Corvinus University of Budapest

Doctoral School of International Relations and Political Science

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THESIS SUMMARY

Ph.D Dissertation

"Forging a Fire-Free Future: Examining Collaborative Governance Approaches to Tackle Forest and Land Fires in Indonesia"

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I. Research background and justification of the topic

Addressing the environmental crisis, one of the most pressing global issues is undoubtedly global warming, which poses a significant threat to human well-being (Othman et al., 2009). As countries increasingly recognize the urgency of the situation, they are actively seeking ways to mitigate the escalation of global warming. Among the prominent strategies for curbing its impact is the strategic utilization of tropical rainforests, often called the "lungs of the world." Tropical rainforests hold immense potential in their capacity to absorb carbon emissions stemming from human-driven industrial activities (Alviya et al., 2018; Hepburn, 2007; Jaenicke et al., 2010; Kiely et al., 2019; Liu et al., 2015; Muttaqin et al., 2019). By acting as carbon sinks, these ecosystems play a critical role in sequestering atmospheric carbon dioxide and thus mitigating the greenhouse gas effect that drives global warming.

Indonesian rainforests are vital for the world in preventing climate change. Indonesia is a country that has a large forest area. Therefore, Indonesia can be crucial in saving the climate from global warming. However, what happened was that Indonesia became one of the countries experiencing deforestation the fastest (Carmenta et al., 2017; Dohong et al., 2018; Muttaqin et al., 2019; Ruysschaert & Hufty, 2020; Saputra, 2019). Most deforestation occurs due to illegal logging and the large-scale opening of oil palm plantations (Amacher et al., 2012; Damayatanti, 2013; Hasyim et al., 2020; Jaenicke et al., 2010; Masria et al., 2015). Indonesia is the largest producer of palm oil in the world, whose derivative products are used by many countries around the world (Budiman et al., 2020; Cooper et al., 2019; Gunawan, 2018; Jaenicke et al., 2010; Purnomo et al., 2017a, 2017b, 2019; Runkle & Kutzbach, 2014; Ruysschaert & Hufty, 2020).

In addition, the problem that occurs almost every year in Indonesia is forest and land fires. Forest and land fires usually occur in the dry season (Edwards et al., 2020a). Forest and land fires in Indonesia are forest and land fires due to human activities, which are illegal and forbidden by the regulation. Few forest and land fires occur due to natural factors (Purnomo et al., 2017b). Various sources indicate that

forest and land fires occur because companies or communities want to convert their land to oil palm plantations. Land clearing by burning is used because it is cheaper than heavy equipment (Purnomo et al., 2017b).

Forest and land fires in Indonesia have occurred yearly since 1997 (Tacconi & Vayda, 2006; Varma, 2003). In the past 20 years, the worst forest and land fires occurred in 2015 (Alisjahbana & Busch, 2017; R. B. Edwards et al., 2020, 2020; Herry Purnomo et al., 2017, 2017). These forest and land fires caused an economic loss of USD 16.1 Billion, which is not yet an immaterial loss such as the health of the victims (Edwards et al., 2020b; Purnomo et al., 2017a). At that time, Indonesia was also an exporter of smog to neighbouring countries, Malaysia, Singapore, Brunei Darussalam, and Thailand (Purnomo et al., 2019). Many domestic or international flights in Indonesia and some countries were stopped because of inadequate visibility conditions.

The total area burned in Indonesia from 1997 to 2021 (in hectares)

Year	Total burned area (in hectares)	Notes
1997-1998	11.698.379	The data from these two years are combined, considering that the fires occurred from 1997 to 1998. Source: (Tacconi, 2003)
1999	44.090	Source: (Ministry of Forestry, 2009)
2000	3.016	
2001	14.329	
2002	35.496	
2003	3.545	
2004	3.343	
2005	5.501	
2006	4.140	

2007	6.974	
2008	6.793	
2009	data not available	Validated official data from both the Ministry of Environment and Forestry and other institutions are not available
2010	data not available	
2011	data not available	
2012	data not available	
2013	4.918	The data is sourced from a compilation of data issued by the Ministry of Environment and Forestry and the Ministry of Agriculture.
2014	44.411	
2015	2.611.411	
2016	438.363	
2017	165.483	
2018	529.266	
2019	1.649.258	
2020	296.942	
2021	354.582	

Table 1 Total area burned in Indonesia 1997-2021 (Tacconi, 2003, Ministry of Environment and Forestry and Ministry of Agriculture)

Indonesia has experienced one of the largest forest and land fires in history, with the most significant fires occurring in 1997-1998 and 1999. The area burned yearly decreased from 2000 to 2008, but the fires disrupted economic activity and harmed public health. In 2013, there were 4,918 hectares of burned area, which increased ten times in 2014 to 44,411 hectares. The worst fires since 1997-1998 occurred again in 2015, with the total fire area reaching 2,611,411 hectares, 58 times greater than in 2014. The intensity of forest fires continued to increase, reaching hundreds of thousands of hectares per year and reaching 1,649,258 hectares in 2019. The fires from 2015 to 2021 highlighted the need for further efforts to resolve the fire problem in Indonesia. This research explores the intricacies of forest and land fire management in Riau Province, focusing on a case study in Riau Province. Guided by Ansell & Gash (2008) collaborative governance model, the analysis examines the

implementation of collaborative governance in Indonesia's forest and land fire management context. The model strongly emphasizes stakeholder engagement, coordinated efforts, and shared decision-making processes - all critical in formulating effective fire management strategies. By investigating the nuances of collaborative governance implementation, this research seeks to provide valuable insights into improving fire management practices in Indonesia.

This dissertation explores the severity and persistence of forest and land fires in Indonesia, focusing on Riau Province. It emphasizes the need to address this issue and the potential transformative impact of collaborative governance in mitigating these fires. The research uses a case study to explore the unique complexities of forest and land fire management in Indonesia, providing actionable insights for policymakers and practitioners. The study highlights the challenges of collaborative governance, such as accountability, participatory ideals, strategic goals, institutional design, power dynamics, rent-seeking behavior, and communication breakdowns. The research offers valuable lessons for improving future collaborative governance efforts by analyzing these failures. The study of collaborative governance shortcomings in Indonesia's forest and land fire management adds a new perspective and increases the field's sophistication.

Research Questions in this study are:

1. RQ1: How has collaborative governance been implemented in forest and land fire control in Indonesia?

2. RQ2: What are the challenges and opportunities for implementing collaborative governance in land and forest fire control in Indonesia?

This study addresses two research questions. Readers can refer to the research framework visualized in Figure 1 to facilitate a clear understanding of the research progression. This framework visually illustrates the interconnectedness and logical flow of the research, aiding readers in grasping the contextual relationships between the research questions and their subsequent analysis.

Figure 1. Research framework (My own synthesis)

II. Methodology

This research uses a case study method in line with post-positivism, which acknowledges that scientific knowledge is not entirely objective or free from bias. A case study is a unique, special, or exciting story focusing on an individual, organization, process, environment, institution, or surrounding event. The primary objective of this case study design is to provide an in-depth understanding and explanation of why intriguing or noteworthy occurrences take place, how they are executed, and what outcomes result from these noteworthy occurrences.

The research focuses on multi-stakeholder collaboration for forest and land fire control in Indonesia, particularly in Riau Province. The primary focus of this research is the multi-stakeholder collaboration in Riau Province. The research is suitable for Causal-Process Tracing (CPT), which focuses on an in-depth exploration of how a causal process develops from beginning to end in a single case. This approach aims to understand the internal mechanisms that cause specific outcomes, such as who is involved, how they interact, the challenges faced, and how decisions are made and implemented.

This research draws upon a combination of primary and secondary data sources. Primary data is meticulously garnered through in-depth interviews with semi-structured and direct field observations in alignment with established methodologies. Acquiring primary data through in-depth interviews is a cornerstone of case study methodology. Furthermore, a fundamental tenet of the case study approach entails complementing interviews with firsthand field observations of actual events (Guion et al., 2002; Wray et al., 2007; Yazan & De Vasconcelos, 2016). The research design is augmented by secondary data from pertinent literature encompassing books, work reports, and other scholarly works pertaining to the research domain (Guion et al., 2002; Vanwynsberghe & Khan, 2007).

Table 2. Source of data used in this research (My own synthesis)

Data source	**Data Collection Technique**	**Description**
Primary Data	In-depth interview	Conducting interviews with appointed informants
	Direct field observation	Go to locations around forest and land fires to see firsthand what is happening in the field.
Secondary Data	Work report document	Sourced from the central government, local governments, NGOs, and various other reports relevant to this research
	News in print and online media	Paying close attention to various news related to forest and land fires
	Documents Research related to forest and land fires	Collect and analyze research documents about forest and land fires

The study aimed to understand the current collaborative governance practices in managing forest and land fires in Indonesia. The researchers interviewed 20 informants, including government officials, community leaders, NGO representatives, and the private sector. The interviews were conducted in various locations across Indonesia, particularly in areas recently experiencing significant forest and land fires. The interviews provided first-hand information on the perspectives, experiences, and insights of critical actors involved in managing these fires. The results of this study provide valuable scientific evidence to inform policymakers and practitioners seeking to enhance the collaborative governance framework for managing forest and land fires in Indonesia. The study was conducted from August 2022 to January 2023, with 16 informants revealing their identities and 9 recording conversations.

The following are the stages of data analysis carried out in this study:

1. Interviews with Stakeholders Conducted

In this study, semi-structured interviews were conducted with various stakeholders, including government agencies, non-governmental organizations, local communities, and the private sector. These interviews were intended to identify the perspectives, roles, and contributions of each party in controlling forest and land fires. The use of semi-structured techniques allows for flexible and in-depth exploration of stakeholder views.

2. Interview Transcriptions Created

After the interviews were completed, complete transcriptions were created to ensure the accuracy of the data obtained. This transcription process allows for a detailed review of the conversations and ensures that the perspectives of all stakeholders are represented in subsequent analysis.

3. Data Coded and Categorized Based on Collaboration Themes

At this stage, the transcribed data were coded according to themes relevant to the collaboration, such as stakeholder communication, division of roles and responsibilities, resource support, and challenges and constraints. In addition, arguments were classified to indicate each party's stance (e.g., supportive, neutral, or opposed) toward the collaborative steps being taken.

4. Data Triangulated with Observations and Supporting Documents

To increase the validity of the findings, interview data were verified through triangulation with field observations and relevant documentation, such as annual reports, government policies, and organizational activity records. This triangulation was conducted to ensure that the perspectives gathered from the interviews aligned with the reality on the ground and supported by secondary sources.

5. Conclusions Drawn and Dissertation Compiled

Based on the analysis and triangulation, conclusions regarding the effectiveness of multi-stakeholder collaboration in controlling forest and land fires were drawn. These conclusions include identifying successful collaboration patterns, areas for improvement, and recommendations for future policies. The dissertation systematically compiles these findings to inform and contribute to developing collaborative strategies for controlling forest and land fires in Indonesia.

This study employs a thorough data analytic technique that provides a solid foundation for assessing and improving multi-stakeholder collaboration in the management of forest and land fires in Indonesia. This study employs a meticulous process involving stakeholder interviews, transcription, coding, and rigorous triangulation with field observations and supporting documents to ensure accurate representation and systematic analysis of each stakeholder group's voices and perspectives. This process enhanced the reliability and validity of the findings while offering a multi-faceted perspective on the collaborative dynamics among

stakeholders, emphasizing both the triumphs and challenges within the current fire management frameworks.

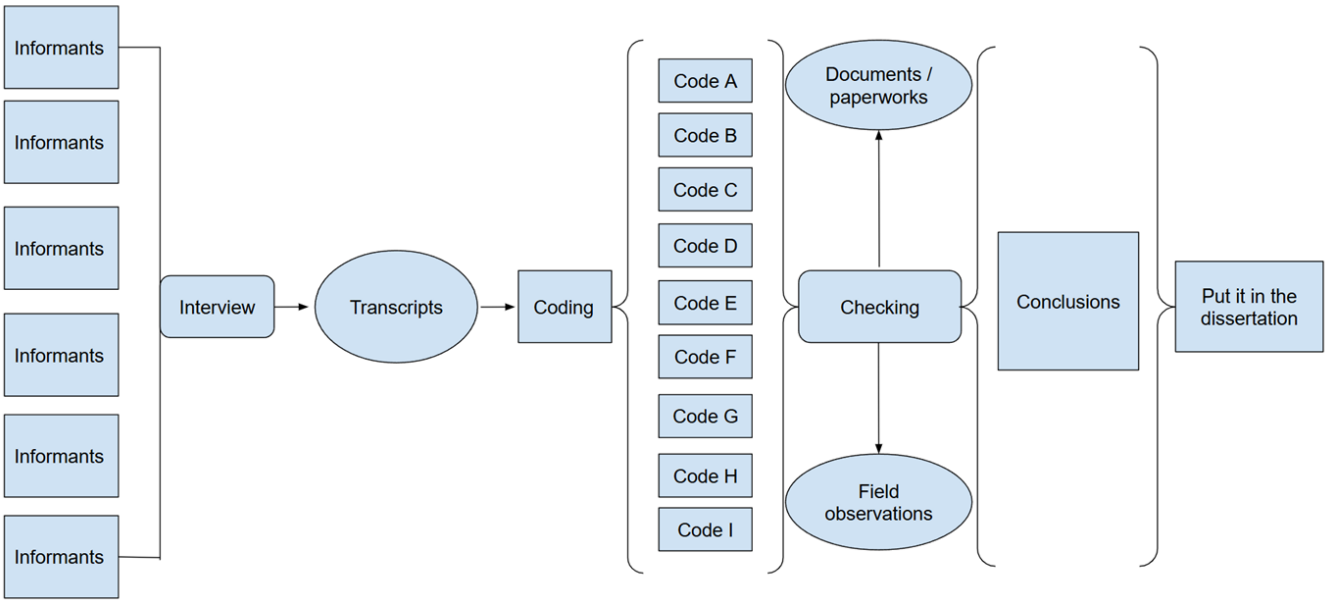

Figure 2. Data analysis technique (my own synthesis)

III. The findings of the dissertation

The main points of my research findings are arranged more concisely and comprehensively:

- Indonesia has long struggled with the devastating impacts of forest and land fires, which have resulted in widespread environmental damage, economic losses, and health hazards within the country and across Southeast Asia. While significant progress has been made, particularly in organizing more structured fire control efforts and fostering multi-stakeholder collaboration, several persistent challenges remain. This detailed analysis highlights progress, points out critical gaps, and provides actionable recommendations for improving fire management practices in Indonesia.
- Structural Advances in Fire Control: One of Indonesia's most significant achievements in its fire management strategy has been improving its

organizational structure. The increased involvement of the military and police, particularly at the village level, has been a game changer. Their technical expertise and disciplined approach have strengthened early fire detection systems and enabled a more coordinated response to fire outbreaks. The military and police bring critical resources such as manpower, logistical support, and law enforcement capabilities, which are critical in containing fires before they spread out of control. Furthermore, the presence of these forces at the grassroots level bridges the gap between national strategy and local implementation, ensuring that fire control efforts are broad in scope and deeply rooted in local communities. This structured approach has facilitated faster decision-making, better resource allocation, and more effective coordination among the various actors involved.

- Collaborative Decision-Making and Top-Down Implementation: Fire control in Indonesia has shifted toward a more collaborative decision-making model, incorporating input from various stakeholders, including local communities, government agencies, NGOs, and private sector representatives. This bottom-up approach ensures that decisions are based on local knowledge and that strategies reflect realities on the ground. By involving a wide range of voices in the planning stage, Indonesia has made significant strides in developing more comprehensive and contextually sensitive fire prevention and response strategies. However, once decisions are made, implementation follows a more structured, top-down chain of command. This model ensures that fire control measures are implemented consistently and effectively across the country, with clear roles and responsibilities assigned to each actor. Each stakeholder, from local farmers to national officials, is accountable for their specific tasks, leading to a more synchronized deployment of fire management resources and tactics.
- Persistent Weaknesses in Collaborative Efforts

  Despite the improvements, several fundamental weaknesses continue to hamper the success of Indonesia’s fire control efforts.

1. Knowledge Gaps Among Key Actors: While the military and police have enhanced fire suppression capabilities, other stakeholders, particularly at the community level, often lack the necessary knowledge and training to effectively contribute to fire prevention. This gap in expertise can lead to delays in response, ineffective fire mitigation strategies, and even unintentional exacerbation of fire risks.
2. Financial Constraints: One of the most critical barriers to effective fire control is inadequate funding. Many of the agencies tasked with fire management operate under severe budgetary limitations, which restrict their ability to carry out essential tasks such as purchasing equipment, conducting field training, and running public education campaigns. Insufficient funding also hampers the long-term prevention efforts needed to build fire-resilient landscapes.
3. Transparency and Accountability Issues: While collaboration has improved, gaps in transparency and accountability among stakeholders continue to weaken the overall system. Poor communication and lack of oversight often result in misallocation of resources and missed opportunities to hold negligent parties accountable for fire-related incidents.

- Weak Law Enforcement: A major obstacle to effective fire control in Indonesia is weak law enforcement. The current system faces two main challenges:
    1. Inconsistent Law Enforcement and Leniency: There is a lack of strong legal action against individuals and companies responsible for illegal burning. The leniency given to violators creates an environment of impunity, where illegal land-clearing practices continue unabated. Violators have little incentive to change their behavior without the threat of significant legal consequences.
- Opaque Law Enforcement Process: Limited access to information about law enforcement actions regarding fire control hampers efforts to ensure

accountability. The lack of transparency in the prosecution and monitoring of violators creates loopholes that allow individuals and companies to escape punishment, further perpetuating illegal practices.

- The Role of Corruption and Foreign Investment: Corruption remains one of Indonesia's most dangerous obstacles to controlling forest and land fires. Rent-seeking behavior and corrupt practices in the forestry and plantation sectors undermine fire prevention policies. Government officials involved in corrupt activities often facilitate illegal land-clearing practices, which financially benefit from deforestation. This involvement undermines the entire fire control system, as officials are more likely to protect private interests than the public interest. The problem is compounded by the role of foreign companies, particularly from Malaysia and Singapore, which indirectly contribute to Indonesia’s forest fires through their investments in palm oil plantations. These companies, driven by the need to clear land quickly, often pressure local partners to engage in cost-effective but environmentally damaging practices, such as slash-and-burn agriculture. The involvement of foreign companies creates a complex layer of cross-border liability that must be addressed through stricter regulations and international cooperation.
- External Barriers: Economic, Political, and Social Factors

  In addition to internal challenges, several external factors exacerbate Indonesia’s forest fire problem:

  1. Economic Dependence on Palm Oil: Indonesia’s heavy reliance on the palm oil industry complicates fire prevention efforts. The sector’s economic importance has led to widespread deforestation and land clearing, often through burning. Balancing economic growth with environmental sustainability remains a thorny challenge for policymakers.
  2. Political Hesitation: Local politicians are often reluctant to implement strict fire control measures for fear that doing so could slow economic

growth and damage their political prospects. This reluctance contributes to inconsistent enforcement of fire prevention regulations and allows destructive practices to continue unchecked.

3. Traditional Land Clearing Methods: In many rural communities, the practice of burning land to clear it for agriculture is still widely practiced. Although efforts have been made to educate communities about alternative methods, cultural traditions, and economic pressures keep the practice alive, contributing to a recurring cycle of forest fires.

- Strategic Recommendations for Improving Fire Management
  1. Incentives for Fire Prevention: To change behavior, governments should provide financial incentives to farmers, businesses, and local communities that adopt fire-free practices. These incentives can include tax breaks, subsidies, or access to government-funded resources that promote sustainable land use and fire prevention methods.
  2. Stricter Penalties and Consistent Law Enforcement: Tougher penalties should be applied to individuals and businesses involved in illegal burning. These penalties should be financial and include land use restrictions and operational shutdowns for repeat offenders. Consistent law enforcement is key to creating a deterrent effect that can significantly reduce fire incidents.
  3. Strengthening Law Enforcement Capacity: Law enforcement agencies should have the resources and authority to enforce fire management laws effectively. This includes increasing funding, providing specialized training, and using advanced monitoring technology to detect illegal activity in remote areas.
  4. Improving Regulatory Management: Streamlining and coordinating existing fire prevention regulations will help reduce overlap and confusion, ensuring all stakeholders work under a unified set of guidelines. Clearer regulations will make it easier for law enforcement

agencies to hold parties accountable and for companies and communities to comply with the law.

5. Education, Training, and Rewards for Field Officers: Frontline field officers play a critical role in fire prevention and suppression. Specific training programs should be established to improve their fire management skills, and recognition or reward programs can help boost morale and incentivize performance in this challenging role.

- Conclusions

  Indonesia has made significant progress in developing fire control efforts and building collaboration among stakeholders. However, persistent challenges related to law enforcement, corruption, financial constraints, and knowledge gaps continue to hamper the effectiveness of these efforts. By implementing a comprehensive set of strategic recommendations, including incentives for fire prevention, stronger sanctions, and increased law enforcement capacity, Indonesia can build a more resilient and sustainable forest and land fire control system. Better collaboration, governance, and management regulations are vital to ensuring that the country can effectively combat fires and mitigate their devastating impacts at the local and regional levels.

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