Analysis of Indonesian Forest and Land Fire Controlling Operational Policies. Case Study: Siak Regency, Riau Province

Irfan Kemal Putra¹, Bambang Hero Saharjo², Basuki Wasis³
¹Post-Graduate Student of Environment Resource Management, Bogor Agricultural Institute.
²Forest Fire Laboratory, Faculty of Forestry, Bogor Agricultural Institute. IPB Dramaga Campus, Bogor 16680.
³Forest Nutrition Laboratory, Faculty of Forestry, Bogor Agricultural Institute. IPB Dramaga Campus, Bogor 16680.

Corresponding author: putra_irfankemal@apps.ipb.ac.id

Abstract. Indonesia has been struggling with forest and land fires for decades due to its large, multi-dimensional impacts. While less hotspots in 2016 were due to the La Nina, Indonesia has managed to reduce the hotspots in normal condition in 2017. However, there were indications that some of the policies were outside of the legal jurisdiction, e.g. to involve institutions out of their legal roles in fire controlling operations. Thus, this paper qualitatively discussed the analysis of fire controlling policy in Indonesia with Siak Regency as the case study. Data collection used semi-structured interviews with key informants from related agencies and experts, as well as supported by literatures. Meanwhile, policy and actor analysis were used to approach the issue. The findings revealed that the lack of resources and personnel has forced some actors to dominate. In this case, the establishment of complementary regulations should accommodate and legalised some policy implementers who did not have the ‘rights’ to involve in the forest and land fire reducing programme.

1. Introduction

Forest and land fires in Indonesia have been the major sources of the country’s GHG emissions for decades. Not only has it been a concern for the neighbouring countries, haze from the fires has also created massive losses in multiple sectors, i.e., public health, livelihood, conservation efforts [1], land degradation [2], and economy [3]. This situation, as well as Indonesian commitment to fulfil the COP21 ratification, has shifted the fire controlling policy.

Prior to 2016, Indonesia focuses its fire controlling policy on locating hotspots and to put out fires as fast as possible with less priority to prevention [4] until intense peat fires occurred in 2015 due to El Niño. After the event, the Peat Restoration Agency (Badan Restorasi Gambut – BRG) was established under the Presidential Regulation (Peraturan Presiden – Perpres) No. 1 of 2016 [5]. This institution specifically restores degraded peatlands, which are vulnerable to fires, as one of its preventive works. Policy change, concerned with fire preventive actions, is also visible from the intensive prohibitions for communities to burn during dry season, by the local police, as well as, from regular patrol on fire prone area, carried out by operational fire control, either Manggala Agni, from the government, and the Community Fire Brigades (Masyarakat Peduli Api – MPA).

The result of this programme is significant. The Indonesian Ministry of Environment and Forestry (Kementerian Lingkungan Hidup dan Kehutanan – KLHK) claims in a press release, that they managed
to reduce 71.5% of hotspots in 2017 [6]. In spite of this success, the programme is still lacking legal awareness, as indicated by the involvement of stakeholders that do not have legal standing to be within the fire controlling operation. As for the example is the involvement of the military institution with fire controlling operations, despite the activities are out of their legal roles: Act No.34 of 2004 [7]. Being based on the aforementioned narrative, this paper will forward discusses about the phenomena: 1) what is/are causing this policy mis-implementation, and 2) what are the possible alternatives.

2. Methods

This research was conducted in Siak, a regency under the Riau Province administration as a sample plot for policy implementation. Interviews were carried out with involved stakeholders to have better understands about how the central government policies in Jakarta were imposed at lower levels of administration. Furthermore, Siak Regency has an annual high number of hotspots during the dry season (Table 1).

![Study location, Siak Regency, Riau Province.](image)

In general, this study consisted of two main parts of analysis: policy and actor. The policy analysis focused on the available text of regulations and their realisation, not only to map which actors and their related roles within the fire controlling programme, but also to understand the laws as the rule of the game could be a favour to capture conformity or dissonance. At this stage data were collected from literatures, i.e.: laws, regulations, press releases, and other valid sources.

| Regency | Year |
|---------|------|
|         | 2010 | 2011 | 2012 | 2013 | 2014 |
| Siak    | 102  | 310  | 326  | 189  | 366  |

The actor analysis phase was conducted to gain better understandings about the interactions among the involved actors. Consideration in carrying the actor analysis was based on the assumption that at

*Saharjo and Harahap [38] state that hotspot-based indicator is unreliable, since it does not represent factual impacts of the fires. For instance, although, there were only 2270 hotspots recorded in 2010, which was far smaller than the previous numbers in 2011 which was 6652, however, the total burnt area showed a contrasting result, i.e., 3.493,12 ha in 2010 and 2.612,09 ha in 2011. In spite of this aforementioned data, this study still considers the government’s progress as positive, since the smaller number of hotspots implied that there was smaller arson numbers occurred. In short, it signified reduced numbers of implementation failure in putting out fires.
institutional level, which consisted of technocrats, there should be legal awareness, from at least an individual, about out of law activities. Another thing is that the lack of critics from, neither oppositions nor observers, towards the currently running fire reduction policy. This situation could occurred due to several reasons, *i.e.*: 1) inferior outcome of the previous policy due to existing limitations; 2) high official domination, possibly from the inner circle of government, or 3) could be from both, domination and previously poor outcome policy.

Observation of the results of the previous policy could be measured by annual hotspot data from years prior to 2016. Analysis of actor had to involve primary sources. Thus, this phase required data from semi-structured interviews with officials of involved stakeholders and experts, aside of literatures. The obtained data were quantitatively analysed to create an actor map based on their interests and influence levels. This map would classified the stakeholders into four categories: 1) subjects, have high interests but low influence; 2) key players, dominant with high interest and influence; 3) context setters, low interest but high influence, and 4) crowds, low interest and low influence [9] related to the fire reduction programme.

**Table 2.** Categories, scores and criteria of actors’ level of influence.

| Category/Score | Criteria |
|---------------|----------|
| Highly powerful (4) | If actors’ statements, actions, or policies are highly influence to others in regards of fire controlling activities. This category of actors is capable of causing or stopping fires. |
| Powerful (3) | If actors’ statements, actions, or policies are directly influencing others in regards of fire controlling activities. Or, actors’ statements, actions, or policies are not very influencing to others in but they are able to cause or stop fires. |
| Less powerful (2) | If actors’ statements, actions, or policies are able to gradually influence others in regards of fire controlling activities. |
| No Power(1) | If actors’ statements, actions, or policies are not influencing to fire control activities. |

For an organisation or government institution, level of interest, within this study, is quantifiable through their legal roles (*tugas pokok dan fungsi – tupoksi*), to show, whether they have or not, legal standings to be involve in the fire controlling programme. Most of the legal roles were mentioned in a law, regulation, or other forms of regulation (Figure 2). However, for communities surrounding the forest area, though they have no legal roles, were considered to have high interests to fire reduction policy, since they are highly dependent on forest and land for their livelihoods. Meanwhile, quantification of actors’ influence was based on their accessing capabilities (simplified in Table 2). Access is “the ability to derive benefit from things.” [10]
Figure 2. Determination to actors’ level of interest.

Comparisons between these two analyses, policy and actor, complement each other. The policy analysis aimed to understand discrepancies between policies and their implementations, while the actor analysis could provide a broader view of who were dominating the “action arena” of the policy making. Result from these analyses, could enhanced the understanding of the existing obstacles faced by previous policies, which might provide causality between the dominant actors and their actions.

3. Results and Discussion

3.1. Involved Stakeholders and Their Legal Standings

This part merged the investigation to available policies towards fire reduction programme and the involving actors, since both were inseparable. Further, an institution has to have one, or more, fire counter measuring activities within their regulated main roles, to be accounted as an actor. In general, there were three phases of fire counter measuring activities in Indonesia, as follows:

- Pre-fire activities (based on the Article 1 No. 39 of the Minister of Environment and Forestry Regulation (Peraturan Menteri Lingkungan Hidup dan Kehutanan – Permen LHK) No. 32 of 2016[11], regarding: a) fire prone area mapping; b) building firebreaks and imposing land burn prohibition; c) community partnership, information dissemination, and policy socialisation; d) fire warning systems; e) fire prone area monitoring and evaluation; f) training, preparing, and locating firemen personnel (brigade dalkarhut); g) peat land restoration; h) preparing extinguisher devices and institutional empowerment, and i) observation to causes of fires.

---

Referring to Cole (2013[39] this is a term from Ostrom to describe a place, “..in which collective (cooperative or non-cooperative) decisions are made, resulting (or not) in collective action”. The location is various, depending on which level a policy is made: 1) constitutional-choice level; 2) collective-choice level, or 3) operational level.
During the fire, based on the Article 1 No. 40 of the Permen LHK No. 32 of 2016[11]. In Riau Province, based on the Governor Regulation No. 5 of 2015, activities in this phase would not only comprised of fire extinguishing, but also: a) early detection of fires; b) determining proper stages and actions, whether it is in standby, emergency response, or post-disaster recovery [12].

Post-fire activities, based on Article 7 verse 4 of the Regulation of General Director of Forest Protection and Natural Conservation (Peraturan Direktur Jenderal Perlindungan Hutan dan Konservasi Alam – Perdirjen PHKA) No. 23 of 2014, consists of: collecting information; identification and rehabilitation of burnt area; legal forces, and monitoring & evaluation [13].

Based on the above definitive boundaries there were at least 21 stakeholders that have their legal roles covering the above fire reduction policy, including the estates and forestry corporations, as well as local communities (Table 3). Also, there were two more stakeholders, to which, in fact, partake in operational activities, i.e., the Indonesian Army (Tentara Nasional Indonesia – TNI) and the Indonesian National Board for Disaster Management (Badan Nasional Penanggulangan Bencana – BNPB). However, their involvements were only regulated under the Presidential Instruction (Instruksi Presiden – Inpres) No. 11 of 2015 [14], which is only an internal note for institutions that were under the President’s authority. Although, this regulation did not carry any legal forces – to which violation of this regulation should not have any legal consequences, the pressure against those actors to be involved in fire control operation was great.

For example, the BNPB. This institution should not be involved in any of fire controlling operations. Referring to Act No. 24 of 2007 on Disaster Management [15], the legal roles of BNPB were only related to disaster and its mitigation. Meanwhile, forest and land fires, at any case, could not be considered as a disaster, because most of the fires are purposive and anthropogenic (human-made). Thus, to confirm that these fires were disasters could potentially create an image, that the perpetrators accidently burn their lands, so they were able to set free from penalty. The above-mentioned judgement was in accordance with the statement from the Coordinating Minister of Politic, Law, and Security (Menteri Koordinator Politik, Hukum, dan Keamanan – Menko Polhukam), Luhut Binsar Pandjaitan in 2015 “…if (we confirmed that the fires are) national disaster, they (the perpetrators) have the rights to be pardoned” [16].

The above mis-interpretation about disaster definition has also direct impact towards the military body (TNI), which partake in the fire control operational. This is, since one of the main roles of the stakeholder was to contribute to disaster counter measurement activities (Article 7 verse 1 of Act No. 34 Year 2004)[7]. For the TNI, not only from the Presidential Instruction No. 11 of 2015, pressure for this stakeholder to operationally involve in fire controlling activities also came from a coordination meeting in 2016, where the President called for a dismissal ultimatum to local police and military officials who failed in controlling fires in their working area [26]. Although, both policies have no legal power, this pressure has effectively worked. This is indicated by the presence of personnel from both institutions at fire scenes, together with BNPB. Based on the observation in the study location, there were officers helping to extinguish the fire in March 2017, whether from the local police (Polisi Resor – Polres) or the army (Komando Distrik Militer – Kodim & Komando Daerah Militer – Kodam).

†there are disputes among government officials and experts, with regard to the appropriateness of this term regarding forest fires. Since, the related act, Act No. 24 of 2007 concerning Disaster Countermeasure, does not clearly state that forest and land fire as a disaster. Some experts claim that forest and land fire are man-made (anthropogenic) with particular purposes, which cannot be accounted as a disaster, but the haze from the fire is. This is, since the haze affects people, either those who did ignition or not. In this case, the authors’ stance is the latter reasoning: forest and land fires are not a disaster.
| No. | Actor | Legal Standing(s) | Legal Roles |
|-----|-------|-------------------|-------------|
| 1. | Communities | Minister of Environment and Forestry Regulation *(Peraturan Menteri Lingkungan Hidup dan Kehutanan – Permen LHK)* No. 32 of 2016 Article 1 Point 52[11] | As subject of policies |
| 2. | Community Fire Brigades *(Masyarakat Peduli Api – MPA)* | Minister of Forestry Regulation *(Peraturan Menteri Kehutanan – Permenhut)* No. 12 of 2009 Article 1 Point 12[17] - General Director of Forest Protection and Natural Conservation Regulation *(Peraturan Direktur Jenderal Perlindungan Hutan dan Konservasi Alam – Perdirjen PHKA)* No. 2 of 2014[18] | Preventing and extinguishing fires |
| 3. | Manggala Agni | *Permenhut* No. 12 of 2009[17] - *Permen LHK* No. 32 of 2016 Article 1 Point 53[11] | Operational forest and fire controlling organisation to prevent, extinguish, and post-fire actions. |
| 4. | Task Force of Forest and Land Fire Control *(Satuan Tugas Pengendalian Kebakaran Hutan dan Lahan – Satgas Daltarhu)* of Siak Regency | *Permen LHK* No. 32 of 2016 Article 16[11] | Coordination of activities during fire events |
| 5. | Environment and Forestry Service *(Dinas LHK)* of Riau Province | Governor Regulation *(Peraturan Gubernur – Pergub)* of Riau No. 74 of 2016 Article 3 Verse (2) a – d[19] | Planning & executing policies related to environmental degradation, 2) reporting, evaluating and administering environmental degradation |
| 6. | Ministry of Environment and Forestry *(Kementerian Lingkungan Hidup & Kehutanan – KLHK)* | Presidential Regulation *(Peraturan Presiden – Perpres)* No. 16 of 2015 Article 3a[20] | Formulating, executing and implementing policies related to forest area and other environmental matters, including managing impacts of climate change and forest & land fires |
| No. | Actor                                                                 | Legal Standing(s)                                                                 | Legal Roles                                                                 |
|-----|-----------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 7.  | Local Government *(Pemerintah Daerah - Pemda)* of Siak Regency        | - Act No. 24 of 2007 Article 5[15]                                                | Confirming disaster status in order to deploy the BNPB and use their helicopter |
| 8.  | Local Government *(Pemerintah Daerah - Pemda)* of Riau Province        | - Act No. 24 of 2007 Article 5[15]                                                | Assigning disaster status in order to deploy BNPB and use their helicopter   |
| 9.  | Central Government                                                     | - Act No. 24 of 2007 Article 5[15]                                                | - Confirm disaster status in order to deploy BNPB and use their helicopter   |
|     |                                                                       |                                                                                  | - Imposed other fire controlling policies, formal or non-formal               |
| 10. | Ministry of Home Affairs *(Kementerian Dalam Negeri – Kemendagri)*   | - No direct role for fire controlling programme                                 | Based on the Regulation of Minister of Home Affairs No. 69 of 2012, this actor is responsible for supervising Governors and Mayors, including in regards of fire controlling activities |
|     |                                                                       | - Presidential Instruction *(Instruksi Presiden – Inpres)* No. 11 of 2015[14]     |                                                                                  |
| 11. | Corporations (estates or forestry)                                    | - Chapter II of Appendix of the Regulation of Minister of Agriculture *(Peraturan Menteri Pertanian – Permentan)* No. 47 of 2014[21] | - Responsible for increasing land vulnerability to fires from canals they made |
|     |                                                                       | - *Permen LHK* No. 32 of 2016 Article 17 & 22[11]                                | - Their firemen are responsible to fire controlling operation occur in their area or concession area |
| 12. | National Aviation and Space Institution *(Lembaga Penerbangan dan Antariksa Nasional - LAPAN)* | - No direct role for fire controlling programme                                 | Providing real time hotspots map, as their business as usual, which is vital   |
|     |                                                                       | - *Inpres* No. 11 of 2015[14]                                                    |                                                                                  |
| 13. | National Meteorology and Geophysics Agency *(Badan Meteorologi dan Geofisika Nasional - BMKG)* | - No direct role for fire controlling programme                                 | Providing real time hotspot map and FDRS (Fire Danger Rating System) as their business as usual |
|     |                                                                       | - *Inpres* No. 11 Year 2015[14]                                                  |                                                                                  |
| No. | Actor                                                                 | Legal Standing(s)                                                                 | Legal Roles                                                                 |
|-----|----------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 14  | Indonesian Army (*Tentara Nasional Indonesia - TNI*) at regional (*Komando Daerah Militer - Kodam*) or district (*Komando Distrik Militer - Kodim*) levels.\(^a\) | - No direct role for fire controlling programme                                   | Based on observation, they helped firemen to prevent and extinguish fires   |
| 15  | Regional Police (*Polisi Daerah – Polda*) or sub-regency police (*Polisi Resor – Polres*) | - Act No. 2 of 2002 Article 2[22]                                               | Preventing and extinguishing fires, as well as, post-fires activities, including law enforcement towards perpetrators |
| 16  | Local Agency for Disaster Management (*Badan Penanggulangan Bencana – BPBD*) of Siak Regency \(^a\) | - Local Regulation (*Peraturan Daerah – Perda*) of Siak Regency No. 15 of 2012 Article 17 Verse 1 & 3[23] | Main roles of these institutions are to countermeasure disasters, in this case, ideally haze from fires. |
| 17  | Local Agency for Disaster Management (*Badan Penanggulangan Bencana – BPBD*) of Riau Province \(^a\) | - Governor Regulation (*Peraturan Gubernur – Pergub*) of Riau Province No. 43 Year 2015 Article 2[24] | Based on observation, they were all involved since the fire standby stage   |
| 18  | National Agency for Disaster Management (*Badan Nasional Penanggulangan Bencana - BNPB*) \(^a\) | - Act No. 24 Year 2007[15]                                                       |                                                                           |
|     |                                                                      | - Regulation of the Head of National Agency for Disaster Countermeasure (*Peraturan Kepala BNPB*) No. 1 Year 2008 Article 2 & 3 (in regards of haze disaster)[25] |                                                                           |
| 19  | Peat Restoration Agency (*Badan Restorasi Gambut – BRG*)             | - Presidential Regulation (*Peraturan Presiden – Perpres*) No. 1 Year 2016 Article 2 & 3[5] | Restoring degraded peatland as part of comprehensive fire management       |
| No. | Actor                                                                 | Legal Standing(s)                                                                 | Legal Roles                                                                                       |
|-----|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 20. | High educational institutions (universities, institutes, colleges, or vocations) | - No direct role for fire controlling programme                                          | In fact, these actors were involved in fire controlling activities in multi-aspects within their educational scopes, i.e.: information dissemination, community partnership, fire prone area mapping, trainings for fire extinguishing activities, researches, as well as, knowledge distribution related to fire reduction. |
| 21. | Non-government organisations (particularly those who concern with social, environment, or socio-environment) | - No direct role for fire controlling programme                                          | Many NGOs were observed to run activities related with fire awareness to the communities, supervising activities of rights holders in the fire prone area, as well as, economic empowerment. |

*Have improper or no legal standing towards fire controlling programme, while obliged to be involved.*
3.2. Central Government Domination and Its Effects

The previous narrative showed the dominant role of the central government, in this case the President, towards fire controlling programme in Indonesia. The result of analysis from the level of interest, as well as influences for this actor produced similar result: high. Aside of the President’s main roles, there were pressures to maintain the high interest since impacts of fires were multi-sectoral.

Furthermore, the President, as one of the highest rights holders, has multiple sources of access to support his influence, i.e. access to: technologies, capital, labours, working opportunities, markets, knowledge, authorities, social identity, as well as, relation, by which Ribot and Peluso (2003) mentioned these as “the bundle of power.” Authoritatively, the President could be the one with the highest power to impose policies, aside of the Parliament House (Majelis Permusyawaratan Rakyat – MPR). Thus, ministries and central institutions, which are under the President’s authority, have lower power, with respect to access.

High influence in the fire controlling programme was also shown by the KLHK, the ministry that administered environment and forest area. The combination of high involvement of their main roles as a legislative and an executive institution for environmental affairs, as well as, pressure from the central government, played a big part in making them a key player within the programme.

Different impact occurred with the Ministry of Home Affairs. Their role as the supervisor for governors and mayors seemed to be reduced due to overlarge portion of power that the central government have within the fire controlling programme. This was indicated by the various decisions regarding fire control that were made by the governor, in this case is Riau, were out of legal paths with less counteraction from the ministry. Based on the observation, there was no regulation from the governor on emergency status of disaster to involve the BNPB in fire controlling operation during fire in March 2017. At the same time, this case has also shown that the BNPB has an unduly high interest, as well as, influence within the fire controlling programme.

Referring to the explanation in the previous sub-chapter, the BNPB had no legal standing to entangle, even if the emergency fire disaster has established by, either governor, mayor, or President, since the establishment of fire disaster status was considered illegal (see footnote 5). Since, the BNPB did not have legitimation to be involved in the fire controlling programme, theoretically they would have a low interest. In fact, their intense complicity within the programme showed a contradicting interest level, as well as, influence within the fire controlling programme.

3.3. Existing Obstacles for Governmental Institutions

The existence of fire events during almost every dry season in Indonesia exposed challenges to stakeholders within the fire controlling programme (Table 3). In general, problems to control fires in Indonesia are similar. Aside of anthropogenic factors, such as using fires for cultivation or estates[27–31], there were also natural and institutional challenges within fire controlling operations. For instance, problems faced by the Riau Province administrative are: 1) lack of extinguishing equipment for peatland fires; 2) large administrative area and distance among the regencies; 3) weak coordination among institutions, and 4) non-comprehensive fire controlling activities, which focus only on extinguishing [4]. Similar problems also showed in South Sumatera Province, as stated by Budiningsih (2017), such as: 1) difficult access to location; 2) lack of water sources due to dry season; 3) lack of human resources, funds,
and extinguishing equipment; 4) lack political will; 5) weak coordination among institutions, and 6) non-comprehensive fire controlling activities.

Furthermore, the above-mentioned problems did not only occur in a specific area, but almost in every fire prone area, particularly on peatlands, in Indonesia. This is, since the similar results were also appeared in West Kalimantan Province [33], Kapuas Regency [34], and Jambi Province [35]. Thus, those problems could be representatives of the general challenges facing fire controlling activities in Indonesia.

The previously observed difficulties for the stakeholders to correctly implement the fire controlling policies, at least, have given us backgrounds and reasons behind the central government’s policy mis-implementations. While strict with the current regulations means to not being involved, both the BNPB and TNI in fire control operational, this could potentially cause negative impacts to the entire programme, since these institutions were capable of providing human resources, as well as, extinguishing equipment, which are inadequate.
Even, the BNPB, as well as BPBD, had bigger roles than the TNI during their entanglement in the fire control operation due to the establishment of disaster status, which at the same time enable the involvement of the BNPB and BPBD, and could activate the Article 50 of the Act No. 24 of 2007 [15]. Referring to the aforementioned article, such kind of status allowed these institutions to provide their access to: 1) human resources; 2) equipment, in this case helicopters for water bombing; 3) logistics; 4) facilities to simplify immigration, customs, and quarantine; 5) permissions; 6) goods and services procurement; 7) funds or goods management; 8) search and rescue, and 9) command to instruct other related institutions.

The above-mentioned advantages showed how vital roles of these institutions while being deployed in the fire controlling activities. To be clearer, their participations in the entire activities could dwindle some of existing challenges: 1) lack of human resources; 2) lack of equipment; 3) limited funds, as well as, 4) to cut problems down with tough access to burnt locations by serviceable helicopters. Further, being based on our interview with a BNPB high official, this stakeholder, in fact, used to defray helicopter services during fire controlling at their cost, although regulation – Article 60 of the Act No. 24 of 2007, states that this is the local government responsibility [15].

There is another policy of the central government that was expected to solve one of the problems, i.e., the establishment of the Peat Restoration Agency (BRG) under the Presidential Regulation No. 1 of 2016 [5]. Theoretically, the institution could complete preventive activities against fires through peatland recovery, since most of the fires occurred within the disturbed peatland area. After all, even if the central government have imposed some illegal policies to control the fires, as well as dominating the power, this, in fact, resolved some existing problems. Accordingly, there was one thing for optimisation: to diminish the gaps of policy misconduct.

3.4. Diminishing Current Gaps of Policy Misconduct

Based on the aforementioned arguments, the most evident gap remaining within the current fire controlling programme is impropriety between policy implementation and the available laws. Therefore, to change, either the current regulations or its implementation that correlate with the fire controlling activities has to be accounted in order to alleviate this gap.

When the alternative is to change about how the President imposes the fire controlling policies, it means, that those policies have to be appropriate with the existing regulations. Consequently, this actor has to deal with the resource scarcity and the potential of policy failure (see discussion in sub-chapter 3.3.). Meanwhile, if regulation change is the option, then consideration has to be around the discourse of the most feasible shape of the shifting and potential impacts of this decision. As explained in the previous sub-chapter, the existing gap was around the involving mechanism of, both BNPB and TNI, as fire control operational.

In Indonesia, regulation making process is regulated by the Act No. 12 Year 2011 [36], consisted of five stages: 1) planning; 2) forming; 3) discussing; 4) enactment, and 5) regulating. In general, aside of urgent situations, the planning and forming process requires various bills and their supporting academic documents to be debated in a bill discussion session, *Prolegnas (Programme Legislasi Nasional – National Legislation Programme).* This bill, then undergoes sets of bureaucratic mechanisms, including discussions in the House of Representatives (*Dewan Perwakilan Rakyat* – DPR), depends on which institution is issuing the bill, before progressing to the next stage. More complex mechanisms occur in the discussing stage. Briefly, there are two levels of discussion, which consist of multiphase meetings: 1) commission, joint commissions, legislative agency, and budgetary agency of the House of Representatives internal; and 2) plenary meetings (*rapat paripurna*). Once agreement between the DPR and President, or/and Local Representative Board (*Dewan Perwakilan Daerah* – DPD), has reached, the bill is ready to be enacted. The regulation is, then, lawed after the President signed the bill, or 30 days without the signing.

The above narration clearly showed how complex and time consuming, the mechanism is for regulation making process. However, this is the most accommodating mechanism for filling the gap of the current fire controlling policies. Accordingly, to look only at a few alternatives for dealing with a
problem, and to choose options that marginally differ from the current policies, by which Sutton (1999) describes as “the incrementalist model,” might by far be the most feasible. Thus, in this case, since, the problem has solved and stakeholders have agreed on, the current policy misconduct is adjustable by adding, revising, or to set complementary regulations, particularly for both the TNI and BPNPB/BPBD, thus they have legal entanglement to operate fire controls.

4. Conclusion
Currently, there are policy mis-implementations imposed by the central government to control the fire, such as the involvement of TNI and BNPB/BPBD, while they have no legal standings to operate within the programme. However, based on the observation, this action was primarily because of the challenges faced by local governments and institutions. Being overly strict with the current laws, could potentially roll the positive achievements back to previous failures of fires management, thus maintaining recent activities as they are the most reasonable actions. However, revising, adding, or complementing the current rules are necessary in order to legally accommodate, both the TNI and BNPB/BPBD.

Acknowledgement
I would like to appreciate UNESCO which had financially supported us to finalise this research. Also, thanks to people of Sungai Rawa, Rawa Mekar Jaya, and Penyengat village who had kindly received us during the stay and collecting data.

References
[1] Someshwar S, Boer R, Conrad E. Managing Peatland Fire Risk in Central Kalimantan, Indonesia. World Resour Rep Case Study. 2011:1–20.
[2] Barus B, Indraningsih W, Purnama A, Waluyo H, Iman L, Yudarwati R. Implication of Peat Land Protection in Indonesia: A Case Study in Bengkalis Island, Riau. In: Ngah I, Kamarudin KH, editors. Proceeding of the 7th RRPG International Conference and Field Study in Malaysia 2016 (RRPG7). Kuala Lumpur: UTM Razak School of Engineering and Advanced Technology; 2016. p. 514–20.
[3] Glauber A., Gunawan I. The cost of fire. An Economic Analysis of Indonesia’s 2015 Fire Crisis. Vol. 1, Indonesia Sustainable Landscapes Knowledge Note. Jakarta; 2016.
[4] Meiwanda G. Kapabilitas Pemerintah Daerah Provinsi Riau: Hambatan dan Tantangan Pengendalian Kebakaran Hutan dan Lahan. J Ilmu Sos dan Ilmu Polit. 2016;19(3):251–63.
[5] Kemensekneg. Peraturan Presiden Republik Indonesia Nomor 1 Tahun 2016 Tentang Restorasi Gambut. Indonesia; 2016 p. 1–16.
[6] Kementerian Lingkungan Hidup dan Kehutanan. Tahun 2017, Luas Kebakaran Hutan dan Lahan Menurun 71,5% [Internet]. Press Release. 2017 [cited 2017 Mar 2]. Available from: http://ppid.menlhk.go.id/siaran_pers/browse/831
[7] Kemensekneg. Undang-Undang No. 34 tahun 2004 tentang Tentara Nasional Indonesia. Indonesia; 2004 p. 1–42.
[8] Pemerintah Provinsi Riau. Rencana Kerja Pemerintah Daerah Provinsi Riau 2016. Pekanbaru; 2015.
[9] Reed MS, Graves A, Dandy N, Posthumus H, Hubacek K, Morris J, et al. Who’s in and why? A typology of stakeholder analysis methods for natural resource management. J Environ Manage. 2009;90(5):1933–49.DOI: 10.1016/j.jenvman.2009.01.001
[10] Ribot JC, Peluso NL. A Theory of Access. Rural Sociol. 2003;68(2):153–81. DOI:10.1111/j.1549-0831.2003.tb00133.x
[11] Kemen LHK. Peraturan Menteri Lingkungan Hidup dan Kehutanan No. 32 Tahun 2016 Tentang Pengendalian Karhutla. 32 Indonesia; 2016.
[12] Sekda Provinsi Riau. Pergub Riau No. 5 tahun 2015 tentang Pelaksanaan Rencana Aksi Pencegahan Kebakaran Hutan dan Lahan di Provinsi Riau.pdf. Indonesia; 2015 p. 1–23.
[13] Kemen LHK. Peraturan Direktur Jenderal Perlindungan Hutan dan Konservasi Alam No. 23 tahun
2014 tentang Petunjuk Teknis Penanganan Pasca Karhutla. 23 Indonesia; 2014 p. 1–15.
14. Kemensekneg. Instruksi Presiden No. 11 tahun 2015 tentang Peningkatan Pencegahan Kebakaran Hutan dan Lahan. 11 Indonesia; 2015 p. 1–6.
15. Kemensekneg. Undang-Undang No. 24 Tahun 2007 Tentang Penanggulangan Bencana. Indonesia; 2007.
16. Prabowo D. Ini Alasan Pemerintah Tak Tetapkan Musibah Asap sebagai Bencana Nasional [Internet]. 2015 [cited 2017 Aug 1]. p. 8–11. Available from: https://nasional.kompas.com/read/2015/10/16/12153091/Ini.Alasan.Pemerintah.Tak.Tetapkan.Musibah.Asap.sebagai.Bencana.Nasional
17. Kemenhut. Peraturan Menteri Kehutanan No. 12 Tahun 2009Tentang Pengendalian Kebakaran Hutan. Indonesia; 2009 p. 1–21.
18. Kemen LHK. Peraturan Direktur Jenderal Perlindungan Hutan dan Konservasi Alam No: P.2/IV-SET/2014 Tentang Pembentukan dan Pembinaan Masyarakat Peduli Api. 2 Indonesia; 2014 p. 1–31.
19. Sekda Provinsi Riau. Peraturan Gubernur Riau No. 74 Tahun 2016 Tentang Kedudukan, Susunan Organisasi, Tugas dan Fungsi, serta Tata Kerja Dinas Lingkungan Hidup dan Kehutanan Provinsi Riau. Indonesia; 2016 p. 1–21.
20. Kemensekneg. Peraturan Presiden Republik Indonesia Nomor 16 Tahun 2015 tentang Kementerian Lingkungan Hidup dan Kehutanan. Indonesia; 2015 p. 1–38.
21. Kementan. Peraturan Menteri Pertanian Republik Indonesia Nomor 47 tahun 2014 tentang Brigade dan Pedoman Pelaksanaan Pencegahan serta Pengedalian Kebakaran Lahan dan Kebun. 47 Indonesia; 2014 p. 1–20.
22. Kemensekneg. Undang-Undang Republik Indonesia Nomor 2 Tahun 2002 tentang Kepolisian Negara Republik Indonesia. Indonesia; 2002 p. 1–35.
23. Sekda Kabupaten Siak. Peraturan Daerah Kabupaten Siak No. 15 Tahun 2012 Tentang Organisasi dan Tata Kerja Inspektorat, BAPPEDA dan Lembaga Teknis Daerah Kabupaten Siak. Indonesia; 2012 p. 1–50.
24. Sekda Provinsi Riau. Perubah Riau No. 43 tahun 2015 tentang Rincian Tugas dan Fungsi Badan Penanggulangan Bencana Daerah Provinsi Riau. Indonesia; 2015 p. 1–18.
25. BNPB. Peraturan Kepala Badan Nasional Penanggulangan Bencana. 1 Indonesia; 2008 p. 1–80.
26. Teresia A. Kebakaran Hutan, Jokowi Ancam Copot Kapolda dan Pangdam [Internet]. Tempo. 2018 [cited 2018 Mar 2]. p. 2016–8. Available from: https://nasional.tempo.co/read/737254/kebakaran-hutan-jokowi-ancam-copot-kapolda-dan-pangdam
27. Bowen M, Bompar J, Anderson I, Guizol P, Gouyon A. Anthropogenic Fires in Indonesia: A View from Sumatra. Radojevic M, Eaton P, editors. Palembang, New York: Nova Science; 1999. 31 p.
28. Cochrane M. Fire Science for Rainforests. Nature. 2003;421:913–9.
29. Saharjo BH, Nurhayati AD. The changes in chemical and physical properties of fibric peat following burning. J Tanah dan Lingkung. 2003;5(1):1–6.
30. Joosten H, Tapio-Biström M-L, Tol S. Peatlands - Guidance for Climate Change Mitigation through Conservation, Rehabilitation and Sustainable Use. Mitigation of Climate Change in Agriculture (MICCA) Programme series 5. Rome: Food & Agriculture Organization of the United Nations; Wetlands International; 2012. 1-100 p. Available from: http://www.fao.org/docrep/015/an762e/an762e.pdf
31. Hayasaka H, Noguchi I, Putra E, Yuliandi N, Vadrevu K. Peat-Fire-Related Air Pollution in Central Kalimantan, Indonesia [Internet]. Environ Pollut. 2014;Available from: http://dx.doi.org/10.1016/j.envpol.2014.06.031.
32. Budiningsih K. Implementasi Kebijakan Pengendalian Kebakaran Hutan dan Lahan di Provinsi Sumatera Selatan. J Anal Kebijak Kehutan. 2017;14(2):165–86.
33. Sukrismanto E. Sistem Pengorganisasian Pengendalian Kebakaran Hutan dan Lahan di Indonesia.
Institut Pertanian Bogor; 2012.

[34] Thoha A. Model Penguatan Kelembagaan Pengelolaan Risiko Kebakaran Hutan dan Lahan Berbasis Masyarakat. Institut Pertanian Bogor; 2014.

[35] Suhendri, Purnomo EP. Penguatan Kelembagaan Dalam Pencegahan dan Pengendalian Kebakaran Hutan dan Lahan di Kabupaten Muaro Jambi Provinsi Jambi. J Gov Public Policy. 2017;4(1):174–204.

[36] Kemensekneg. Undang-Undang Republik Indonesia Nomor 12 Tahun 2011 Tentang Pembentukan Peraturan Perundang-Undangan. Indonesia; 2011 p. 201.

[37] Sutton R. The policy process: an overview. EldisOrg [Internet]. 1999;(August):1–35. Available from: http://www.eldis.org/vfile/upload/1/document/0708/DOC7279.pdf%5Cnpapers://33432778-ef7b-4391-ae67-220f9c46620d/Paper/p2665

[38] Saharjo BH, Harahap AY. Pengaruh Kebijakan dalam Upaya Pengendalian Kebakaran Hutan dan Lahan terhadap Penurunan Emisi Gas Rumah Kaca. J Silvikultur Trop. 2014;05(2):124–30.

[39] Cole DH. The Varieties of Comparative Institutional Analysis. Wis L Rev. 2013;1127(1904):383–409.