Review of Community Based Wildfire Management in Indonesia

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Review of Community Based Wildfire Management in Indonesia*

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Abstract

The occurrence of wildfires in Sumatra and Kalimantan has caused terrible loss and destruction towards the region. The disasters occur almost annually since the last 17 years and cost 24.3 million USD in total. The damage caused ranked number one as the most destructive disaster beyond tsunami in Aceh or earthquake in various region of Indonesia. The damage ranging from destroyed forest (up to 25 million ha) to social-economic disruption (Kompas, 2014c). However, the most detrimental effect was probably its contribution to the climate change.

In this paper successful practice of local knowledge in preventing wildfire is discussed. The study was based on extended literature review. The successful forest management was found in South Borneo, Middle Borneo, South Celebes and West Java. Furthermore, the policy and regulation stipulated to manage the wildfires is also examined, because there has been a notion that the imposed law was defective and thus the law breaker could not be held responsible to the crime they committed. This paper concluded that the wildfire prevention program could only be successful when the government program, known as Communal Forest, was coupled with local knowledge.

Keywords: *wildfire, Indonesia, community, government policy*

1. Introduction

Indonesian rainforest is ranked as the third largest states tropical forest in the world, of which the habitat of more than 3000 animal species. Indonesian forest functions as the lungs of the world, and also storage of carbon stock. However, the rate of deforestation in Indonesia is very damaging. The financial losses caused also very enormous. In the period 26 February to 4 April 2014, the economic losses caused by forest fires in Riau reached Rp 20 trillion as well as 6 million people are exposed to smoke. In addition, forest fires are also detrimental to public health, the environment and create carbon emissions regardless. Peat fires are a major contributor to the release of carbon in Indonesia. In fact, the forestry sector is the second largest foreign exchange earner after oil and gas country. In the first semester semester of 2014, the result of the export of forestry products reached $ 3.2 billion US (Kompas, 2014i). Thus the destruction of the forest could lead to the decrease of Indonesian foreign exchange revenue.

However, this condition is in contrast to the statistic that pointed out that out of 50 million people living within the area of forest, 10.2 million were Categorized as poor (CIFOR). As a result, rampant illegal logging and encroachment by the local community and other parties were widespread, as the result of economic pressure. The existenceof illegal logging action were encouraged by the access roads, ditches or canals that opened by companies that has permission of forest concessions (HPH) and the Right Plant Industry (HTI).

In general, deforestation in Indonesia was caused by illegal logging, forest fires, forest conversion, unplanned agricultural expansion, and social conflict over forest resources (Nawir et al., 2007). As per statistics of Forestry 2009, the total forest area in Indonesia was 137.09 million hectares; the degraded

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area was 59.7 million hectares; with degradation rate of 1.08 million acres/ yr and resulted in critical land of 30,196,799.92 Ha. There are also at least 19,410 villages in Indonesia are in the forest (BPS, DG of Forest Planning 2008 and 2009).

Related with these conditions, Government of Indonesia (GoI) has issued many policies in land and forest rehabilitation such as Forest Community, Social Forestry, National Movement of land and forest rehabilitation (GERHAN), One Man One Three (OMOT), One Billion Indonesian Trees (OBIT), etc. In addition Perhutani (as a State Owned Enterprise) also has applied forest management based community.

However, in the earlier stages the local community was the object of programmes; which was shown by the existence of top-down planning. Consequently, the programmes failed to solve the socio economic problem in forest development. In the later stage of reformation era, both the Government through the Ministry of Forestry and Perhutani tried to improve the policies by including the local community as the subject in forest programmes. As the result, participative planning was built based on bottom up approaches (Nawir et al., 2007; Nomura, 2008).
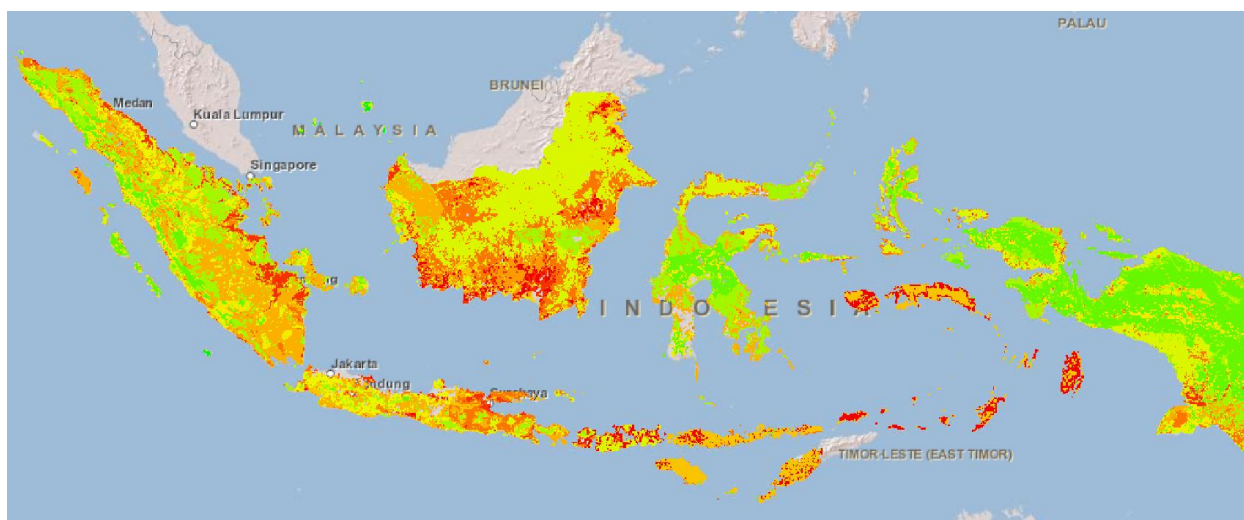
Figure 1. Map of potential forest fires in Indonesia
Source: Bappenas, 2013

In term of bottom-up planning, the community as the subject of land and forest rehabilitation programs is very important. This is because the aims of land and forest rehabilitation are to maintain forest functions and to obtain welfare for the community in the surrounding forest area (Government Rules No. 76/2008, Ministry of Forestry Regulation No. P. 70/Menhut-II/2008). Moreover, those who resided around forest area mostly were farmers. Consequently, those who played main role of land and forest rehabilitation should be the farmers.

Participation of local communities is one of the effective approaches in forest management (Faham et al., 2008). Based on that, community participation in resource management is a tool to achieve sustainability of natural resources by people, living in and arround a region integrated ecologically, socially, and culturally. This participation is known as one of the principles in ecosystem-based approaches to river rehabilitation (Hilman et al., 2005).

This research draws upon case studies from Indonesian regions. Upon explanation of wildfire background in Indonesia, this article further explores the theory of interdependency between the stakeholders involved in forest management: people (community), the government, and company. We will start by reviewing factors causing wildfire and wildfire management followed by identifying community's local knowledge over forest and wildfires. Then, the government programs and

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regulations are observed. In the end, the private companies' dynamic interaction in the attempt of managing wildfires is discussed.

2. Method

The approach used in this study is a qualitative and quantitative approach that aims to exploration. This study aims to identify the scope of wildfire problem throughout Indonesian regions. The concepts approached by three stakeholders (government, community and corporation) are being identified and examined. The relationship obtained between these three stakeholders will provide an understanding of the development process framework of wildfires adaptation.

Methods of data collection consisted of a survey of secondary This study uses content analysis to explore the Government's policy in managing the development and impacts of wildfires. Data were used on top of other studies.

3. Result

In Indonesia, wildfires are closely related to human activities. Main activities that ignite wildfires were carried out by private companies, commonly by palm oil companies. Fewer incidents of wildfires were ignited by local communities. Some of the Incidents were purposely and consciously carried out in order to clear the land. Two areas that are most inflicted by wildfires are Sumatra and Borneo. In These islands, the soil is mainly of peat fires, making the land prone to wildfires (Applegateet al., 2001). Large areas of land and forest in Indonesia was burned in 1982 and 1983. Wildfires also burned during extended dry periods in 1987 (49,323 ha), 1991 (118,881 ha) and 1994 (161,798 ha). The fire areas in 1987, 1991 and 1994 were larger than during years with normal rainfall, (Taconi, 2003). The World Resources Institute (2013) noted that a large number of fire incidents are initiated at timber plantation and oil palm, accounting about 47% of the total incidents. Large numbers of timber and oil palm plantations indeed are found in Kalimantan and Sumatra, where the large number of fire hotspots occurred.

The historical data from 2001 until 2012 shows that Sumatra Island suffers about 20,000 hotspot warnings every year (with the accuracy of 30%) (WRI, 2014). The hot spot warning is normally issued between June until September every year. About 60 percent of the hotspot occur in the period of these months (WRI , 2014). The large scale wildfires are induced by the climate change phenomenon, such as El-Nino that occurred in 1987, 1991, 1994 and 1997 (Environmental Ministry and UNDP, 1998).

Peatlands drained by using the canal will be highly flammable, especially when peat decomposition has occurred due to the methane gas that produced by the peat decomposition (Kompas, 2014g). Once the peat ignited, it smolders and can burn undetected for months or years. Peat fires spread by creeping through the underground layer, which is called "duff". This condition caused peat fires to be hard to extinguished. Therefore, the participation of local community are urgently required to reduce the incidents of wildfires. In the next section, the roles of each stakeholders (i.e government, community and company) are described.

3.1. Local Wisdom

Tradition of "Penabatan" in Katingan sub-district, Middle Borneo: The national park in Sebangau was comprises of peat soil. The local community conserve the soil by building dams surrounds the area, which is called "penabatan" locally. Thus the water contain of the peat soil was preserved, especially water in the surface layer. The water would penetrate and soak the organic material. As the result, fires would be hard to ignited or re-ignited and fire in the sub-surface layer could be prevented (Radius, 2014a).

The building of dams had been done indigenously and thus was a form of local knowledge. As the result incidents of fires is considerably reduced and in addition to that when the water was shallow the fishes could be garnered easily.

Although the activity had been locally recognized, it was not practiced until there was initiation from NGO's such as World Wide Fund (WWF), Wetlands International, Borneo Orangutan Survival (BOS). Since 1996, there had been 900 small dams built which cover around 150 acresof peat soil or 25% of the total national park area. The NGOs would hire local people to build the dam. Consequently, this program provided the locals with additional, if not optional income other than their main occupation as fisher, hunter, tree lodger or mining.

The dam itself is categorized into three different categories: basic, simple and permanent. The dimension of the basic dam was 2.5m in length, 1m width and 1.5 m depth. The construction period ranged from two hours for basic dam until 3 days for building the permanent one.

Local belief of Baduy community in Banten, West Java: Baduy community was considered as traditional community that still hold fast to their ancient belief. As the result, even though living in a fast-growing cultivation province of Banten, the forest in the village area was still intact. The forest area had been divided into three parts: entrusted area, protected area and cultivation area. The entrusted area was considered as sacred, entrusted from God to be preserved, guarded and kept clear from any pollution. This area was located on the top of mountain and its vicinity. The protected area was a reserved area where people could enter to get forest amenity that they needed, such as: rattan, fruits, tubers and latex. Trees could be cut down, but had to be replanted immediately. Whereas, the cultivation part of the forest could be opened and used for plantation (Setianingsih and Helmy, 2014).

Many regions in Indonesia also had similar local belief; however, the difference in Baduy community was that the people of Baduy community were still heavily attached to their traditional inheritance. The common laws were stipulated strictly, where total adherence to the common laws was a requisite of the member of the community. In most cases the lawbreaker of common law was banished from the community. Another example of Baduy common law was as follows: "the world was originated in the forest and the upstream of rivers, as such those place are sacred." As the result, Baduy people did not even dare to enter forest area, moreover to open the forest area(Setianingsih and Helmy, 2014).

Local belief of Kuta community in Ciamis, West Java: In Kuta community, the people were forbidden to enter the forest except on Monday and Friday, and it had to be done with barefoot. The belief imposed that the forest were inhabited by powerful supernatural beings that would punish anyone that they encountered. The sacred forest governed the flow of the river, prevented it from flooding the village. It also sent seeds through bats and weasels to the surrounded area. Other than the forest, there were 23 places that were considered as sacred, including cliff, at where cutting forest was strictly prohibited (Setianingsih and Helmy, 2014).

Another village, Naga village, in Tasikmalaya sub district, West Java had also similar belief. Local people could not set their feet in the forest. They could only put one foot in the forest area, and the other foot should be on the outside area. Whereas in Dukuh village of Garut sub-distrit (in West Java) the forest was used as shrines and considered sacred (Setianingsih and Helmy, 2014).

3.2 Government program

Community based program from the Government: In this section, four programs of the government which supported the community based activity of the forest will be highlighted. There are hutan desa (village forest), hutan tanaman rakyat (community plantation forest) and hutan kemasyarakatan (community forestry). Through these programs the community could legally gain access to the forest and its resources, where previously the activity would have been considered as trespassing. Through these regulations, the government acknowledge that by allowing and empowering the community to cultivate and manage the forest, the forest would be protected from "bigger" harm, which was illegal logging by local broker who would consumed the forest without doing any conservation. Moreover,

since the community resided nearby the forest they would instinctively preserve the forest to maintain its sustainability as the forest now was now became part of their livelihood.

These three programs were consecutively launched by the government under the Ministry of Forestry. The initial program was the community plantation forest which was supported by Ministry of Forestry No.6 year 2007; followed by the community forestry (supported by Ministry of Forestry No 37 year 2007); then followed by committed and partner through Law No 39 year 2013 and lastly by village forest (Law No 49 year 2013).

In general, the community-based agroforestry could benefit the government through a self-financed rehabilitation done by the community and forest protection. On the other hand, it could benefit the forestry by (i) encourage the formation of crop diversity (ii) maintenance of the ecological and hydrological functions and (iii) maintain the natural diversity of indegeneous flora and fauna.

The government program of community based agro forestry was expected to eliminate conflicts by providing access and rights to manage the forest to local communities. In this context, community-based agroforestry is expected to ensure the sustainability and economic transformation and cultural communities in and around forest.

Hutan Kemasyarakatan: In order to reduce the rate of forest destruction the government performs various rehabilitation programs and forest protection. In addition to doing forest and land rehabilitation program, another steps taken is involving forest communities in the form of Base Community Forest Management (CBFM) or Community Forest (HKm) to find a balance between the preservation of ecosystems and the increased public welfare.

One example is the Community Forest Community Forest Megah Buana in Barru District, South Celebes. In this area 2.100 acresof forest has got the status of a Community Forest. Previously, the community does not have access to get into the woods or cutting down trees in the forest area. But with the scheme of Community Forest, communities now can rejuvenate pecan trees and planting new crops in the forest, such as cloves (Daeng, 2014).

Another example is the practice of agroforestry in Pekalongan carried out in an area of 3000 acresof tropical forests. Residents grow coffee as a commodity to compromise on economic pressures that led to the destruction of forests. A total of 30 families on average have 1-2 acres of coffee plantations that produce superior quality organic coffee. Communities also develop non-timber forest businesses such as coffee, brown sugar and honey (Yasa, 2014).

*Hutan Tanaman Rakyat (HTr):*There was a new scheme of forest management recently raised by the government in an effort to empower forest communities, which was supported by chapter 1: 19 of Government Regulation No. 6 th 2007 of Plantation Forests hereinafter abbreviated as HTr. HTr is forest plantations built by groups of community to improve the potency and quality of forestry production by applying silviculture in order to ensure the sustainability of forest resources.

One example of smallholder plantations located in the village Kamiri, South Celebes. In this area people manage 350 acresof production forest to plant 80,000 stems of super teak trees and Jabon, as well as 20,000 stems of plants hazelnut.

Hutan Desa: The Village of Forest Utilization in production forests include: 1) Utilization of forest products from natural forests; 2) Utilization of forest plantations; 3) Utilization of non-timber forest products (eg. honey, rattan, sap, fruit, etc.). In the protected forest areas include: 1) Utilization of Non-Timber Forest Products; and 2) Utilization of Environmental Services (water harvesting, ecotourism, carbon sequestration, etc.).

One of the successful practice of village forest is located at Kalawa Pulang Pisau district, Central Kalimantan. In this area the people managed to make 16 thousand acres of forest land as a forest

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village. To monitor the forest village, the people organized regular patrol to prevent illegal logging and canalization project. As the result, illegal logging activities were reduced, as well as forest fires caused by illegal logging. The next stage is to replant about 3.000 acres of degraded land with various species of trees, such as: rubber trees, *aloes*, *durian* tree, manga and *matoa* (Radius, 2014b).

3.3 Law and regulations

The earliest attempt of the government to rehabilitate forests and inhibit forest degradation was by issuing PP 6/1999 to change the orientation of forester from commercial or industry to non-commercial and non-industrial forester by issuing the license under the label of Hutan Tanaman (HT). Before the commencement of this regulation, the orientation of forester was grounded on PP Nomor 7 Tahun 1990 which aimed to increase the national revenue from forestry and thus the license was named Hutan Tanaman Industri (HTI) or literaly translated into Comercial Plantation Forestry. Furthermore, PP 6/1999 repealed by Regulation 34/2002 which completely eliminate the activity of establishing and managing plantations.

On the other hand, the policy which is used to legitimize the use of the forests by traditional peoples is the article 67 of Law No. 41 Year 1999 on Forestry. This articles acknowledge the existence of traditional people and entitled them several things as follows: i) the right to collect product from the forest to meet the needs their daily life, ii) the right to manage forests based on customary law that applicable, and iii) the right to be empowered to improve their welfare .

The general provisions set out in Article 32 of Regulation No 34/2002 describe that harvesting timber is simply to meet the needs of individuals and may not exceed 20 cubic meters. As for non-timber forest products such as *rattan, manau*, sap, fruits can be traded with a volume of up to 20 tons each permit, in contrast to timber products which were not to be traded. However, there are few regulations that have potential of misuse (table 2).

3.4 Community Based Industry in Forestry

In the implementation, the permission of HTI became uncontrollable and problematic because it was not in accordance with the regulations stipulated. This is compounded by the lack of control in the field resulting in illegal logging cases which dragged the plantation company as suspects. In addition, the termination of granting HTI permission was considered so that the conflict between the company and the local community could be reduced. During this time many issues arising from traditional land converted into plantations.

Table 2. Potential Misuse of Law and regulation on forestry

Law & Regulation	Content	Note
President Regulation No 11/2011 President Regulation No 6/2013	Moratorium of new permits which has possible exploitation of primary forests and peatlands; contains new licensing delays and improving monitoring of primary natural forest and peatland	Implementation trigger widespread social conflicts because many areas of which the moratorium is applied were traditional forest area or those belong to the community Supposedly moratorium is critical land former timber
Minister of Forestry No. 936/2013	Spatial and Regional Planning of West Kalimantan	Legalize the existence of industrial area of 51 companies in the area of agriculture and forestry
Regulations No 18/2013	Prevention and Eradication of Forest Destruction	Misimplementation: not the corporation that is targeted, but

Law & Regulation	Content	Note
		the local communities surrounding the forest
Regulation No 32/2009 Clause 69 Paragraph 1-2	Prohibition to burn, destroy, pollute the woods by any person with the exception of the consideration of the local knowledge	Paragraph 2 is used by unscrupulous forest-burner as an excuse to burn the forest

Source: Various articles from Kompas (2014j,k,l)

The common practice of industrial forest is open to the forest using heavy instruments. The worst practice is by using fires. Recently, a government company, Inhutani II, used a conventional community-based method to open forest, by which using man power. Utilization of local community was considered to be much cheaper and effective in preventing forest encroachment. The practice took place in the forest area of 1,000 hectares in South Kalimantan where community planted rice under *akasian mangium* stands which belongs to the company (Susanto, 2014b).

The idea has been stipulated in Government Regulation No. 6/2007 on Forest Management and Forest Management Planning and Forest Utilization. Described in the regulation, the holder of IUPHHK-HTI should provide space for the local community to have plantation for their livelihood. However, its implementation was not yet optimal (Susanto, 2014b).

Incentive for the company: Another idea from the government to encourage companies to produce sustainable forest products is the sustainability certification scheme called *Meja Bundar Minyak Sawit Lestari* or literally translated into Roundtable on Sustainable Palm Oil which is voluntary based as well as Indonesian Palm Oil Sustainability standards that are mandatory (Kompas, 2014h). There was also a timber legality verification system (TLVs) are recognized and appreciated UNi Europe World Trade Organization (WTO). With TLVS sustainability of the timber products can be ensured with tracking system.

Forestry Innovation: Restorasi Bisnis Lestari: Ministry of Forestry also issued a backup permit of timber harvesting which focused on ecosystem restoration. In this scheme investors could not cut down trees to sell wood or plant non-forestry commodities such as palm oil. Investors of restoration concession license actually have to restore degraded lands by planting local native plants and take care of that ecosystem recovered as usual. Investors can profit from non-timber forest products (intangibles) such as water, honey, medicinal plants, ecotourism, and carbon trading in the global market. In the practice it is expected that investors would engage local communities to manage the forest (Hamzirwan, 2014).

Some of the ecosystem restoration managed by non-governmental organizations with the support of donors had taken place in a number of locations, including Jambi (46 385 ha), South Sumatra (52 170 ha) and East Kalimantan (86,450 ha).

4. Discussion

Poverty in the area around the forest occurs due to access cut out of local community from forestry resources (Handadhari, 2014). During this time, the root of the problem of forest fires is land conflicts, regional governance and social issues such as poverty. Poverty happens because people have a weak position in forest management. It is caused by the paradigms and forestry policies which place people as object. It was assumed that the community did not understand how to or have the ability to preserve the forest (Kompas, 2014a).

However this is not the case as much as the certainty of clarity over land tenure. Farmers are willing to cultivate the tree when there is certainty over land tenure. Tenure security needed by farmers to

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ensure their investments, that they were the guaranteed party who would be benefited from these trees. Usually farmers would carry out cultivation of trees on land owned by themselves and not willing to do so on communal or state land because then the result would be benefit the land owner (Suharjito, 2012).

Factors that influence farmers to choose to cultivate trees are: (1) clarity on land tenure, (2) the availability of labor, (3) the availability of and access to markets the wood products; (4) availability of capital, and (5) knowledge of procedures for the cultivation of mahogany (Suharjito, 2012). These factors should be empowered by local government by providing policy incentives such as certainty over forest land and the rights attached to it, building a road infrastructure that can provide access to the market so as to increase the price of forest products. The farmers could also involved in programs of trees cultivations which provide incentives such as REDD program (reduced emission from deforestation and forest degradation, PES (payment for environmental services) and CDM (clean development mechanism).

Poverty and lack of access to forest resources also makes them vulnerable to be exploited by irresponsible financiers, such as one occurred in Riau. Hence the cycle of forest fires can be stopped by stopping the flow of capital which rewarded the villagers who burn forests and fields, as well as campaigned to not buy the products from the company that burned the area (Kompas 2014d).

4.1 Conflict in the field

Poor boundaries, faulty forest bureaucracy making the companies and communities meet face to face in the field. These conditions lead to conflict between the two parties. As many as 97% of forestry permits were controlled by corporation. Only 3% of the forest area that can be utilized community. In fact, there were 30,000 villages that live in the area of forestry. Based on the Consortium for Agrarian Reform, there were approximately 370 conflicts involving 140 thousand families which spread to 28 million hectares (acres) of land (Susanto, 2014a). This conflict occurs because the majority of the people was expelled from the traditional arable land or forest, or has been displaced by the expulsion of the village due to concessions. As a result, the social and economy of local community was increased.

On the Contrary, Indonesian Institute of Sciences Sumberjaya, West Lampung showed that community based forest management could reduce poverty by 60%. It is obtained from the harvest coffee grown by Sumberjaya community in the traditional forest. While in East Nusa Tenggara, as many as 270 residents earn an income of 3-5 million per month from forest management. East Flores communities manage forests by planting coffee, hazelnut and cocoa.

Another study showed that the community income could increase by 300% with community based forest management scheme. This increase is higher than the success of other government programs in reducing poverty. Other government programs since 2004 only succeeded in reducing the poverty rate by 2% from the total of 12% (Kompas, 2014b). The same was observed in Vietnam and Philippines. In Vietnam 4 million hectares of forest (95%) are managed by the community (KOmpas, 2014e). Product of non-timber was used for the production of soap-shampoo. While in the Philippines 30% of the forests managed by communities.

Unfortunately, the national forestry program is still siding with the corporation. This is reflected in the allocation of forest land in the National Forest Plan. The corporation gets a 39% (approx. 44 million ha) of forest area, while the community received an allocation of 5% (approx. 5.6 million ha). In fact, permission granted for cooperation (HTI) already out of hand and many were problematic because they did not fit with the prevailing regulations. Corporation practice in the field often results in environmental damage. This happens because the lack of control in the field which resulted in cases of illegal logging by the corporation. Thus, the majority of HTI should be assessed so that the termination of the scheme can reduce the environmental damage as well as dampen the conflicts between company and community, which aroused from conversion of traditional land into plantations.

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In addition to the minimal allocation of land and the existence of conflicts between communities and corporations, other problems are the local government commitment to environmental sustainability and well-being of local communities. The local government was more interested in giving permission to mining or oil companies to manage the forests. For the local government, this was favorable at moment, as well as providing a gap for corruption. In spite of this, forest management by cooperation still tended to be exploitative, and failed to utilize technology that can add the value of timber without compromising the sustainability of forest. In contrast, the local government gained nothing in providing permission for public forestry. As the result the bureaucracy for getting the legality of community based forest becoming lengthy and complicated: the permit for local community must pass through 29 tables, gaining approval from four first echelons, which in total take as long as 180 days to 3 years.

4.2 Legislation

As depicts in table 2, many unscrupulous land burner hide behind the provisions of Law No. 32 of 2009 on Environmental Protection and Management. Paragraph 1 banned activities such as burning, destroy or pollute the woods by any person. However, there is an exception described in paragraph 2 that the burning activity is allowed if it is according to the local knowledge. In the following explanation mentioned this is accepted if the area burned is up to 2 hectares per household for the purpose of planting local varieties and whenever the fire is surrounded by firebreaks as a deterrent of fire breaching to surrounding areas. Actually, this paragraph is intended for the welfare of the poor citizens who have limitation in managing the land, but in reality was used by corporation.

The tradition of forest burning occurred in Sumba and Timor and had been proven to impoverish the forest nearby as well as the people who live in it (Kompas, 2014f). This tradition has been carried out since 1650 with the purpose of indicating to the enemy or the people around that the area was already occupied. As for now, this tradition has led to a number of forest fires in the spring catchment areas, thus causing water shortage in the dry season. Extent of deforestation reached up to 15% per year of the total 1.8 million acres of forests in the East. It can be concluded that the understanding of forest functions should be taught since elementary school.
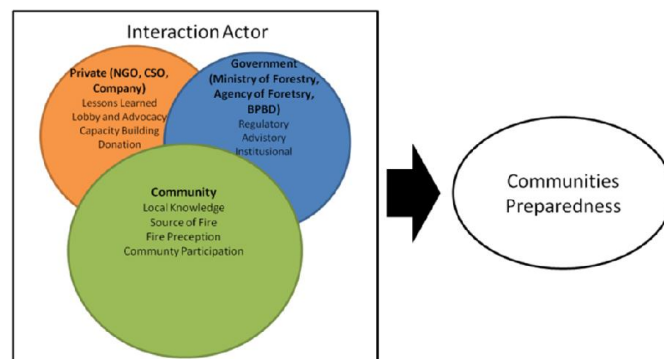
Figure 2. Interaksi between stakeholders
Source: Sagala et al., (in press)

As depicted in Figure 2, community participation requires a concerted, interactive collaborative effort of communities, government and private sector. Collaboration eliminates limitations in term of resources, knowledge and access. Therefore, local communities which are living in or close to forests could work side by side with the government in overseeing the activities and violation of law in the forest. This might be an appropriate solution since communities have vital resources including knowledge and understanding of the forest condition, in contrast to the government that is lacking manpower to cover vast area of forest. Accordingly, the appropriate roles for government are law enforcement to the private company and facilitator and motivator to the local community. For

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instance, government should facilitate the low income community by providing means to organize patrol regularly and thus reducing the incidents of illegal logging and land burning.

5. Conclusion

Wildfire in Indonesia is mostly anthropogenic. The anthropogenic activities that induce wildfires are mainly conducted by two stakeholders, which are local community and private companies. Other than inducing the wildfires, they could mitigate and prevent the wildfires. This implies that the stakeholders, especially local community and private companies could play two contradictory roles, either causing or preventing the wildfires, depending on the characteristic of the stakeholders. Thus, the task of the government is to make sure these stakeholders possessing the good characteristics that would help preventing the wildfires instead of creating it. This implies that the lack of government interference to the stakeholders could worsen the incidents of wildfires.

In contrast the active interference of the government could help reduce the occurrences of wildfires. This can be reached by fostering collaboration between the stakeholders: community, private companies and government. Other benefit that can be obtained from active interference of the government is increasing the community preparedness toward the wildfire. This would benefit the community by lowering the destruction and casualties caused by wildfire.

Some things that must be considered by the government to minimize conflict is an inventory of community-managed forest area, which is in accordance with constitution Court No. 35 of 2012 concerning Indigenous Forests. Indigenous forest is essentially an attempt to save the forest not by banning local residents, but to provide an opportunity for the public to use. It can be effectively nurtured when the education community around the forest walk because discrimination tends to happen to the people that a low education.

Empowerment of poor communities around the forest department should involve industry and trade to create added value for citizens forest products. In seeking legal status of the forest, the citizens must also be accompanied and facilitated the organization of the group, preparation of documents, the proposed mapping related forest management, as well as established relationships with government agencies.

Finally, with agroforestry people in need of land and food continue to grow and reap the results. As a result of forest area is maintained, and the company is able to save operational costs. Utilization of forestry business area is expected to increase production, reduce imports of food, and narrow the current account deficit Indonesia.

References

Applegate, G., U. Chokkalingam, and S. Suyanto. (2001) The Underlying Causes and Impact of Fires in Southeast Asia , Final Report. Jakarta: Center for International Forestry Research (CIFOR).

Boer, C. (2002) Forest and fire suppression in East Kalimantan, Indonesia Proceedings Of An International Conference On Community Involvement In Fire Management. FAO. Bangkok.

Bowen, M.R., Bompard, J.m., Anderson, I.P., Guizol, P. And Gouyon, A. (2000) Anthropogenic Fires In Indonesia : a View From Sumatera. In : Radojevic, M. And Eaton, P. (eds). Wildfires and Regional Haze in South East Asia. Nova Science, New York.

CIFOR (2003) The fire of Swampland / Peat in Sumatra: Problems and Solutions. Proceeding of Workshop, Center for International Forestry Research (CIFOR)

Daeng, M.F. (2014). Harapan Baru dari Hutan Barru. Kompas, 24 February 2014.

Faham, E., Rezvanfar, A., Shamekhi, T. (2008) Analysis of Socio-Economic Factors Influencing Forest Dwellers' Participation in Reforestation and Development of Forest Areas (The Case Study

`

of West Mazandaran, Iran). American Journal of Agricultural and Biological Sciences Vol 3 (1): Pp. 438-443.

Hamzirwan (2014) Restorasi Bisnis Lestar. Kompas, 7 July 2014.

Hanhadhari, T. (2014) Visi Misi Soal Hutan dan Lingkungan. Kompas, 5 July 2014.

Hilman, M., Brierley, G. (2005) A Critical Review of Catchment-scale Stream Rehabilitation Programmes. Journal Progress in Physical Geography 29. Pp. 50-70.

Kompas (2014a). Warga di Sekitar Hutan Sering Dikriminalisasi. Newspaper article on 25 March 2014.

Kompas (2014b). Potensi Kesejahteraan Belum Digarap Optimal. Article on 21 February 2014.

Kompas (2014c). Kebakaran Hutan dan Lahan Paling Merugikan. Article on 27 March 2014.

Kompas (2014d). Antisipasi Kebakaran Hutan harus Terintegrasi. Article on 21 June 2014.

Kompas (2014e) Indonesia Tertinggal dari Vietnam, Newspaper article on 17 April 2014.

Kompas (2014f). Tradisi Membakar Hutan di Timor Memiskinkan Warga. Article on 30 June 2014.

Kompas (2014g) Rambut Rawan Terbakar, RPP Gambut diharapkan beri jalan keluar. Article on 29 February 2014.

Kompas (2014h). Komitmen Kelestarian Perkebunan Ditagih. Article on 5 July 2014).

Kompas (2014i). Legalitas Produk Permudah Akses Pasar. Article on 14 July 2014.

Kompas (2014j). Uji Materi UU P3H Disiapkan. Article on 21 March 2014.

Kompas (2014k) Pemilik Konsensi Sawit Lebih Diuntungkan. Article on 22 February 2014.

Kompas (2014l). Moratorium Hutan Belum Efektif. Article on 26 June 2014.

Nawir, A., Ani, Murniati, and Rumboko, Lukas. (2007) Forest Rehabilitation in Indonesia; Where to After More Than Three Decades?. Center for International Forestry Research (CIFOR). Jakarta.

Nomura, Ko. (2008) The Politics of Participation in Forest Management: A Case from Democratizing in Indonesia. The Journal of Environment and Development. Volume No. 17 Number 2. Pp. 166-191. June 2008. Sage Publications.

Radius, D.B. (2014a) "Penabatan" Selamatkan Gambut. Kompas, March 2014.

Radius, D.B. (2014b) Perjuangan demi Hutan Desa Kalawa. Kompas, 14 February 2014.

Sagala, S., Dodon and Sitinjak, E. (in press) Fostering Community Preparedness to Wildfire: Experiences from Indonesia, in Paton, D. Wildfire Hazards, Risks, and Disasters, Elsevier Publishing.

Setianingsih D, Helmy C (2014). Menjaga Hutan sebagai Titipan. Kompas, 8 February 2014.

Suharjito D (2012) Pengembangan HKm, HTR, HD dan HR: Belajar dari Pengalaman di Jawa. Makalah yang dipresentasikan dalam Seminar "Prospek Pengembangan Hutan Tanaman Rakyat, Konservasi dan Rehabilitasi Hutan", diselenggarakan oleh Balai Penelitian Kehutanan Manado. Manado, 23-24 Oktober 2012.

Susanto I. (2014a) Hutan Belum Menyejahterakan. Kompas on 12 May 2014

Susanto I (2014b). Hutan untuk Ketahanan Pangan. Kompas, 9 April 2014.

Tacconi, Luca. (2003) Fires in Indonesia: Causes, Costs and Policy Implications. CIFOR Occasional Paper No. 38. Bogor.

University of Tampere (2014) The IMRAD Research Paper Format. Finland Studies in the ETI Curriculum, University of Tampere Finland Web. http:// http://www15.uta.fi/FAST/FIN/fin.html. Accessed 4 April 2014

`

World Resources Institute (2013). Site location http://www.wri.org/ . Accessed in August 2014.

Yasa, P (2014) Kopi Untuk Kelestarian Owa Jawa. Kompas, 4 July 2014.