

Comparative Analysis of Bottom-Up and Top-Down Approaches in Forest Fringe Management: Evidence from Tanjung Betung II Village, Bengkulu, Indonesia

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ABSTRACT

This study aims to evaluate the comparative effectiveness of bottom-up and top-down approaches in the management of forest fringe areas in Tanjung Betung II Village, Padang Guci Hulu District, Kaur Regency, Bengkulu Province. The study was motivated by persistent resource management friction, limited community participation, weak inter-agency institutional coordination, and unsustainable forest utilization within peripheral communities. Adopting a qualitative case study design, data were collected through in-depth semi-structured interviews, direct field observation, institutional documentation, and literature analysis involving village officials, traditional (*adat*) leaders, forest farmer groups (*Kelompok Tani Hutan*), and local forestry administrators. The findings demonstrate that while the top-down approach offers high regulatory standardization and uniform administrative control, it generates low social legitimacy, fails to accommodate localized ecological-economic needs, and produces fragile program sustainability. Conversely, the bottom-up approach is significantly more effective in strengthening community participation, leveraging traditional local wisdom (*kearifan lokal*), and establishing robust local ownership. This research advances public policy discourse by demonstrating that an isolated approach is insufficient; rather, an integrated collaborative governance model that bridges formal state regulations with community-based institutional arrangements is essential for sustainable forest fringe ecosystem management.

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1. Introduction

Forest fringe areas represent critical socio-ecological interfaces where conservation mandates, regional economic development plans, and community livelihood strategies constantly intersect. In Indonesia, state-led forestry policies have historically treated these peripheral zones as administrative boundaries requiring strict top-down regulatory enforcement (Wahyudi, 2021). However, this centralized approach frequently overlooks the fact that forest-fringe communities rely heavily on dryland agriculture, agroforestry, and non-timber forest products (NTFPs) for daily economic survival. One such critical socio-ecological landscape is found in Tanjung Betung II Village, Padang Guci Hulu District, Kaur Regency, Bengkulu Province. This village borders a state-designated forest area that is undergoing environmental degradation, recurrent land-use conflicts, and structural marginalization due to centralized enforcement mechanisms that lack synchronized inter-agency coordination and local social legitimacy.

In contemporary public administration and public policy theory, resource governance models are fundamentally bifurcated into top-down and bottom-up paradigms (Winarno, 2018). The top-down model, heavily rooted in traditional Weberian bureaucracy, positions state authorities as the centralized, omniscient architects of policy formulation and execution (Tachjan, 2006). This model prioritizes bureaucratic command-and-control, rigorous administrative oversight, and uniform legal standards. While it ensures high legislative uniformity, empirical literature reveals that top-down forestry frameworks often experience systemic implementation deficits because they isolate peripheral populations, branding them as objects of development rather than active partners (Rondinelli, 1981).

Conversely, the bottom-up approach elevates local community structures, civic participation, and multi-actor decentralized collaboration as the primary engines of natural resource management (Suharto, 2017). This model operates on the premise that sustainable environmental management is impossible without capturing localized socio-economic realities and traditional local wisdom (*kearifan lokal*). In the context of public participation, Arnstein's seminal *Ladder of Citizen Participation* illustrates that genuine empowerment requires

shifting the public role from mere manipulation or tokenism toward delegated power and citizen control (Arnstein, 1969). Furthermore, the *Community-Based Natural Resource Management* (CBNRM) framework posits that local communities possess deep-seated, generational ecological knowledge that renders them highly effective co-managers of natural resource commons, provided they are granted proper institutional authority (Ostrom, 1990).

To resolve the systemic tensions inherent in resource distribution and ecological preservation, modern public administration has increasingly shifted toward the paradigm of collaborative governance (Keban, 2019). As conceptualized by Ansell and Gash, collaborative governance constitutes a structured arrangement where public and private stakeholders engage directly in a collective, consensus-oriented decision-making process to manage public resources (Ansell & Gash, 2008). This framework emphasizes that sustainable policy implementation depends on face-to-face dialogue, mutual trust-building, shared commitment to the process, and the generation of intermediate shared outcomes (Emerson, Nabatchi, & Balogh, 2012).

In Tanjung Betung II Village, forest edge management has long been characterized by a disjointed implementation landscape. Centrally mandated forestry regulations and conservation boundaries are imposed without structural synchronization with the village administration or community-based traditional systems. This creates a disconnect between administrative regulations and local economic necessities (Dwiyanto, 2021). While state apparatuses focus strictly on territorial containment and enforcement, community initiatives—rooted in customary rules (*adat*) and practical agroforestry management—demonstrate significant unexploited potential to secure ecological preservation.

While extensive academic literature covers general community forestry (*Hutan Kemasyarakatan*) in Indonesia, there remains an empirical deficit regarding localized comparative evaluations between rigid top-down regulatory frameworks and organic bottom-up participative initiatives in peripheral rural areas of Southern Sumatra, particularly Kaur Regency. This study directly addresses this gap by analyzing the operational effectiveness, structural barriers, and

institutional dynamics of both approaches in Tanjung Betung II Village. By utilizing the conceptual lenses of collaborative governance and CBNRM, this research aims to formulate an adaptive, integrated governance model capable of reconciling state conservation goals with community-led sustainable socio-economic development.

2. Method

This study adopted a qualitative case study research design with a descriptive analytical approach (Yin, 2018). This method was selected to facilitate an in-depth, contextualized exploration of the complex administrative and socio-ecological phenomena governing forest edge area management within a specific geographical jurisdiction (Creswell, 2018). The research was physically and institutionally situated in Tanjung Betung II Village, Padang Guci Hulu District, Kaur Regency, Bengkulu Province, selected due to its strategic position on the boundary of critical state forest land and its history of parallel top-down state programs and bottom-up community initiatives.

Data sources were strategically divided into primary and secondary classifications to ensure empirical depth and triangulation (Moleong, 2019):

- 1) Primary Data: Obtained through semi-structured, in-depth interviews with key institutional and community stakeholders, including village executive administrators (*perangkat desa*), traditional customary leaders (*tokoh adat*), executives of local Forest Farmer Groups (*Kelompok Tani Hutan / KTH*), peripheral farmers, and district-level local government forestry officers.
- 2) Secondary Data: Collected via systematic reviews of village demographic registries, regional forestry spatial layout maps, local regulatory frameworks, ministerial decrees, and relevant academic research publications (Bungin, 2017).

Field data collection was operationalized through a combination of three key techniques (Raco, 2018):

- 1) In-Depth Interviews: Formulated around thematic guidelines assessing policy knowledge, level of structural involvement, perceived regulatory barriers, and resource access.

- 2) Direct Field Observation: Conducted across the forest edge borders and community agroforestry plots to assess real-time land utilization, territorial enforcement markers, and informal community resource extraction patterns.
- 3) Documentation and Institutional Review: Examining formal policy blueprints, attendance registries of village consultation forums (*Musrenbangdes*), and institutional reports on forestry conflicts.

The collected qualitative data were systematically processed using the interactive data analysis model delineated by Miles, Huberman, and Saldaña (2018), which moves through three concurrent streams of activity: data reduction (coding and categorizing raw interview transcripts and field notes), data display (structuring comparative matrix tables), and conclusion drawing/verification. Rigorous data validity and trustworthiness were maintained through source triangulation (comparing accounts from state officials against local farmers), method triangulation (cross-referencing interview data with direct field observations), and member checking with key informants to ensure the credibility of the research findings (Sugiyono, 2022).

2.1. Theoretical Framework Mapping

To ensure analytical rigor, the comparison between the top-down bureaucratic control model and the bottom-up participatory framework across primary governance components is synthesized in Table 1.

Table 1. Conceptual Comparison of Top-Down and Bottom-Up Approaches in Resource Governance

Administrative Component	Top-Down Approach Paradigm	Bottom-Up Approach Paradigm
Locus of Decision-Making	Centralized State Agencies & Bureaucratic Elites	Decentralized, Participatory Village-Level Forums
Structural Citizen Role	Passive Objects of Regulatory Enforcement	Active Subjects and Co-Managers of Development

Primary Policy Orientation	Strict Administrative Control & Regulatory Compliance	Socio-Economic Empowerment & Ecological Sustainability
Source of Institutional Legitimacy	Formal Statutory Regulations & State Mandates	Social Participation, Consensus, & Customary Norms
Operational Flexibility	Rigid, Standardized, and Procedural	Highly Adaptive & Responsive to Local Needs
Long-Term Program Sustainability	Entirely Dependent on State Budget Allocations	Driven by Local Ownership & Communal Investment

Source: Synthesized and Processed from Public Administration Literature (Tachjan, 2006; Winarno, 2018).

3. Results and Discussion

3.1. Contextual Profile of Forest Edge Management in Tanjung Betung II Village

Tanjung Betung II Village is characterized by an agrarian socio-economic structure where the vast majority of households depend on smallholder farming, dryland agriculture, and the extraction of non-timber forest products (NTFPs) such as resin, rattan, and wild spices for livelihood maintenance. Geographically, the village shares an extended border with state-designated forest conservation zones, creating an intense socio-ecological pressure point. Over the past decade, field observations reveal that this boundary zone has experienced accelerating ecological pressure caused by population growth, economic volatility forcing agricultural land expansion, and structural deficits in state-led forest oversight (Hardin, 1968).

The empirical data indicates that forest fringe governance within this jurisdiction is severely hampered by three institutional barriers: a lack of collaborative communication between district forestry officers and the village government, low technical and institutional capacity within local community organizations, and a historical absence of community-centered empowerment policies (Dwiyanto, 2021). Interviews with village administrators revealed that state forestry officials frequently enforce spatial zoning and entry

prohibitions without pre-existing socialization or consultatory dialogue. Consequently, the local populace perceives state forestry interventions not as conservation mechanisms, but as structural threats to their economic survival (Wahyudi, 2021), leading to an undercurrent of latent conflict and non-compliance with environmental mandates.

3.2. Critical Evaluation of the Top-Down Approach

The top-down approach implemented in Tanjung Betung II Village is operationalized via national and regional forestry initiatives designed at the ministerial or provincial level. The primary advantage of this model lies in its capacity for high regulatory standardization and immediate administrative uniformity (Winarno, 2018). From a technical standpoint, the centralized approach successfully clarifies formal state boundaries, legalizes zoning codes, and establishes standardized enforcement procedures for forest rangers. This provides a clear, rule-bound framework for legal compliance and formal state oversight.

However, the field findings reveal deep structural weaknesses in this model. First, by excluding the village apparatus and local farmers from the initial planning stages, the policies suffer from a profound lack of local social legitimacy (Rondinelli, 1981). As one leader of the Forest Farmer Group (KTH) stated:

"The government officers arrive only to install boundary markers and hand down lists of prohibitions. They do not know how we survive or that our ancestors farmed these fringes long before the boundaries were drawn on their maps."

This exclusion creates an adversarial dynamic between the state apparatus and the community. Second, the top-down model is structurally blind to localized economic realities; enforcing absolute non-access rules without providing alternative sustainable livelihoods drives communities to conduct clandestine, unsustainable resource extraction (Ostrom, 1990: 88). Third, because monitoring depends entirely on poorly funded, understaffed regional forestry patrols, the state lacks the logistical capacity to police the vast forest edge, rendering top-down prohibitions practically ineffective. From a public policy perspective, treating the community merely as an object of

regulation destroys any sense of local program ownership (Suharto, 2017). Consequently, whenever active state funding or physical policing in Tanjung Betung II Village declines, the programs collapse, leaving no durable trace of local institutional sustainability.

3.3. Empirical Performance of the Bottom-Up Approach

In contrast to centralized enforcement, bottom-up initiatives within Tanjung Betung II Village—primarily driven by traditional customary structures and organic community agroforestry groups—demonstrate superior performance in building localized environmental sustainability. The community operates under traditional ecological knowledge and informal customary rules (*adat*) that regulate water-source protection and seasonal forest harvesting. This cultural framework serves as a potent form of social capital that fosters ecological preservation without requiring state coercion (Wahyudi, 2021).

When forest management strategies are organized around village deliberation forums (*Rembug Desa*), community participation shifts upward along Arnstein's ladder toward authentic partnerships (Arnstein, 1969). Field data shows that when local farmers are given the autonomy to form Forest Farmer Groups (KTH) and participate in defining sustainable harvesting parameters, their behavioral patterns shift from defensive resistance to active stewardship. The bottom-up model builds local institutional capacity by formalizing these farmer groups into recognized village-level bodies capable of resolving internal land-use disputes and organizing voluntary community forest patrols (Suharto, 2017).

From the analytical perspective of collaborative governance and CBNRM, this model effectively aligns environmental conservation with economic self-interest (Ansell & Gash, 2008). By integrating sustainable agricultural practices—such as planting high-value perennial fruit trees and managing wild NTFPs—the community secures long-term economic returns directly tied to the standing forest. This material incentive converts the community into self-regulating guardians of the forest fringe, drastically reducing monitoring costs and creating an organic, locally sustained ecosystem protection model (Ostrom, 1990).

3.4. Comparative Matrix of Governance Effectiveness

To clearly evaluate the administrative and practical differences between the two governance models based on field data, Table 2 provides a comparative assessment across key performance indicators.

Table 2. Performance Evaluation of Top-Down and Bottom-Up Approaches in Tanjung Betung II Village

Governance Performance Indicator	Top-Down Performance Level	Bottom-Up Performance Level	Empirical Observations in Tanjung Betung II Village
Community Participation	Low	High	Top-down restricts public input to passive listening; bottom-up embeds public input into active decision-making.
Social Legitimacy	Marginal	High	State regulations face local resistance; community-devised guidelines enjoy high social compliance.
Long-Term Program Sustainability	Low	High	Top-down initiatives terminate once state budgets lapse; bottom-up structures persist via local institutional habits.
Contextual Adaptation	Deficient	High	Top-down applies generic national templates; bottom-up tailors rules to local topography and micro-economies.
Regulatory Standardization	High	Moderate	State mechanisms ensure strict legal consistency; community mechanisms show localized procedural variation.

Governance Performance Indicator	Top-Down Performance Level	Bottom-Up Performance Level	Empirical Observations in Tanjung Betung II Village
Local Institutional Capacity	Weakened	Strengthened	Centralized commands bypass village networks; participatory frameworks build resilient farmer cooperatives.

Source: Analyzed and Processed from Field Research Data, 2026.

The synthesis in Table 2 confirms that while the top-down approach excels at formal regulatory standardization, it fails across every socio-political metric vital for long-term field execution. Conversely, while the bottom-up model requires extensive time to build consensus and may show moderate procedural variation, it delivers superior social legitimacy, deeper contextual adaptation, and long-term institutional sustainability (Keban, 2019).

3.5. Towards an Integrated Collaborative Governance Model

The empirical findings demonstrate that neither an isolated, rigid top-down approach nor an entirely autonomous bottom-up initiative provides a flawless solution for forest fringe governance. A pure top-down model lacks the social compliance and local knowledge required for effective field execution, while a pure bottom-up model often lacks the formal legal authority, broader financial backing, and macro-level coordination needed to protect large-scale conservation zones from external illegal logging networks (Emerson et al., 2012). Therefore, the strategic path forward requires an integrated Collaborative Governance Model that structurally bridges the two approaches.

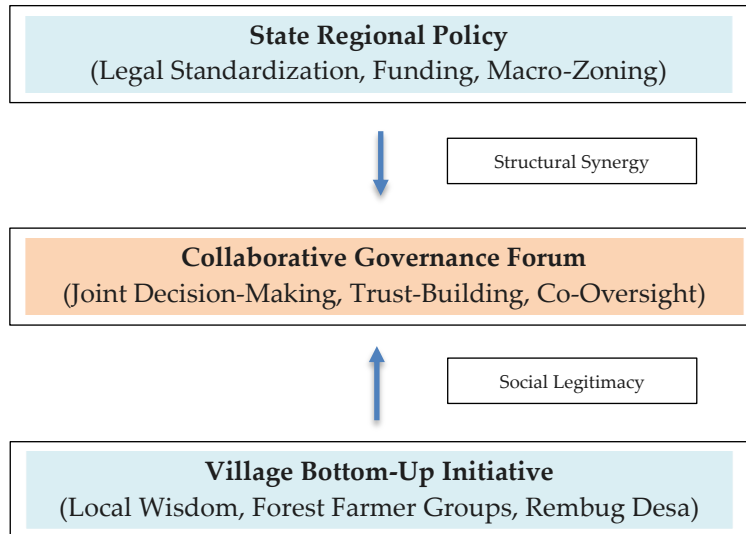


Figure 1. Integrated Collaborative Governance Model for Forest Fringe Governance

Source: Developed by the authors based on Ansell and Gash (2008), Emerson et al. (2012), and Indraha (2015)

This integrated model operationalizes collaborative governance by leveraging the strengths of both systems (Ansell & Gash, 2008). The state government shifts its role from an absolute command-and-control actor to a facilitator and legal guarantor (Ndraha, 2015). The state retains its authority to set macro-level conservation targets and provide formal legal recognition, while delegating operational planning, spatial utilization rights, and everyday monitoring responsibilities to village institutions and Forest Farmer Groups through formal frameworks like Social Forestry (*Perhutanan Sosial*). This synthesis ensures that policies carry both formal legal weight and deep local social legitimacy, creating a resilient, legally sound, and community-sustained forest fringe management framework.

4. Conclusion

This study demonstrates that the bottom-up approach exhibits substantially higher overall effectiveness compared to the top-down

approach in managing the forest fringe areas of Tanjung Betung II Village, Kaur Regency. By prioritizing village-level deliberations, capitalizing on traditional local wisdom, and organizing local forest farmer groups, the bottom-up paradigm fosters genuine citizen participation and builds high social legitimacy. This effectively turns peripheral communities into active, self-regulating stewards of conservation. In contrast, the rigid top-down model relies on a command-and-control infrastructure that ignores localized economic realities, isolates the village apparatus, and fails to establish long-term program sustainability once state funding stops.

However, both models possess interdependent strengths and weaknesses. Total reliance on top-down mechanisms leads to social friction and implementation failures, while unguided bottom-up initiatives risk isolation from formal legal protections and broader state planning. The study concludes that sustainable forest fringe management requires an integrated collaborative governance model. This framework fuses the regulatory authority and macro-standardization of the state with the localized knowledge, adaptability, and social capital of bottom-up community networks.

Based on the field findings and theoretical analysis, the following structural policy interventions are recommended:

- 1) Institutionalize Formal Collaborative Interfaces: The Regional Government of Kaur Regency and provincial forestry departments should establish permanent, consensus-driven collaborative forums that include village leaders, customary authorities, and forest farmer groups in the co-design of edge-zone utilization boundaries (Ansell & Gash, 2008).
- 2) Accelerate Social Forestry (*Perhutanan Sosial*) Legalization: Transition informal community management into formal state-sanctioned frameworks by accelerating the legal issuance of community forestry permits, granting secure, long-term resource management rights tied to strict conservation performance metrics (Wahyudi, 2021).
- 3) Embed Local Wisdom into Formal Regulations: Local village ordinances (*Peraturan Desa*) should be drafted to formally codify customary environmental rules (*adat*), providing them with

state legal backing while utilizing traditional social sanctions to prevent illegal logging and unsustainable land clearing.

- 4) Strengthen Community Economic Capacity: Shift forestry budgets toward community-based economic empowerment, specifically funding technical training in sustainable agroforestry, eco-tourism development, and value-added processing for non-timber forest products (NTFPs) (Suharto, 2017). This will directly tie village economic prosperity to the preservation of the forest canopy.

This study is limited to a qualitative case study conducted in Tanjung Betung II Village, Kaur Regency, so the findings cannot be generalized to all forest fringe areas in Indonesia. In addition, the study focuses primarily on institutional and participatory aspects without quantitatively measuring ecological and economic impacts. Future research is recommended to conduct comparative studies across multiple regions and integrate quantitative or mixed-method approaches to evaluate the effectiveness of collaborative governance models more comprehensively

Declaration of Conflict of Interest

The author declare that there are no conflicts of interest in the research and publication of this article.

References

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571. <https://doi.org/10.1093/jopart/mum032>
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>
- Bungin, B. (2017). *Metodologi penelitian kualitatif*. Rajawali Pers.
- Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- Dwiyanto, A. (2021). *Manajemen pelayanan publik*. Gadjah Mada University Press.
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, 22(1), 1–29. <https://doi.org/10.1093/jopart/mur011>

- Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243–1248.
<https://doi.org/10.1126/science.162.3859.1243>
- Keban, Y. T. (2019). *Enam dimensi strategis administrasi publik*. Gava Media.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2018). *Qualitative data analysis: A methods sourcebook* (4th ed.). Sage Publications.
- Moleong, L. J. (2019). *Metodologi penelitian kualitatif*. Remaja Rosdakarya.
- Ndraha, T. (2015). *Kybernology: Ilmu pemerintahan baru*. Rineka Cipta.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.
- Raco, J. R. (2018). *Metode penelitian kualitatif: Jenis, karakteristik, dan keunggulannya*. Grasindo.
- Rondinelli, D. A. (1981). Government decentralization in comparative perspective: Theory and practice in developing countries. *International Review of Administrative Sciences*, 47(2), 133–145.
<https://doi.org/10.1177/002085238104700205>
- Sugiyono. (2022). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Suharto, E. (2017). *Membangun masyarakat memberdayakan rakyat*. Refika Aditama.
- Tachjan. (2006). *Implementasi kebijakan publik*. AIPI.
- Tilaar, H. A. R. (2015). *Perubahan sosial dan pendidikan*. Grasindo.
- UNDP. (2020). *Human development report 2020*. United Nations Development Programme.
- Wahyudi, W. (2021). *Pengelolaan sumber daya alam berbasis masyarakat*. Prenadamedia Group.
- Winarno, B. (2018). *Kebijakan publik: Teori, proses, dan studi kasus*. CAPS.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage Publications.