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The Political Economy of Mitragyna speciosa (Kratom) in Indonesia: Agrarian Transition, Pharmacological Standardization, and the 2024 Regulatory Shift

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The global surge in demand for *Mitragyna speciosa* (Kratom) has precipitated a profound agrarian transition in West Kalimantan, Indonesia, positioning the region as the world's primary supplier of this psychoactive botanical. This study investigates the multi-dimensional dynamics of the Indonesian Kratom industry, analyzing the socio-economic drivers behind the shift from traditional commodities like rubber (*Hevea brasiliensis*) to Kratom, the pharmacological imperatives for standardization, and the implications of the Ministry of Trade Regulations Number 20 and 21 of 2024. Utilizing a qualitative descriptive approach synthesized with secondary data analysis and regulatory review, this research demonstrates that the adoption of Kratom by smallholder farmers is a rational economic adaptation to global commodity price volatility and ecological suitability in peatland areas. However, the industry faces critical challenges regarding heavy metal contamination, alkaloid consistency, and regulatory ambiguity. The 2024 regulatory framework, which mandates a maximum particle size of 600 microns and enforces strict export protocols, represents a pivotal shift from a shadow economy to a formalized, high-value export sector. While this formalization promises to enhance product safety and state revenue through export levies, it imposes significant compliance costs on smallholders. This article argues that for Indonesia to sustain its competitive advantage, an integrated policy approach is required—one that harmonizes trade expansion with rigorous Good Manufacturing Practices (GMP) and sustainable agroforestry models.

Keywords: *Mitragyna speciosa, Agrarian Change, Export Regulation, Pharmacological Standardization, Political Economy, Indonesia*

Introduction

In the riparian landscapes of the Kapuas River basin in West Kalimantan (Borneo), a quiet yet radical transformation has reshaped the agricultural and economic topography over the last two decades. Mitragyna speciosa Korth., a tropical evergreen tree locally known as purik or ketum, has transcended its origins as a traditional ethnomedicine to become a globally traded commodity with significant pharmaceutical potential. Historically utilized by indigenous communities in Southeast Asia as a mild stimulant to

combat fatigue during manual labor and as a remedy for opium withdrawal, pain, and diarrhea, Kratom has recently surged in popularity across Western markets, particularly in the United States and Europe. Estimates suggest that millions of consumers in the global north utilize Kratom for the self-management of pain, anxiety, and substance use disorders, creating a burgeoning market estimated to be worth hundreds of millions of dollars annually (Prozialeck et al., 2019; Grundmann, 2017).

The Political Economy of Agrarian Change: From Rubber to Kratom

2.1 The Crisis of Traditional Commodities

To understand the rise of Kratom, one must analyze the economic context of West Kalimantan through the lens of agrarian political economy. For decades, the provincial economy has been anchored by two primary commodities: rubber (*Hevea brasiliensis*) and palm oil (*Elaeis guineensis*). However, smallholder farmers have faced increasing precarity in these sectors due to global market volatility and structural disadvantages. Rubber farming, once the backbone of rural livelihoods, has suffered from a prolonged period of depressed prices and disease outbreaks such as *Pestalotiopsis*, which have severely eroded its economic viability. Farmers report earning significantly less from rubber tapping than is required to meet the rising costs of living, forcing them to seek alternative livelihoods (Sari, 2023).

Similarly, while palm oil offers higher potential returns, it presents significant barriers to entry for independent smallholders. Cultivation requires substantial capital for seedlings, fertilizers, and land clearing, as well as access to mills for processing fresh fruit bunches (TBS) within 24 hours of harvest. The fluctuating price of TBS often leaves smallholders at the mercy of large corporations that dictate prices. Consequently, the search for a crop that offers high liquidity, low input costs, and price stability led farmers to Kratom.

2.2 Rational Choice and the Kratom Boom

The adoption of Kratom represents a rational economic choice by farmers seeking to maximize utility and minimize risk. According to Rational Choice Theory, individuals weigh costs and benefits to maximize personal advantage. For West Kalimantan farmers, Kratom offers a superior value proposition across multiple dimensions. Firstly, the economic yield is substantially higher; a mature Kratom plantation can generate monthly revenue that is nearly ten times higher than that of a rubber plantation of equivalent size (Wahyono et al., 2019). Unlike rubber, which takes 5-7 years to mature, or palm oil which takes 3-4 years, Kratom trees grow rapidly and can be harvested within 9 months to a year. Once established, the leaves regenerate quickly, allowing for frequent harvests that provide a steady cash flow, contrasting sharply with the seasonality of other crops.

The comparative economic advantages are summarized in Table 1 below, highlighting the disparities in gestation period, harvest frequency, and revenue potential that drive this agrarian shift.

Table 1: Comparative Economic Analysis of Smallholder Commodities in West Kalimantan

Feature	Rubber (Hevea brasiliensis)	Palm Oil (Elaeis guineensis)	Kratom (Mitragyna speciosa)
Gestation Period	5 – 7 Years	3 – 4 Years	9 Months – 1 Year
Harvest Frequency	Daily (weather dependent)	Every 2 weeks	Every 1.5 – 3 months
Est. Monthly Revenue/Ha	IDR 1.5 – 2 Million	IDR 2 – 4 Million	IDR 10 – 25 Million
Labor Intensity	High (tapping requires skill)	Moderate (harvest & transport)	Moderate (picking & drying)
Ecological Resilience	Low (intolerant to flood)	Low (requires drainage)	High (flood tolerant)
Market Structure	Oligopsony (dependent on mills)	Oligopsony (dependent on mills)	Emerging/Fragmented (Direct export potential)

Source: Adapted from Wahyono et al. (2019), Sari (2023), and Field Observations.

Furthermore, Kratom is a native species adapted to the riparian wetlands and peat swamp forests of Borneo. It is flood-tolerant, surviving inundation that would destroy the root systems of rubber or oil palm trees. This makes it an ideal crop for the Kapuas riverbanks, which are prone to seasonal flooding. The ecological resilience of Kratom significantly reduces the risk of crop failure due to climate-related events, further incentivizing its cultivation. The shift to Kratom has functioned as a powerful engine for poverty alleviation and social mobility in Kapuas Hulu. Ethnographic data suggests that the surplus income generated from Kratom is frequently invested in human capital, specifically funding higher education for children, thereby breaking the cycle of intergenerational rural poverty (Sabran & Sihaloho, 2023).

Pharmacological Profile and the Imperative for Standardization

3.1 Alkaloid Complexity and Mechanisms of Action

The commercial value of Kratom is derived from its complex phytochemistry. The leaves of *Mitragyna speciosa* contain over 40 distinct alkaloids, along with flavonoids, terpenoids, saponins, and glycosides. The primary active constituent is mitragynine, an indole alkaloid that can constitute up to 66% of the total alkaloid content in Thai varieties, though Indonesian phenotypes often exhibit significant variability depending on geographical origin and harvest maturity (Hassan et al., 2013). Mitragynine acts as a partial agonist at the mu-opioid receptor (MOR). Unlike full agonists like morphine or

fentanyl, which recruit both the G-protein signaling pathway (responsible for analgesia) and the beta-arrestin-2 pathway (responsible for respiratory depression), mitragynine exhibits functional selectivity or "biased agonism" (Kruegel et al., 2016).

This pharmacological profile suggests a "ceiling effect" on respiratory depression, theoretically making fatal overdoses from pure Kratom extremely rare compared to traditional opioids. However, the second key alkaloid, 7-hydroxymitragynine (7-HMG), is significantly more potent. Although present in minute quantities in fresh leaves, 7-HMG can be formed as an oxidative metabolite of mitragynine during the drying and fermentation processes used to produce specific Kratom varieties (e.g., Red Vein). This post-harvest chemical transformation underscores the necessity for rigorous processing standards to ensure consumer safety and product consistency.

3.2 The Challenge of Contamination

Despite the potential therapeutic benefits, the global reputation of Indonesian Kratom has been marred by issues of contamination. The US Food and Drug Administration (FDA) and other international bodies have frequently cited the presence of heavy metals—specifically Lead (Pb), Nickel (Ni), Arsenic (As), and Cadmium (Cd)—as well as microbial pathogens like *Salmonella* and *E. coli* in Kratom products exported from Indonesia (FDA, 2019; Prozialeck et al., 2020). These contaminants are not inherent to the plant but are introduced through the supply chain.

The volcanic soils of Indonesia are naturally rich in metals, and the acidic conditions of peatlands can enhance the bioavailability and uptake of these elements by the plant. Furthermore, traditional processing methods, which often involve drying leaves on open ground accessible to animals and dust, create significant vectors for microbial contamination. The use of substandard grinding machinery can also introduce metal filings into the final powder product. The variation in alkaloid content and the risk of contamination highlight the urgent need for the standardized processing protocols that the new 2024 regulations aim to enforce.

Regulatory Architecture: The 2024 Paradigm Shift

4.1 From Prohibition to Formalization

The legal status of Kratom in Indonesia has historically been defined by inter-agency conflict. The National Narcotics Agency (BNN) has consistently advocated for the classification of Kratom as a Class I Narcotic, citing its psychoactive properties and potential for abuse. In 2017, the National Committee on Narcotics Classification recommended a five-year transition period to phase out cultivation by 2022. Conversely, the Ministry of Trade and the Executive Office of the President (KSP) have recognized the undeniable economic significance of the sector, prioritizing the welfare of farmers and the potential for state revenue (Moeldoko, 2024).

This regulatory tug-of-war created a "grey zone" where cultivation flourished but operated without legal protection or quality standards. This ambiguity ended in August

2024, when the Indonesian government moved decisively to formalize the trade. The Ministry of Trade issued two landmark regulations: Permendag No. 20 of 2024 and Permendag No. 21 of 2024. These regulations explicitly recognize Kratom as a regulated export commodity, thereby rejecting the prohibitionist stance in favor of a managed trade regime.

4.2 Analysis of Permendag No. 20 and 21 of 2024

Permendag No. 20 of 2024 amends the list of goods prohibited for export, specifically banning the export of raw, unprocessed Kratom leaves and coarse crumbs. This policy is designed to force domestic value addition, ensuring that the economic benefits of processing are retained within Indonesia. By prohibiting the export of raw materials, the government aims to professionalize the industry and prevent the degradation of leaf quality during transit.

Permendag No. 21 of 2024 establishes the procedural framework for permitted exports. It mandates that only companies registered as Registered Exporters (Eksportir Terdaftar or ET) can engage in the trade. Furthermore, every shipment requires a specific Export Approval (Persetujuan Ekspor or PE) and must be accompanied by a Surveyor Report (Laporan Surveyor or LS) from a government-appointed surveyor, such as PT Sucofindo. Crucially, the regulation imposes strict technical standards, particularly regarding particle size and contamination limits.

Table 2: Key Provisions of Ministry of Trade Regulation No. 21 of 2024

Regulatory Component	**Specification**	**Rationale**
Approved Forms	Powder and Fine Crumbs only	Ensures processing occurs domestically; prevents raw leaf degradation.
Particle Size Limit	$\le$ 600 Microns (approx. 30 Mesh)	Ensures homogeneity for testing; removes stem/vein material; standardizes dissolution profile.
Microbial Limits	*Salmonella*: Negative / 25g *E. coli*: < 10 MPN/g	Aligns with international food safety standards (e.g., FDA, AHPA).
Heavy Metal Limits	Pb, Cd, As, Hg (Strict PPM limits)	Mitigates toxicity risks associated with volcanic soils and processing equipment.
Documentation	Surveyor Report (LS) required for every	Guarantees third-party verification of quality before export.

	shipment	
Exporter Status	Registered Exporter (ET) only	Filters out informal/illegal traders; ensures tax compliance.

Source: Synthesized from Ministry of Trade Regulation No. 21 of 2024 (Kemendag, 2024).

The imposition of the 600-micron standard is scientifically significant. A finer particle size ensures a more homogeneous product, which is essential for accurate alkaloid testing and consistent pharmacological effects. It also implies a level of mechanical processing that filters out stems and veins, which contain lower alkaloid concentrations. Additionally, the requirement for Surveyor Reports mandates testing for heavy metals and microbial contamination, directly addressing the safety concerns raised by international import authorities (Kemendag, 2024).

Fiscal Implications and State Revenue

The formalization of the Kratom trade opens a significant new revenue stream for the Indonesian state. Previously, the "shadow trade" of Kratom—often mislabeled as "Bio-fertilizer" or "Green Tea" to bypass customs—resulted in massive fiscal leakage. Estimates suggest the industry generates hundreds of millions of dollars annually in retail value in the US alone. With the new regulations, the government can now implement a dedicated export levy and capture corporate income taxes from registered exporters.

Using a conservative estimate of 7,000 to 10,000 tons of annual exports, a fixed export levy could generate millions of dollars in direct revenue. This revenue is critical for the regional development of West Kalimantan, potentially funding infrastructure improvements, laboratory facilities, and farmer education programs. Furthermore, the high barrier to entry created by the ET and LS requirements will likely lead to market consolidation, weeding out fly-by-night operators who compromise quality and creating a more stable, taxable industrial base.

This fiscal formalization also aligns with Indonesia's broader strategy of resource nationalism and downstreaming (hilirisasi), applied successfully in the nickel and palm oil sectors. By mandating domestic processing (grinding, sterilization, packaging), Indonesia captures a larger share of the value chain that was previously lost to overseas processors.

Socio-Ecological Dimensions: Agroforestry and Sustainability

Beyond economics and pharmacology, Kratom cultivation presents unique ecological opportunities and risks. Unlike oil palm, which requires the clear-cutting of forests and drainage of peatlands—a major source of carbon emissions—Kratom is a native wetland species. It thrives in peat swamp forests and riparian zones, areas that are often unsuitable for other crops. Research indicates that tree-based agricultural systems like Kratom farming can sequester substantial amounts of carbon, contributing to climate change mitigation (Agroforestry World, 2023).

Moreover, the extensive root system of the Kratom tree helps stabilize riverbanks, preventing soil erosion that is endemic in deforested areas of Kalimantan. However, the high profitability of Kratom carries the risk of incentivizing monoculture expansion, which could reduce biodiversity. To ensure long-term sustainability, policy must encourage agroforestry models where Kratom is intercropped with other species, mimicking the natural forest structure. The 2024 regulations, by formalizing the trade, provide a platform for the government to enforce sustainable agricultural practices as a condition for export licensing, potentially linking Kratom cultivation to global carbon credit markets.

Conclusion

The transformation of *Mitragyna speciosa* from a forest shrub to a regulated global commodity represents a critical intersection of economics, pharmacology, and policy in Indonesia. For the farmers of West Kalimantan, Kratom is not a narcotic but a lifeline—a rational adaptation to the failure of traditional commodities that funds education, housing, and social stability. The shift to Kratom is a testament to the resilience and adaptability of smallholder communities in the face of global market volatility.

The issuance of Permendag No. 20 and 21 of 2024 marks a maturing of the industry. By imposing strict standards on particle size, hygiene, and export procedures, the Indonesian government has effectively rejected prohibition in favor of a strategy that balances economic opportunity with public health responsibility. While these regulations will inevitably increase compliance costs and consolidate the market, they are essential for securing the long-term viability of the trade against international safety concerns.

Future research must focus on the longitudinal impacts of these regulations on smallholder welfare and the environmental footprint of intensified cultivation. Ultimately, the sustainability of Indonesia's "Green Gold" depends on a continued commitment to rigorous quality control, scientific research, and equitable economic policy that ensures the benefits of this global trade reach the farmers at its source.

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