RINJANI SOCIETY
POLICY BRIEF SERIES

CENTRE FOR ISLAND SYSTEMS RESEARCH
RINJANI-LOMBOK UGGp & BIOSPHERE RESERVE

Governing Environmental Services in the Rinjani Landscape

Reconciling the Economic Surplus of Ecotourism with Ecological Reproduction in a UNESCO Global Geopark and Biosphere Reserve

Policy Brief Working Group Members
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Key Message
The Rinjani–Lombok landscape generated IDR 25.92 billion in Non-Tax State Revenue (PNBP) and IDR 182.05 billion in total economic turnover in 2025, yet the entire PNBP is remitted in full to the central treasury while the costs of ecological reproduction—trail rehabilitation, 30.35 tonnes of trekking waste, and disaster mitigation—are borne locally. This brief argues that Rinjani's most strategic environmental service is its water-regulation (hydrological) service, not ecotourism; that fiscal centralisation produces a metabolic rift between extracted value and the ecological capacity that sustains it; and that the top five-year priority is the internalisation of environmental-service value through a Payment for Environmental Services (PES) scheme paired with measurable local fiscal retention.

The Strategic Issue

The Rinjani–Lombok landscape—designated both a UNESCO Global Geopark and a Biosphere Reserve in 2018—is among the most valuable environmental-service landscapes in central Indonesia. Its core is Mount Rinjani National Park (TNGR), roughly 41,330 ha, rising to 3,726 m, with the Segara Anak caldera lake and a network of seven geotrails. Yet international status and surging ecotourism demand have generated an unresolved structural tension.

The core tension: the economic value harvested from the landscape is growing rapidly, but the mechanism for capturing and returning that value is not designed to finance the ecological recovery on which its sustainability depends. In 2025 the area recorded 80,214 visitors, IDR 25.92 billion in PNBP, and IDR 182.05 billion in economic turnover—while in the same year producing 30.35 tonnes of trekking waste and requiring a three-month trail closure for ecosystem recovery and safety following a series of climber incidents.

The fiscal–political dimension: all area PNBP is remitted in full to the central treasury. Managers and Rinjani-area tourism operators openly demand that at least 30% of PNBP be returned to the landscape for much needed trail repair, sanitation, and evacuation equipment—expenditures they

say have barely materialised. The ticket-tariff increase of 3 November 2025 (implementing Ministry of Forestry Regulation No. 17/2025 and Government Regulation No. 36/2024, reclassifying the Sembalun–Senaru–Torean routes from Class II to Class I) raises revenue extraction without guaranteeing any earmarking for conservation.

Read through a critical International Political Economy lens, this configuration is a local instance of what the eco-Marxian tradition terms a metabolic rift: a rupture between the ecological-reproduction cycle of a landscape and the circuit of value accumulation that relies upon it. Surplus flows upward (to the centre) and outward (to upstream tourism value-chain operators), while ecological entropy—erosion, waste, hydrological load—settles locally. Without institutional correction, the landscape drifts toward over-tourism that erodes the very natural-asset base from which the rent is drawn.

Key Findings

Findings follow the study's five key questions, emphasising how variables interact rather than merely listing facts.

2.1 The most strategic service is water regulation, not ecotourism

Public discourse foregrounds ecotourism as the flagship service because it is the easiest to monetise. This brief departures from that view: the most strategic service—in the sense of being the most systemic and least substitutable—is the water-regulation service (hydrological regulating service). Flows from Rinjani's slopes (e.g., Kokok Putih, Kokok Rinjani) irrigate thousands of hectares of farmland across northern and eastern Lombok and constitute the island's natural reservoir. The landscape's service hierarchy can be mapped as follows:

Table 1. The Landscape Service Hierarchy in Rinjani-Lombok UGGp and Biosphere Reserve

Service Category	Form in Rinjani-Lombok	Strategic Value
Regulating	Water regulation & irrigation, micro-climate control, volcanic-hydrological disaster mitigation, primary-forest carbon storage (±40%).	HIGHEST — sustains food, settlement, and every other service.
Cultural	Ecotourism & trekking, geotourism, Sasak sacred value (Dewi Anjani, the Pekelem ceremony), cultural landscape.	HIGH — monetised, but contingent on the regulating service.
Provisioning	Horticulture, coffee & cacao, non-timber forest products (ketak/Lygodium), Gili coastal fisheries.	MEDIUM–HIGH — transitional livelihood base.
Supporting	Endemic Lesser Sunda biodiversity (e.g., Rinjani scops owl), soil formation, nutrient cycling.	FOUNDATION — not market-priced, most vulnerable to the rift.

Implication: a policy that optimises only the cultural service (trekking tickets) without protecting the regulating service is consuming natural capital to finance short-term income.

2.2 The principal constraint: failure to internalise value, and fiscal centralisation

- Un-internalised externalities. Ecological costs (waste, erosion, hydrological load) are reflected neither in ticket prices nor in tourism-product prices—a classic, tolerated market failure.

- Fiscal centralisation (the 30% question). PNBP is remitted in full to the centre; the demand for at least 30% retention has not been institutionalised. Local governments capture no rent on assets located within their own territory—the crux of the centre–periphery dependency critique.
- Institutional fragmentation. The landscape's authority is split among the TNGR Office (core zone, under the Ministry of Forestry), the Geopark Management Body, the NTB provincial government, and five district governments—with no single entity holding mandate over the whole environmental-service value chain.
- Seasonal over-tourism pressure. The post-reopening domestic surge (1 April 2026) concentrates impact on the Sembalun–Senaru nodes, exceeding the carrying capacity of infrastructure (lighting, sanitation, trails).
- Value-chain asymmetry. The largest surplus is captured by upstream operators (tour aggregators, platforms), while porters, guides, and homestay owners—the labour that bears the risk—occupy a subordinate position in value distribution.
- Volatile dependence on foreign markets. The international-visitor segment is declining amid global conflict; a revenue base over-reliant on foreign arrivals is geo-economically fragile.

2.3 A strategy that reconciles economic benefit with ecological function

The principle is not to choose economy or ecology, but to redesign the value-capture mechanism so that ecological reproduction is financed from the rent it itself generates. Four pillars:

1. Payment for Environmental Services (PES) for water. Monetise the hydrological regulating service: a measured levy on downstream users (water utilities, irrigation, tourism hydrology) channelled to upstream buffer-zone villages in return for maintaining forest cover—internalising what has so far been free.
2. Earmarking & local fiscal retention. Institutionalise the return of ≥ 30% of PNBP into a ringfenced area conservation fund, as local actors demand, closing the fiscal rift between extraction and recovery.
3. Data-driven carrying-capacity management. Dynamic daily quotas via the E-Rinjani app, waste penalties, and seasonal zoning—not merely raising tariffs, but capping physical throughput to match regenerative capacity.
4. Deepening local value retention. Shift from volume maximisation to maximising captured value per visitor: geo-homestays, porter/guide certification, derivative products—so that surplus settles in the transition zone rather than upstream in the value chain.

2.4 The Role of Stakeholders

Table 2. Stakeholder Key Role and Primary Accountability

Stakeholder	Key Role	Primary Accountability
TNGR Office / Ministry of Forestry	Core-zone authority; quota and tariff setting; Go Zero Waste enforcement.	Reinvest PNBP into the landscape; transparent allocation.
NTB Province & 5	Spatial planning, buffer-zone infrastructure,	Capture local rent; equitable

Regencies / City	cross-district coordination.	regional development.
Geopark Management Body	UNESCO's three pillars: conservation, education, economy; four-yearly revalidation.	Preserve UGGp status; integrate the value chain.
Communities & Sasak Adat	Porters, guides, homestays, customary-forest stewards; local knowledge & sacred value.	Subjects (not objects) of governance; PES recipients.
Operators & Tourism Platforms	Marketing, logistics, service and safety standards.	Fair value-sharing; ecological compliance.
Downstream Users & Visitors	Water utilities, irrigation, downstream water users; visitors as service-payers.	Pay for the service value consumed (PES).

Synthesis: sustainability requires a shift from top-down, permit-based governance to polycentric governance in which buffer communities are paid subjects for the environmental services they steward, not merely recipients of impact.

2.5 Anticipating counter-arguments (stress-testing the case)

- Neoliberal/orthodox objection: "The tariff increase is enough; market prices will manage demand." Rebuttal: a higher ticket price without earmarking merely diverts surplus to the central treasury—it raises extraction, not the internalisation of externalities. A price signal without ringfencing never touches the root of the rift.

- Developmental-realist objection: "Maximise visitor volume for GDP and foreign exchange." Rebuttal: maximising volume on a landscape with fixed carrying capacity is consuming natural capital—today's income paid for with degradation that lowers tomorrow's rent. The optimum lies not at maximum volume but at maximum value-per-visitor within ecological limits.

Policy Recommendations

1. **Institutionalise local fiscal retention of at least 30% of PNBP.** Establish a ringfenced Rinjani Conservation Fund (via a public-service-agency or endowment mechanism) with binding allocations for trail recovery, sanitation, and evacuation—meeting local actors' demand and closing the fiscal rift.

2. **Build a Payment for Environmental Services (PES) scheme for water.** Set a hydrological levy on downstream users (utilities, irrigation, tourism enterprises) channelled to upstream buffer villages in return for maintaining forest cover; treat the water-regulation service as a valued asset, not a free good.

3. **Apply dynamic, carrying-capacity-based daily quotas via E-Rinjani.** Cap physical throughput per route by regenerative capacity rather than merely raising prices; integrate a deposit-refund waste system and measured penalties.

4. **Create a single Rinjani Landscape Multistakeholder Joint Authority Body.** Consolidate TNGR–Geopark–Province–district mandates into one polycentric body with authority over the whole environmental-service value chain, breaking institutional fragmentation.

5. **Raise local value capture.** Certify and license porters and guides with a floor tariff, support geo-homestays and community derivative products, and require value-sharing clauses on operators—so surplus settles in the transition zone.

6. **Diversify the market base and build fiscal transparency.** Reduce reliance on volatile foreign arrivals by strengthening the high-value domestic segment; publish a revenue-and-reallocation dashboard (potentially ledger/blockchain-based) so that PES and PNBP allocations are publicly auditable.

Implementation Priority (5 Year Roadmap)

The single highest priority for the coming five years: internalising environmental-service value through a water PES paired with local fiscal retention. This is the one intervention that directly closes the metabolic rift—returning the cost of ecological reproduction into the value circuit that depends on it. Phasing:

Table 3. Five Year Priority Action Water Roadmap for Rinjani-Lombok UGGp and Biosphere Reserve

Phase	Priority Action	Output	Lead
Year 1	30% PNBP-retention regulation + economic valuation of the water service; finalise carrying-capacity quotas.	Conservation Fund by-law/decree; per-route carrying-capacity baseline.	Ministry of Forestry, NTB Province
Year 2	Pilot a water PES in one watershed (e.g., Kokok Putih); establish the Joint Authority.	Operational upstream–downstream payment scheme; institutional MoU.	Joint Authority, water utility, upstream villages
Year 3	Scale PES to all priority watersheds; full deposit-refund waste system; porter-guide certification.	Cross-watershed PES coverage; lower waste tonnage; standardised porter tariffs.	Joint Authority, communities
Year 4	Public fiscal-transparency dashboard; diversify toward high-value domestic markets.	Public PNBP–PES audit; new market segmentation.	Province, Geopark
Year 5	Evaluate and permanently embed ahead of UNESCO revalidation; replicate the model elsewhere.	UGGp status secured; Rinjani PES model as a national reference.	All stakeholders

Core success indicator: the ratio of ecological reinvestment to the PNBP the landscape generates rises from near zero toward ≥ 30%, and waste tonnage per 1,000 visitors falls consistently—two direct proxies for the closing of the rift between harvested value and the ecology that sustains it.

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