Controlling Forest and Land Fires in Riau Province using Collaborative Governance: Support for Smart Environment

by Turnitin Hasil Turnitin

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1 Introduction

Forest fires are caused either naturally or by man. Only 20% of forest and land fires occur naturally, while most other fires are caused by human actions [1]. Human actions that cause forest and land fires include the habit of people who clear land by burning, which is even worse than the clearing and clearing of forests and land carried out by plantation companies

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[2].Riau Province is one of six provinces in Indonesia besides Jambi, South Sumatra, West Kalimantan, Central Kalimantan, and South Kalimantan Provinces worst affected by fires in 2016 [3]. Riau Province has a large area of forest and land fires and is located in a peatland area prone to fire [4]. The total area of fires in Riau Province is reported to be around 90,709 km2, which is about 19.02% of the total fire area on Sumatra Island [5].

Many efforts have been made to control forest and land fires [6]. Several attempts were made to incorporate elements of technology in controlling forest and land fires [7]. The technology used includes weather modification technology, a human intervention in forming rain in clouds [8]. In addition, another form of technology is a Web-based dissemination system of Geographic Information Systems with the Geonode application, where this system is used to facilitate the dissemination of information on the distribution of hotspots [9].

Regardless of the use of technology in controlling it, forest and land fires are a problem that requires cooperation or collaboration from various institutions, both at the national, provincial, and district/city levels. The involvement of these institutions requires an organizational system that works in an integrated and harmonious manner so that it is effective and efficient [10]. Controlling forest and land fires in Riau Province involves many institutions, such as the central government, regional governments, non-governmental organizations, and other professional parties [11].

This shows that involving many human resources must be well coordinated so that sectoral differences and ego in collaborating institutions do not become an obstacle in controlling forest and land fires [12]. Researchers developed a collaborative governance model by Ansell and Gash (2008) to test hypotheses related to forest and land fire control in Riau Province by using collaborative governance by adding cultural and output indicators.

2 Method

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Source: processed from primary data in 2021

3 Literature Review

The concept of governance has developed over time [13]. There are several variants in the concept of governance which include good governance [14], network government [15],

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partnership governance [16], new public governance [17], sound governance [18], to collaborative governance. Conceptually, collaborative governance studies highlight the characteristics of cooperation among the three pillars, namely government, private sector, and society [19].

For more than two decades, collaborative governance has attracted the attention of academics and practitioners in various disciplines [20]–[22]. According to Klijn and Koppenjan, in practice, collaborative governance requires complex interactions between a large number of actors who are interdependent on one another. However, this interaction is more complex and spontaneous, requiring management and network constitution to achieve a certain degree of success [23].

Collaborative governance is a concept that is often used to address various public problems in several fields, such as the problem of disaster mitigation [24], food security [25], prostitution and human trafficking [26] and countermeasures Covid 19 [27]. Likewise, issues regarding forest and land fires can be controlled using the concept of collaborative governance [28].

Forest and land fires cause several adverse effects, the first of which is haze which threatens public health due to acute respiratory infections, destroys plant vegetation and natural resources, closes offices and schools, and incurs substantial firefighting and rebuilding costs [29]–[31]. Systematic and orderly management of forest and land fires is required to control forests and land fires successfully [32].

According to Wirawan, curative efforts to control forest and land fires have been considered ineffective and wasteful and have not provided a deterrent effect [33]. Seeing the ineffectiveness of efforts to control forest and land fires, the President issued Presidential Instruction Number 11 of 2015 concerning Strengthening Forest and Land Fire Control, renewed in 2020 in Presidential Instruction Number 3 of 2020.

The Presidential Instruction emphasizes strengthening control through multi-sectoral collaboration and instructs Regional Heads, as administrators of government affairs in the forestry sector, to compile regional regulations regarding the system for controlling forest and land fires [34]. However, even though regulations and laws related to forest and land fires have been issued, these incidents continue to recur [35].

3.1 Culture in Collaborative Governance

The result of the collaboration is networking and purpose. The formation of networks will form a collaborative process [15]. The network formed from the collaboration will develop an organizational culture that will further affect the sustainability of the collaboration [36], as stated by Djumara [37] who described that one of the components of collaboration is Collaborative Culture. Meanwhile, according to Schein, culture is the attitude, behavior, habits, and values that determine how the organization works [38].

H-1: Culture influences Collaborative Process, which is focused on trust.

3.2 Trust-Building

Some literature states that the collaboration process is about negotiation and building trust among stakeholders [39]–[42]. It was found that building trust is often the most salient aspect early in the collaboration process and is difficult to grow [43].

H-2: Trust affects the output of collaboration.

3.3 Facilitative Leadership

The literature finds that facilitative Leadership is important to bring stakeholders together and engage them in a collaborative spirit [44]. Lasker and Weiss argue that the facilitative leader should "give participants a meaningful voice" and encourage participants to listen to one another. Leaders must stimulate creativity by "synthesizing the knowledge of diverse participants so that the group can generate new ideas and insights" [45].

H-3: Facilitate Leadership has a significant influence on trust.

3.4 Institutional Design

□□ rules are often criticized for leading to "most unequal" results [48].□

H-4: □□

3.5 Output and Outcome in Collaborative Governance

One of the core questions regarding the performance of collaborative governance is the extent to which they produce outputs and outcomes. Does it provide benefits to society [49]? Collaboration contributes to outcomes, for example, facilitating planning and policy development and increasing the effectiveness and efficiency of that collaboration [50] by spurring innovation and novelty [51], [52] or enhancing the delivery of services that effective [53], [54].

H-5: The collaboration output produces outcomes through policies, controlled forest fires and forest restoration.
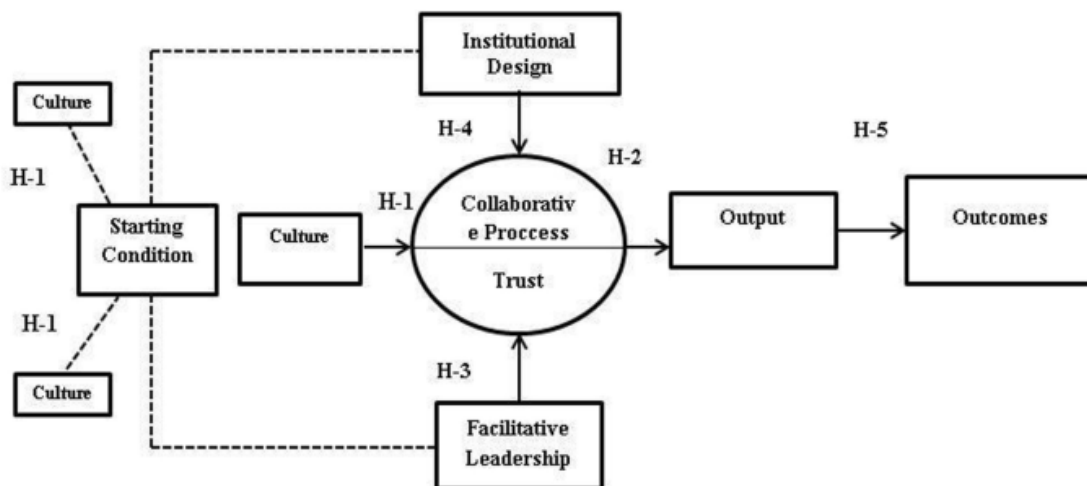
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4   Findings and Discussion

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4.1 Structural Model Validity test

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4.2 Reability Test

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4.3 Regression Analysis

Table 4.

4.4 Research Implication

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5 Conclusion

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