types is clear enough the sharpest obstacles cluster on aggregation, information, and payoff, the three that derail collective action, harden information asymmetry, and drain any reason to process at home.

On the theory side, IAD proves its worth for reading the governance of agro-industrial supply chains; it stretches the framework past common-pool-resource turf and dovetails with transaction-cost and collective-action theory. On the practical side, downstreaming asks for a rules-in-use overhaul all at once: firmer village-level aggregator institutions, a value-chain information system stitched together, supply contracts and offtaker-based financing made formal, and performance indicators aligned across agencies through area clustering. As for what comes next, we would nudge future work toward testing institutional interventions longitudinally, and toward comparing across commodities and regions, the better to firm up the external validity of these findings. The study has its limits, of course. It rests on a single case and on whatever data was to hand so any leap to generalization ought to be made carefully, and slowly.

Declaration on the Use of Artificial Intelligence (AI)

The authors declare that artificial intelligence (AI) tools were used in a limited and reasonable manner, solely to help translate the manuscript from Indonesian into English and to refine its grammar. All substance, ideas, analysis, interpretation, and conclusions are the authors' own. The authors have reviewed and edited the manuscript and take full responsibility for its entire content.

Conflict of Interest Statement

The authors declare that there is no conflict of interest of any kind, whether financial or non-financial, connected with the research, authorship, or publication of this article.

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