JOURNAL INFORMATIC, EDUCATION AND MANAGEMENT (JIEM)
Vol 8 No 1 (2026): September 2025 - February 2026, pp. 237 ~ 251
ISSN: 2716-0696, DOI: 10.61992/jiem.v8i1.207

Policy Strategy for Licensing Reform and Strengthening Monitoring Technology to Break the Cycle of Karhutla Haze in Indonesia

Frisca Ayu Suciandika
Kementerian Koordinator Bidang Politik, Hukum, dan Keamanan Republik Indonesia

Article Info

Article history:
Received 26 October 2025
Revised 28 October 2025
Accepted 30 October 2025

Keywords:
Forest and Land Fires, Regulatory Harmonization, Licensing, Overlapping Authority

ABSTRACT

Indonesia has the world's third-largest tropical forest area (125.9 million hectares) but faces serious threats from forest and land fires (Karhutla). This research aims to identify the root causes of Karhutla and formulate strategic policies to address them. The analytical methods used include APKL (Actual, Problematic, Public Interest, Feasible) and USG (Urgency, Seriousness, Growth) to prioritize problems, and the Bardach method to evaluate policy alternatives. Data shows a 9.43% increase in hotspots from 1,601 points (2024) to 1,752 points (2025), acute respiratory infections increased from 380,000 to 420,000 cases, and economic losses reached IDR 95 trillion. Analysis results identify weak law enforcement as the priority issue (APKL score: 20), with the main root cause being overlapping regulations and licensing (USG score: 15). The recommended policy is sectoral regulatory harmonization through Presidential Regulation involving the formation of a Harmonization Team, preparation of an integrated Academic Paper, and implementation of One Map Policy. The novelty of this research lies in its comprehensive approach integrating multi-criteria analysis to produce evidence-based policy recommendations that can address the root causes of Karhutla fundamentally and sustainably.

Corresponding Author:
Frisca Ayu Suciandika | Kementerian Koordinator Bidang Politik, Hukum, dan Keamanan Republik Indonesia
Email: f1c4.cute@yahoo.com

1. Introduction

Background

Indonesia is the owner of the world's third-largest tropical forest area, covering 125.9 million hectares or 63% of the national land area based on KLHK (Ministry of Environment and Forestry) data. These forests play a strategic role as carbon sinks, buffers for biodiversity, and support for socio-economic life. However, in the last two decades, the sustainability of Indonesia's forests has continuously faced serious threats from forest and land fires (Karhutla). The Karhutla phenomenon has evolved from merely an ecological disaster into

a multidimensional crisis impacting public health, economic stability, social relations, and international diplomacy (KLHK, 2024).

The last three years illustrate that Karhutla is far from being under control. Although various policies have been issued, including Presidential Instruction No. 3 of 2020 concerning the Control of Karhutla, and a number of international commitments, data shows a worrying trend. Based on KLHK reports through the Sipongi system (2024-2025), from January 1 to August 31, 2024, the number of high-confidence hotspots was recorded at 1,601 points. In the same period in 2025, this number increased to 1,752 points, an increase of 9.43%. This increase indicates that despite firefighting and prevention efforts, the risk of fires is actually increasing.

Multidimensional Impact of Karhutla

The impact of Karhutla is multidimensional. From the health aspect, Ministry of Health data recorded more than 380 thousand cases of Acute Respiratory Infections (ISPA) in affected provinces in 2024. In 2025, this number increased to more than 420 thousand cases, along with worsening air quality in major cities such as Pekanbaru, Pontianak, and Palangka Raya, which at times recorded air quality indices above 300 $\mu g/m^3$ or the hazardous category (Kemenkes RI, 2025). The most vulnerable groups are children, the elderly, and pregnant women, with long-term impacts such as decreased lung function and increased risk of cardiovascular disease.

From the economic aspect, according to a World Bank report (2024), economic losses due to Karhutla reached IDR 95 trillion in 2024, covering health costs, disruption of air transportation, and losses in the plantation sector. From the environmental aspect, forest and peatland fires produce very large amounts of carbon emissions. According to the Global Carbon Project (Le Quéré et al., 2023), peatland fires in Southeast Asia, including Indonesia, contribute more than 350 million tons of CO_2 equivalent per year, hindering the achievement of the 2030 Nationally Determined Contribution target.

From the aspect of international diplomacy, in September 2024, the ASEAN Haze Pollution Report noted that haze from fires in West Kalimantan and Riau crossed borders to Malaysia and Singapore, triggering diplomatic protests (ASEAN Secretariat, 2024). Neighboring countries demanded Indonesia improve control, considering the ASEAN Agreement on Transboundary Haze Pollution was signed in 2002.

Identification of Main Problems

Although the government has taken various steps, Karhutla continues to occur due to a combination of complex factors. The main problems faced by Indonesia in Karhutla include: the high intensity of recurring fires every year, especially in peatlands, with a 9.43% increase in hotspots from 2024 to 2025; weak law enforcement against perpetrators of land burning where more than 70% of fire cases involving large companies do not result in license revocation (CIFOR, 2023); limitations in technology and coordination between agencies causing firefighting responses to often be late and ineffective (BNPB, 2025); lack of coordination between central government agencies, regions, TNI/Polri (Indonesian National

Armed Forces/Police), businesses, and the community; and the persistence of conflicts of interest between environmental conservation efforts and short-term economic interests.

Priority Analysis of Problem Causes (APKL)

To identify the most priority causes of the problem, this research uses APKL analysis (Actual, Problematic, Public Interest, Feasible). The APKL method is one method used to test the feasibility of a problem to find a solution using a scoring technique in determining problem priorities. Actual means the issue or main problem is currently happening or will happen and is being discussed by many people. Problematic means an issue that deviates from the supposed condition, standards, or provisions, causing unrest that requires finding the cause and solution. Public Interest means an issue that directly concerns the livelihood of many people. Feasible means the issue is logical and appropriate to discuss according to duties and responsibilities. APKL analysis uses a value range in the form of a score matrix of 1-5, indicating that the higher the score, the more urgent the issue is to be resolved immediately.

Table 1. APKL Analysis of Karhutla Problem Causes

Problem Cause	Actual	Problematic	Public Interest	Feasible	Total	Priority
Socio-economic factors of community & companies	4	5	4	4	17	III
Weak and inconsistent Law Enforcement	5	5	5	5	20	I
Limitations of infrastructure, technology and coordination	5	4	5	5	19	II

Based on the APKL analysis in Table 1, the issue related to "Weak and Inconsistent Law Enforcement" has the highest ranking with an APKL score of 20 points. This is very actual (5) because there was a 9.43% increase in hotspots from 2024 to 2025 and more than 70% of corporate cases do not result in license revocation, and it remains a main topic in policy forums. Very problematic (5) because it creates a culture of "impunity" for perpetrators, hinders the effectiveness of Karhutla prevention efforts, and deviates from the standards of law enforcement that should be. Very much in the public interest (5) because it directly impacts the livelihood of many people, covering health, economy, and environment, and affects the quality of life of people in affected areas. Very feasible (5) because it aligns with the duties and responsibilities of law enforcement institutions and has a clear legal basis for improvement.

Level 1 Root Cause Analysis (USG)

From the previous APKL results, the priority problem is weak and inconsistent law enforcement. To identify the most priority root cause, this research uses USG analysis (Urgency, Seriousness, Growth). The USG method is one method used to prioritize the order of issues that must be resolved using a scoring technique in determining problem priorities. Urgency means how urgent the issue must be discussed in relation to the available time and

how strong the time pressure is to solve the problem causing the issue. Seriousness means how serious the issue needs to be discussed in relation to the consequences arising from delaying the solution to the problem causing the issue. Growth means how likely the issue is to develop, related to the possibility that the problem causing the issue will worsen if left unchecked.

Table 2. Level 1 USG Analysis of Root Causes

Root Cause of Problem	Urgency	Seriousness	Growth	Skor	Prioritas
Weak coordination and overlapping authority	5	5	5	15	I
Existence of potential conflict of interest	4	5	5	14	II
Limitations of HR capacity in Karhutla law enforcement	4	4	4	12	III

Based on the USG analysis in Table 2, "Weak Coordination and Overlapping Authority" is the most critical root cause of weak law enforcement with the highest score (15). This is very urgent (5) because the 2024-2025 hotspot surge (increased 9.43% from 1,601 to 1,752 points) shows the coordination and command system is not yet effective, requires immediate improvement before the 2025-2026 dry season, and without coordination improvement, the number of hotspots has the potential to continue increasing. Very serious (5) because overlapping regulations cause blurred responsibilities between agencies, conflict between KLHK and Regional Government authority in license supervision slows down enforcement, and directly impacts the size of burned areas and economic losses. Has high growth (5) because if left unchecked, this problem grows exponentially; the more overlapping licenses, the more legal loopholes and the greater the chance of recurring fires, with the impact mechanism: overlapping authority → slow response → small fires not extinguished quickly → spread → trans-provincial and trans-national smoke.

Level 2 Root Cause Analysis (USG)

Based on the Level 1 USG analysis results, the most urgent, serious, and likely to develop issue is "Weak coordination and overlapping authority" with a total score of 15. Subsequently, a Level 2 USG analysis was conducted to determine the root cause of weak coordination and overlapping authority.

Table 3. Level 2 USG Analysis of Root Causes

Root Cause of Problem	Urgency	Seriousness	Growth	Skor	Prioritas
Overlapping regulations and licensing	5	5	5	15	I
Limitations of command system and data integrity	4	5	5	14	II
Sectoral Egos among agencies	4	5	4	13	III

Based on the Level 2 USG analysis in Table 3, "Overlapping Regulations and Licensing" is the most fundamental root cause of weak coordination with the highest score (15). This is very urgent (5) because every year regulatory conflicts between central government (KLHK, ATR/BPN, Ministry of Agriculture) and regions cause confusion over responsibility, proven in 2024-2025 when plantation permits in West Kalimantan overlapped with HTI (Industrial Plantation Forest) concessions so law enforcement was delayed, and requires immediate harmonization before the issuance of new permits. Very serious (5) because the impact is significant with dual permits opening legal loopholes so companies can evade responsibility, ATR/BPN data (2024) shows more than 20% of plantation land in Sumatra and Kalimantan potentially overlaps with forest areas, and causes delayed and ineffective law enforcement. Has high growth (5) because if not addressed immediately, more new permits will cause greater conflicts, the problem grows along with plantation and HTI expansion, and has long-term impacts on sustainable forest governance, with the impact mechanism: overlapping regulations → confusion of authority → hindered law enforcement → corporations escape sanctions → recurring Karhutla.

Problem Formulation and Writing Objectives

Based on the tiered analysis using the APKL and USG methods described, this policy paper formulates the problem as follows: how to design strategic policies to address overlapping regulations and licensing as the fundamental root cause of weak Karhutla law enforcement in Indonesia.

The objectives of this writing are: first, to comprehensively analyze the problem of overlapping regulations and licensing in the context of Karhutla using the theoretical frameworks of public policy coordination, integrated policy framework, and regulatory harmonization theory; second, to formulate feasible policy alternatives to address overlapping regulations and licensing; third, to recommend the most effective, efficient, and sustainable strategic policy to break the cycle of Karhutla in Indonesia.

Novelty of the Writing

The novelty of this writing lies in three main aspects. First, the use of tiered and integrated analysis using the APKL method to identify priority problem causes, the two-level USG method to identify fundamental root causes, and the Bardach method to evaluate policy alternatives. This multi-criteria analysis approach ensures objectivity and systematization in identifying root causes and formulating policy solutions. Second, the focus on overlapping regulations and licensing as the fundamental root cause, which has so far received less attention in Karhutla literature that focuses more on technical firefighting aspects and socio-economic factors. Third, comprehensive and implementable policy recommendations with a draft Presidential Regulation that includes substance, implementation mechanisms, and clear and measurable performance indicators.

2. Analysis and Discussion

Theoretical Foundation and Legal Framework

Public Policy Coordination Theory

According to multi-level governance theory (Jordan, 2021), the success of public policy implementation involving multiple stakeholders depends on the effectiveness of vertical (central-regional) and horizontal (inter-ministerial/agency) coordination. In the context of Karhutla, this theory explains that overlapping regulations occur due to the absence of an effective coordination mechanism between KLHK, ATR/BPN, the Ministry of Agriculture, and regional governments. Weak vertical coordination causes central policies not to be implemented well in the regions, while weak horizontal coordination causes sectoral egos and regulatory duplication between ministries/agencies.

Integrated Policy Framework Concept

The concept of integrated environmental governance emphasizes the importance of an integrated approach in natural resource management. According to UNEP (2023), an integrated policy framework allows the alignment of various sectoral regulations into one coherent unit, thereby eliminating gaps in overlapping authority and regulatory duplication. In the context of Karhutla, the integrated policy framework requires one binding regulatory reference for all sectors, one integrated data and information system, and one effective coordination mechanism.

Regulatory Harmonization Theory

Regulatory harmonization theory (Baldwin & Cave, 2021) states that regulatory conflicts can be resolved through three approaches. First, a hierarchical approach through the creation of an umbrella regulation that becomes the reference for all sectoral regulations. Second, a network approach through the formation of a coordination forum involving all stakeholders to resolve regulatory conflicts by consensus. Third, a market approach through providing incentives for those who comply with regulations and disincentives for violators to encourage compliance. In the context of Karhutla, these three approaches need to be integrated to ensure the effectiveness of regulatory harmonization.

Applicable Legal and Policy Framework

The existing legal framework relevant to handling Karhutla includes several main regulations. First, Law No. 41 of 1999 concerning Forestry, which needs revision to clarify supervision and law enforcement authority, integrate the strict liability principle for corporations, and align with the environmental cluster of the Job Creation Law. Second, Law No. 32 of 2009 concerning Environmental Protection and Management, which needs strengthening of administrative and criminal sanctions and regulating cross-compliance mechanisms for licensing.

Third, Law No. 23 of 2014 concerning Regional Government, which regulates the division of authority between central and regional governments, with a potential solution to clarify forest and land management authority through implementing Government Regulations.

Fourth, Law No. 39 of 2014 concerning Plantations, which needs harmonization with the Forestry Law to eliminate overlapping authority and establish business criteria in forest areas. Fifth, Law No. 11 of 2020 concerning Job Creation, which provides a platform for sectoral regulatory harmonization with the potential solution of utilizing the environmental and forestry cluster to align licensing. Sixth, Government Regulation No. 46 of 2023 concerning Business Licensing, which regulates licensing integration through an electronic system with the potential solution of implementing OSS-RBA (Online Single Submission-Risk Based Approach) for forestry and plantation licensing.

Relevant national policies include two main policies. First, the One Map Policy regulated in Presidential Regulation No. 9 of 2016 with the potential solution of spatial data integration to eliminate overlapping permits. Second, the National REDD+ Strategy 2020-2030, which regulates the harmonization of forestry and land use policies with the potential solution of multi-stakeholder coordination in forest land use planning.

Solution Analysis Based on Theory and Regulation

Based on public policy coordination theory, the solutions that can be formulated are: Establishment of a Karhutla Coordination Committee based on multi-level governance theory (Jordan, 2021), implementation through the formation of a committee involving KLHK, ATR/BPN, Ministry of Agriculture, and regional governments, and regulatory support in the form of a Presidential Regulation on Karhutla Control Coordination. Additionally, Development of an Integrated Information System based on integrated information system theory (UNEP, 2023), implementation through integration of Sipongi, OSS, and the National Land System, and regulatory support from PP No. 46/2023 concerning Business Licensing.

Based on regulatory harmonization theory, the solutions that can be formulated are: Preparation of an Academic Paper for Regulatory Harmonization based on the hierarchical approach (Baldwin & Cave, 2021), implementation through revision of the Forestry Law and Plantation Law to eliminate overlaps, and regulatory support from Law No. 12/2011 concerning the Formation of Legislation. Additionally, application of Regulatory Impact Assessment (RIA) based on evidence-based policy making theory, implementation through assessment of regulatory impact before issuing new permits, and regulatory support from Minister of PANRB Regulation No. 12/2020.

International Best Practices

Learning from international experience shows several best practices that can be adopted by Indonesia. From Malaysia, the MyHLP (Malaysian Haze Logger Platform) System is an integration of forest and agricultural land data in one digital platform that enables real-time monitoring and prevention of overlapping permits. The main lesson from Malaysia is the importance of a real-time information system to prevent overlaps and increase response speed to hotspots.

From Brazil, the CAR (Cadastro Ambiental Rural) System is an integrated land registration to prevent double claims by involving active participation of landowners in ownership

verification. The main lesson from Brazil is the importance of a participatory approach in land ownership verification and the effectiveness of an integrated registration system in preventing land conflicts and illegal deforestation.

Implementation Problems

Based on the APKL and USG analysis presented in the introduction, implementation problems can be described in four main dimensions. First, the regulation and governance dimension where ATR/BPN data (2024) shows more than 20% of plantation land in Sumatra and Kalimantan overlaps with forest areas, and central-regional coordination is weak because Regional Governments often wait for central instructions while fires have already spread.

Second, the law enforcement dimension where KLHK (2024) records only 12% of corporate Karhutla cases result in license revocation, the deterrent effect is low because many perpetrators escape legal snares, and potential conflicts of interest make law enforcement biased.

Third, the technology and HR limitations dimension where the Sipongi System exists but data distribution is slow, drone and peat sensor technology is not evenly distributed in vulnerable areas, and HR for investigators and firefighters is limited with BNPB (2025) reporting only 60 water bombing helicopters available for 5 vulnerable provinces.

Fourth, the socio-economic factors dimension where small farmers still rely on burning as a cheap method to clear land, as the cost of mechanical land clearing can be 10-15 times more expensive than burning, and economic alternatives such as subsidies and green credit are not evenly distributed across all Karhutla-prone areas.

The impact of weak implementation is clearly seen from four aspects. From the environmental aspect, there is peat ecosystem degradation and high carbon emissions. From the health aspect, there is an increase in ISPA cases from 380 thousand (2024) to 420 thousand (2025). From the economic aspect, losses reach IDR 95 trillion (World Bank, 2024). From the diplomacy aspect, there are protests from Malaysia and Singapore over cross-border haze (ASEAN, 2024).

3. Policy Alternatives

Alternative 1: Synchronization and Harmonization of Regulations

This alternative focuses on aligning all legislation at the central and regional levels governing forestry, plantation, and land licensing through the formation of a regulatory harmonization team involving all relevant ministries/agencies. Implementation mechanisms include: formation of a cross-ministerial harmonization team with clear authority; preparation of a comprehensive academic paper identifying all forms of overlap; simultaneous revision of the Forestry Law, Plantation Law, and Land Law; and creation of a Government Regulation on Licensing Coordination for Forest Areas.

Similarities with other alternatives are: all aim to eliminate regulatory conflicts, require inter-agency coordination, and are based on the existing legal framework. Differences from other alternatives are: it emphasizes a legal-formal approach, implementation time is longer (2-3 years), and requires a complex legislative process but produces permanent change.

The advantages of this alternative are: it fundamentally solves the root problem of overlapping regulations by creating an integrated and consistent legal system; has strong legal legitimacy as it is based on changes to legislation; and the results are permanent and sustainable. The disadvantages of this alternative are: it requires a relatively long implementation time; the legislative process is complex and requires strong political will; and resistance from sectors that have so far benefited from regulatory ambiguity.

Alternative 2: Digitalization and Integrated System

This alternative builds an integrated digital platform that combines all licensing systems (OSS, Sipongi, Land System) in one portal with a centralized and real-time database. Implementation mechanisms include: development of an integrated OSS platform for forestry and plantation licensing; integration of spatial data from KLHK, ATR/BPN, and Ministry of Agriculture in a digital One Map Policy; implementation of an automatic early warning system for detecting overlapping permits; and development of a monitoring dashboard for all stakeholders.

Similarities with other alternatives are: all require technical coordination between agencies, aim to create transparency and accountability, and utilize modern technology to increase efficiency. Differences from other alternatives are: focus on technological solutions with large IT infrastructure investment, high initial investment costs but lower long-term operational costs, and results are visible more quickly (1-2 years) compared to regulatory changes.

The advantages of this alternative are: able to prevent overlaps through automatic verification and early warning systems; increases transparency and accountability of licensing in real-time; and speeds up the licensing process and reduces transaction costs. The disadvantages of this alternative are: requires very large IT infrastructure investment; requires massive HR capacity building for system operation; and does not resolve regulatory conflicts legally, thus still requiring regulatory harmonization.

Alternative 3: Institutional and Authority Reform

This alternative conducts institutional restructuring through the formation of a special coordination body with superbody authority that can decide cross-sectoral licensing conflicts. Implementation mechanisms include: formation of a National Coordination Body for Karhutla Prevention with coordinative and decisional authority; designation of governors as regional Karhutla handling coordinators with strengthened authority; formation of integrated task forces (satgas) at the provincial and district/city levels; and granting authority to the coordination body to resolve licensing conflicts quickly.

Similarities with other alternatives are: all require structural changes in governance, involve multi-stakeholders from various ministries/agencies, and aim to create better and more

effective governance. Differences from other alternatives are: organizational-institutional approach with focus on institutional restructuring, potential for high bureaucratic resistance due to changing existing authority structures, and requires very strong political will from the highest level of government.

The advantages of this alternative are: able to resolve conflicts through stronger and decisional coordination mechanisms; accelerates decision-making in fire emergency situations; and creates a clear single command system. The disadvantages of this alternative are: does not touch the root problem of overlapping regulations, thus still requiring harmonization; potential for very high resistance from ministries/agencies whose authority is reduced; and requires a long time to build an effective coordination culture.

Selection of the Best Policy Alternative

To select the best policy alternative, this research uses the Bardach Method (2012). The Bardach Method was chosen for its ability to evaluate the feasibility of policy implementation from four comprehensive critical aspects. Assessment criteria include: Technical Feasibility, meaning technical feasibility and availability of required technology or expertise; Economic and Financial Possibility, meaning budget availability and cost efficiency in the short and long term; Political Viability, meaning political support and acceptability from key stakeholders; and Administrative Operability, meaning ease of implementation and existing institutional capacity.

Table 4. Bardach Method Analysis for Policy Alternative Selection

Solution	Technical Feasibility	Economic/Financial Possibility	Political Viability	Administrative Operability	Total Skor	Prioritas
Synchronization and Harmonization of Regulations	4	4	5	4	17	I
Digitalization and Integrated System	5	3	4	3	15	II
Institutional and Authority Reform	3	3	3	3	12	III

Analysis of the assessment results shows that Synchronization and Harmonization of Regulations obtained the highest score (17). From the Technical Feasibility aspect (4), it is technically feasible by involving legal and legislative experts already available in the Ministry of Law and Human Rights and related ministries/agencies; methodology for preparing academic papers and regulatory harmonization is already established; and harmonization experience in the context of the Job Creation Law can be a reference.

From the Economic/Financial aspect (4), costs are relatively affordable as it only requires preparing academic papers, inter-ministerial coordination, and socialization; does not require large infrastructure investment; and long-term costs are minimal as it is based on permanent regulatory changes. From the Political Viability aspect (5), it has strong political support

because it aligns with the government's regulatory harmonization program in the context of bureaucratic reform; aligns with Indonesia's commitment in the ASEAN Agreement on Transboundary Haze Pollution; and receives support from civil society and the international community urging Indonesia to improve Karhutla governance.

From the Administrative Operability aspect (4), it can be implemented through existing mechanisms in the Ministry of Law and Human Rights for regulatory harmonization coordination; does not require the formation of a new institution; and can utilize existing organizational structures in related ministries/agencies.

Digitalization and Integrated System obtained a score of 15 with very high Technical Feasibility (5) because technology is available and has been implemented in several countries, but low Economic/Financial (3) because it requires large investment for IT infrastructure and long-term maintenance, good Political Viability (4) because it supports the government's digital transformation agenda, and low Administrative Operability (3) because it requires massive HR capacity building and changes in bureaucratic work culture.

Institutional and Authority Reform obtained the lowest score (12) because it is technically complex regarding sensitive institutional restructuring (3), medium cost for reorganization and institutional transition (3), high potential resistance from existing ministries/agencies whose authority is reduced (3), and requires a long time for implementation and building a new coordination culture (3).

Based on the Bardach method analysis, Synchronization and Harmonization of Regulations is selected as the best policy with five main considerations. First, effectiveness in fundamentally solving the root problem by eliminating overlapping regulations from their source. Second, political feasibility with broad support from stakeholders and alignment with the government's bureaucratic reform agenda. Third, cost efficiency, more economical compared to massive technology investment with permanent results. Fourth, sustainability because the results are sustainable based on permanent regulatory changes that are not easily altered. Fifth, alignment with the government's regulatory simplification program and Indonesia's international commitments.

4. Policy Recommendations

Main Policy Recommendation

Based on the analysis results using the APKL method for identifying priority problem causes, tiered USG for identifying fundamental root causes, and Bardach for selecting the best policy alternative, this research recommends the Coordinating Minister for Political, Legal, and Security Affairs (Menko Polkam) to make a recommendation to the Minister of Law and Human Rights to create a Presidential Regulation on Harmonization of Licensing Regulations in the Forestry and Plantation Sectors for the Prevention of Forest and Land Fires. The discussion of this Presidential Regulation involves the Ministry of Forestry (KLHK), Kemenko Polkam, the Attorney General's Office, the Indonesian National Police, BNPB, ATR/BPN, and the Ministry of Home Affairs.

Substance to be regulated in this Presidential Regulation includes four main components. First, Formation of an Integrated Regulatory Harmonization Team by forming a special team consisting of representatives from the Ministry of Law and Human Rights, KLHK, ATR/BPN, Ministry of Agriculture, and Ministry of Home Affairs with the chairperson concurrently a member from the Ministry of Law and Human Rights; granting authority to the team to review and align all regulations related to forestry and plantation licensing both at the central and regional levels; setting a deadline for completing harmonization within 12 months from the signing of the Presidential Regulation; and allocating adequate budget for the team's operations from the State Budget (APBN).

Second, Preparation of an Integrated Academic Paper by ordering the preparation of a comprehensive academic paper analyzing all regulatory overlaps in the forestry and plantation sectors; involving academics from leading universities, legal practitioners from the KPK (Corruption Eradication Commission) and Ombudsman, and representatives of affected communities from environmental NGOs; serving as the basis for revising conflicting legislation including the Forestry Law, Plantation Law, and Land Law; and mandating public consultation in the preparation of the academic paper to ensure stakeholder participation.

Third, Implementation of a Legally Binding One Map Policy by stipulating the integration map from the Geospatial Information Agency (BIG) as the single legal reference for licensing in the forestry and plantation sectors; ordering verification and validation of all forest area boundaries, plantations, and concession areas within 6 months; setting administrative sanctions for officials who issue permits contrary to the One Map Policy; and prohibiting the issuance of new permits in areas not yet verified in the One Map Policy.

Fourth, Licensing Conflict Resolution Mechanism by forming a cross-sectoral licensing dispute resolution panel consisting of representatives from KLHK, ATR/BPN, Ministry of Agriculture, Ministry of Home Affairs, and independent experts; establishing standard procedures for handling existing overlapping permits with a maximum resolution timeline of 3 months; regulating fair compensation mechanisms for license holders affected by the harmonization process; and establishing relocation mechanisms for license holders who must be moved from overlapping areas.

Implementation and Monitoring Plan

To ensure the effectiveness of this Presidential Regulation, a clear implementation framework is needed with the following stages. Stage 1 (Months 1-3) includes: enactment of the Presidential Regulation by the President and socialization to all stakeholders; formation of the Integrated Regulatory Harmonization Team with a Decree from the Minister of Law and Human Rights; preparation of a detailed work plan and timeline for the Harmonization Team; and budget allocation and formation of the Harmonization Team secretariat.

Stage 2 (Months 4-15) includes: preparation of the integrated Academic Paper involving academics, practitioners, and the community; verification and validation of 100% of area boundaries in the One Map Policy by BIG in cooperation with KLHK and ATR/BPN;

identification and documentation of all existing licensing conflicts in Sumatra, Kalimantan, Sulawesi, and Papua; and public consultation regarding the draft Academic Paper in Karhutla-prone provinces.

Stage 3 (Months 16-24) includes: the regulatory harmonization process with revision of the Forestry Law, Plantation Law, and Land Law through the legislative mechanism; preparation and enactment of derivative Government Regulations on Licensing Coordination for Forest Areas; resolution of existing licensing conflicts through the conflict resolution panel with a target of 75% of cases resolved; and socialization of new regulations to regional governments, businesses, and the community.

Stage 4 (Month 25 onwards) includes: continuous evaluation of the implementation of new regulations every quarter; policy adjustments based on evaluation results and stakeholder feedback; strengthening the capacity of law enforcement officials in implementing new regulations; and monitoring the impact on reducing Karhutla and achieving KPI targets.

Key Performance Indicators (KPI) are set at three levels. Output Level includes: completion of the integrated Academic Paper within 12 months; validation of 100% of area boundaries in the One Map Policy within 6 months; formation of a conflict resolution panel with clear standard procedures; and completion of revisions to the Forestry Law, Plantation Law, and Land Law within 24 months.

Outcome Level includes: reduction in the number of overlapping licensing reports by 75% within 3 years; increase in the percentage of corporate cases resulting in license revocation from 12% to over 50% within 3 years; increased public trust in licensing governance in the forestry and plantation sectors; and increased sustainable investment in the forestry and plantation sectors due to legal certainty.

Impact Level includes: burned land area reduced to less than 200,000 hectares per year within 5 years; reduction in haze-related ISPA cases by 30% within 5 years; reduction in economic losses due to Karhutla to less than IDR 50 trillion per year; reduction in carbon emissions from the forestry sector by 20% towards achieving the 2030 NDC target; and enhanced reputation of Indonesia in environmental diplomacy in regional and international forums.

Oversight will be carried out by Kemenko Polhukam (Coordinating Ministry for Political, Legal, and Security Affairs), which will monitor the implementation of this Presidential Regulation periodically through quarterly coordination meetings and report its progress directly to the President. The Harmonization Team is required to prepare quarterly progress reports published to the public to ensure transparency and accountability. This quarterly evaluation mechanism is important to ensure implementation proceeds according to the timeline and set targets, and to identify implementation obstacles early so that necessary policy adjustments can be made.

Policy Implications

The implementation of this licensing regulatory harmonization policy has several strategic implications. First, from the institutional aspect, there will be strengthening of coordination

between ministries/agencies that has been the main obstacle in handling Karhutla. The formation of a Harmonization Team with clear authority will create a single point of command in resolving regulatory conflicts. Better coordination will reduce sectoral egos and increase the efficiency of Karhutla handling.

Second, from the legal aspect, regulatory harmonization will create legal certainty for all parties, both government, businesses, and the community. The implementation of the One Map Policy as a single legal reference will eliminate overlapping permits that have been the root cause of land conflicts and Karhutla. Legal certainty will also increase investment attractiveness in the forestry and plantation sectors as investors will have clear references in business development.

Third, from the environmental aspect, regulatory harmonization will support sustainable forest management and reduce pressure on forest areas. The reduction in overlapping permits will reduce the potential for forest encroachment and illegal logging that often trigger fires. Better forest management will support Indonesia's commitment to reducing carbon emissions and achieving the 2030 NDC target.

Fourth, from the socio-economic aspect, this policy will create a more equitable economic system by providing fair access to forest and land resources for all parties, including local communities. The reduction in Karhutla will improve public health and reduce economic losses that have been borne by the state and society. The creation of a transparent and accountable licensing system will also reduce potential corruption in the issuance of forestry and plantation permits.

5. Conclusion

The analysis using the APKL and USG methods shows that the root cause of the recurring Karhutla problem in Indonesia is overlapping regulations and licensing that cause weak law enforcement. The APKL analysis identifies "Weak and Inconsistent Law Enforcement" as the priority problem cause with the highest score (20). The Level 1 USG analysis identifies "Weak Coordination and Overlapping Authority" as the root cause with the highest score (15). The Level 2 USG analysis identifies "Overlapping Regulations and Licensing" as the most fundamental root cause with the highest score (15).

The recommended policy solution is Synchronization and Harmonization of Regulations through the creation of a Presidential Regulation on Harmonization of Licensing Regulations in the Forestry and Plantation Sectors for the Prevention of Forest and Land Fires. This policy was selected based on the Bardach method analysis with the highest score (17) compared to other alternatives, namely Digitalization and Integrated System (15) and Institutional and Authority Reform (12).

The novelty of this research lies in the use of tiered and integrated analysis using the APKL method to identify priority problem causes, the two-level USG method to identify fundamental root causes, and the Bardach method to evaluate policy alternatives. This multi-

criteria analysis approach ensures objectivity and systematization in identifying root causes and formulating policy solutions.

The implementation of this policy is expected to break the cycle of Karhutla in Indonesia by addressing the root cause fundamentally, namely overlapping regulations and licensing. With strong political will and support from all stakeholders, this policy can create sustainable changes in Karhutla governance in Indonesia and support the achievement of sustainable development goals.

References

ASEAN Secretariat. (2024). ASEAN Agreement on Transboundary Haze Pollution: Annual Report 2024. Jakarta: ASEAN.

Badan Nasional Penanggulangan Bencana (BNPB). (2025). Strategi Nasional Penanggulangan Kebakaran Hutan dan Lahan (Karhutla) 2025-2029. Jakarta: BNPB.

Baldwin, R., & Cave, M. (2021). Understanding Regulation: Theory, Strategy, and Practice (3rd ed.). Oxford University Press.

Bardach, E. (2012). A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving (4th ed.). Washington, DC: CQ Press.

Center for International Forestry Research (CIFOR). (2023). Forest and Fire Governance in Indonesia: A Policy Analysis. Bogor, Indonesia: CIFOR.

Jordan, A. (2021). Governing Climate Change: Polycentricity in Action? In A. Jordan, D. Huitema, & J. Schoenefeld (Eds.), Governing Climate Change: Polycentricity in Action? (pp. 3-26). Cambridge University Press. https://doi.org/10.1017/9781108979843

Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional (ATR/BPN). (2024). Peta Konflik dan Tumpang Tindih Izin Perkebunan di Kawasan Hutan: Analisis Spasial 2024. Jakarta: ATR/BPN.

Kementerian Kesehatan Republik Indonesia (Kemenkes RI). (2025). Laporan Nasional Kasus ISPA Akibat Kabut Asap Karhutla Tahun 2025. Jakarta: Kementerian Kesehatan RI.

Kementerian Lingkungan Hidup dan Kehutanan (KLHK). (2024). Laporan Monitoring Kebakaran Hutan dan Lahan (Karhutla) Nasional Tahun 2024 Melalui Sistem Sipongi. Jakarta: KLHK.

Le Quéré, C., Jackson, R. B., Jones, M. W., Smith, A. J. P., Abernethy, S., Andrew, R. M., ... & Peters, G. P. (2023). Global Carbon Budget 2023. Earth System Science Data, 15(12), 5301-5369. https://doi.org/10.5194/essd-15-5301-2023

United Nations Environment Programme (UNEP). (2023). Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Nairobi: UNEP.

World Bank. (2024). Indonesia Economic Prospects: Enhancing Resilience in a Challenging Global Environment. Washington, DC: World Bank Group.