

# The Role of Women in Mitigation of Forest and Land Fires based on Local Wisdom

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## ABSTRACT

The enhancement of women role to prevent the dangers of forest and land fires in Kereng Bangkirai Urban village Sebangau Sub district Palangka Raya City has the aim to identify the efforts of forest and land fire hazards prevention that prioritize the role and involvement of women as well as local wisdom. This activity is carried out by prioritizing participatory methods and approaches. Data collection and the process of identifying the roles and involvement of women and local wisdom are carried out through focus group discussions (*focus group discussion*, *FGD*) to mothers and women in the Kereng Bangkirai Urban village. In addition, in-depth interviews were conducted (*indepth interview*) to several selected key figures and informants based on the researcher's judgment. The findings result show that the role of women is directly or indirectly to prevent the dangers of forest and land fires. The direct role of women is to ensure that the fire is really burning before they leave the location. The indirect role of women in preventing forest and land fires by informing, reminding, communicating about the causes and dangers of forest and land fires to families, including their husbands, children, nieces and community members. The developed module for the forest and land fire hazards prevention are the identification of areas that prone to forest and land fires; Participatory mapping of areas that prone to forest and land fires; Early detection, and the making of artesian wells and water retention basin. These preventive measures are recommended to be campaigned and socialized by involving religious and community leaders.

**Keywords:** Mitigation, women, forest and land fires, Local wisdom.

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## INTRODUCTION

Nowadays forest fires increasingly attracting international attention as environmental and economic issues, especially the 1997/1998 EL Nino (ENZO) disaster which devastated 25 million hectares of land and forests worldwide ( FAO, 2001; Rowell and Moore, 2001). The Fire is considered a potential threat to sustainability because of its direct effect on ecosystems (Shlisky et al., 2007; Scasta et al., 2016; Covington & Vosick, 2016; Sil et al., 2019; Martin, 2019; Daryanto et al., 2019; Briggs et al., 2019).

Forest and peatland fires that occur in Indonesia are generally the result of human activity, whether intentionally or due to negligence (Adinugroho et al., 2005; Mangunjaya, 2006; Suhendri & Purnomo, 2017; Budiningsih, 2017; Ahmad & Isril, 2018; Natural factors also support, such as drought, like the occurrence of El Nino symptoms. In addition, for Central Kalimantan, after the implementation of the million-hectare peatland clearing project (PLG) causing the peat that normally inundated by water experienced drought during the dry season, because the water was eroded into the canals which were built during the project. Another contributing factor is, there are still companies and communities that open agricultural land by burning.

Forest and peatland fire is one of the serious problems that also faced by local governments and communities in Central Kalimantan. Forest and peatland fires in Central Kalimantan occur almost every year, especially during the dry season.

These forest and peat fires not only have a negative impact on public health, but also the economy and the environment. Forest and land fires release carbon (CO<sub>2</sub>) emissions into the air, which contributes to climate change issues. Recorded there have been 5 (five) major fires that struck Central Kalimantan in the last decade, namely in 1994, 1997, 2002, 2006 and 2015 and 2019, which struck natural forests, converted forests for plantations, abandoned land and community land.

Central Kalimantan Province has an area of 153.564,50 Km<sup>2</sup>. From that area, 3.010.640 hectares are peatland. Peatlands have a very high level of vulnerability and insecurity to fire hazards. Fire events so far indicate that almost 70% of forest and land fires occur outside forest areas. This shows the main factors that become the cause of occurrence of forest and land fires besides nature is the lack of knowledge and unpreparedness of the community in anticipating the disaster (Martin et al., 2007; Bihari & Ryan, 2012; Tedim et al., 2013; Moritz et al., 2014). This condition gives an indication that the main factor that becomes the cause of occurrence of forest and land fires repeatedly, besides nature, is the lack of knowledge and unpreparedness of the community to be able to anticipate the disaster. Even can be said that almost 99% of the causes of forest and peatland fire is caused by human activity, both intentional or due to negligence.

Forest and land fires that occur every dry season should provide lessons for people in Central Kalimantan that forest and land fires must be managed either before, during and after; and the result of forest and land fires can damage the environment. Forest and land fires also affect global climate change in terms of biodiversity reduction and carbon emissions; causing substantial losses either infrastructure, facilities, economy, transportation, health and even political losses associated with relations with neighboring countries. The occurrence of forest and land fires that occur in succession should make many parties aware of the importance of prevention and reduction of the risk of forest and land fires.

Community involvement is a key factor, because they live in and around forest and peatland areas that quickly detect potential fires, and can quickly combat fires (Martin & Winarno, 2010; Imanudin et al., 2015; Sukarman, 2017; Suhendri & Purnomo, 2017; Junaidy et al., 2019; However, efforts to prevent and control community-based forest fires, especially those that prioritize the role of women and children, have not yet become a central issue in the prevention and handling of forest and land fires. The focus of environmental and women's discourse lies not in the closeness between women and the environment alone, but sees the culture of women-nature as a better model than culture of men-nature. Women's traditions and values are considered to have more values so that an environmental model that adopts feminine values will be better for the overall environmental system. This research provides a new breakthrough in efforts of forest and land fires prevention by prioritizing the role of women and local wisdom.

During this time, the forest and land fire prevention and handling efforts have almost always been the primary domain for men. The role and involvement of women have never been sought and institutionalized in a systematic and structured manner, and even tend to be forgotten. On the other hand, women are the parties who feel the most impacts and consequences of forest and land fires that cause smog. They must be involved in working, not only in the domestic household sector, but also work hard to recover and/or find sources of income that are burned/lost. They must look after and care for children, the elderly, and sick family members who exposed to the smog. They have to look for firewood or new sources of energy in more distant places because forests and land were burning. Involving women in preventing forest and land fires will also help reduce the burden that will be borne due to fire.

In connection with these problems it is necessary to identify various potential efforts to prevent the occurrence of hazards and recurring disasters of forest and land fires in Central Kalimantan, especially by prioritizing the role of women and local wisdom. Furthermore, it is also necessary to review, adapt and modify various forest fire prevention modules so that the role and involvement of women can be more active and maximal. The involvement of women is still very minimal and tends to be ignored in the overall management of forest and land fires in Indonesia. The results of the identification of the potential for involving women and the adaptation of the module need to be conveyed back to the community through interactive counseling as part of efforts to prevent forest and land fires. Counseling activities that tend to be one-way (monologue) will eliminate the opportunity to get critical feedback and responses from communities the user of forest and land fire prevention

modules. In relation to the danger of forest and land fires that occur almost every year, then it is necessary to identify various potential efforts to prevent the occurrence of hazards and repeated disasters of forest and land fires in Central Kalimantan, particularly by prioritizing the role of women and local wisdom. This study aims to identify the efforts of forest and land fire hazards prevention that prioritize the role and involvement of women and local wisdom.

## RESEARCH METHOD

This study uses a participatory approach that included in qualitative research. Data collection and the process of identification of the roles and involvement of women and local wisdom are carried out through focus group discussions (*focus group discussion, FGD*) to mothers and women in the Kereng Bangkirai Urban village. Informants in this study were 36 women purposively, which were used as primary reference data sources, in the community and the environment where they live have been regarded as important figures who have spearheaded the movement and the implementation of community activities in the environmental field in terms of involvement in overcoming the danger of fire. Women figures are considered to have been able to mobilize or (at least) be able to transmit the spirit to involve other community members to be involved or even actively participate in environmental issues. The selection of informants as informants carried out in this study also considers their social status as a married woman and each already had children. In addition, in-depth interviews were conducted (*indepth interview*) to several selected key figures and informants based on the researchers' judgment, among others an understanding of the local wisdom of the Dayak tribe; understanding towards the patterns, cultures and forms of women's participation, constraints and obstacles as well as possible solutions,- and her thoughts on the potential for women involvement in preventing forest and land fires.

## RESULTS AND DISCUSSION

### Identification of the Efforts of Forest and Land Fires Hazard Prevention that Prioritize Women's Roles and Involvement as well as Local Wisdom

Effective and efficient forest and land fire prevention measures, besides must be supported by basic knowledge about forest fires, it is also necessary to understand well the history of fires that occur in and around the area. The history of forest fires is useful for anticipating future fires through a process of learning from experience. From the history of forest fires will be known the number of losses value, the causes of fires, how fires can occur (*modus operandi*), and what efforts can be done to prevent forest and land fires, especially by increasing the role and participation of women and local wisdom.

### Forest and Land Fire

Forest and land fires in Indonesia occur almost every year during the dry season. Recorded several major occurrences of the forests and land fires, namely in 1982/1983, 1987, 1991, 1994, 1997/1998, 2002, 2005, 2006, 2015 and 2019. Based on NOAA-18 Satellite hotspots data from the Ministry of Forestry, one of the provinces that prone to forest and land fires is Central Kalimantan Province. Generally, land and forest fires in Central Kalimantan occur on peatland so that relatively difficult to extinguish and creates haze/smog.

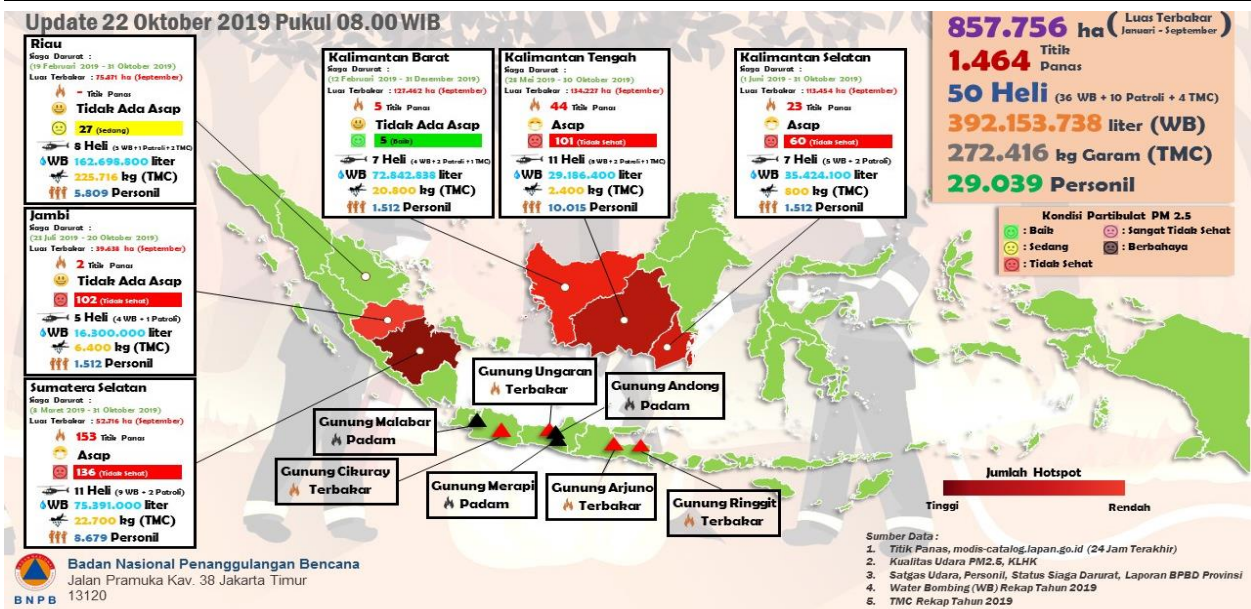


Figure 1. Forest and Land Fires in Indonesia

Source: BNPB Disaster Data, Information and Communication, 2019.

Data from the Ministry of Environment and Forestry notes that the area of burned peatlands reached 227 thousand ha. The largest forest and land fires in the peatlands located in Central Kalimantan with an area of 76 thousand ha, while in mineral land it occurs in East Nusa Tenggara, covering an area of 119 thousand ha. Forest and land fires in mineral land occur in all provinces in Indonesia with the smallest affected area in Banten Province with 9 ha. KLHK data recorded that the area of forest and land fires from January to September 2019 amounted to 857.756 ha with details of 630.451 ha of mineral land and 227.304 ha of peatland. The following is the area of land affected either minerals and peat in several provinces which often occur in forest and land fires each year. The area of land burned in Central Kalimantan Province 134.227 ha, West Kalimantan 127.462 ha, South Kalimantan (Kalsel) 113.454 ha, Riau 75.871 ha, South Sumatra (Sumsel) 52.716 ha and Jambi 39.638 ha. Based on KLHK data, the total land area up to September 2019 is greater than the area of forest and land fires in the last three years. The area of forest and land fires in 2018 amounted to 510 thousand ha, while in 2016 equal to 438 thousand ha (BNPB, 2019).

Data from the BKSDA of Central Kalimantan notes that forest and land fires in Central Kalimantan Province were mostly caused by human actions. This is conducted by the community as part of land preparation activities for planting activities as well as to clear abandoned land that is considered effective and efficient. By burning some people assume that land clearing work becomes faster, easier and cheaper.

Tacconi (2003) states that fires which resulting in forest degradation and deforestation have cost the economy up to 1,62-2,7 billion dollars. Costs due to smoke haze pollution around 674-799 million dollars; and these costs may be higher because the estimation of the economic impact on business activities are not available. According to Rafalis and Khunaifi (2008) in early June (2nd-12th June 2003) with a simple theory, the fire disaster of Central Kalimantan Province in just 10 days had caused a loss of more than 19 billion.

Research findings of Mutch et al. (1993), Tan-Soo & Pattanayak (2019), Martin (2019), Vukomanovic & Steelman (2019), Grennfelt et al. (2019), Kganyago & Shikwambana (2019), Bowman et al. (2019), Wasis (2019) stated that the impact of forest and land fires on the environment is very

broad, among others ecological damage, decreasing diversity of biological resources and their ecosystems, as well as a decrease in air quality. The impact of fire concerns various aspects, both physical and non-physical, directly or indirectly in various sectors, on a local, national, regional and global scale. It was mentioned, among others, in the aspects of health, environmental degradation (land fertility, biodiversity, air pollution, etc.), Greenhouse Gas emissions which subsequently led to global warming and climate change.

Syumanda (2003) mentions that there are 4 (four) important aspects as impacts resulting from forest and land fires, namely impacts on social, cultural and economic, impacts ecological and environmental damage, impacts on relations between countries, impacts on transportation and tourism. Forest and land fires can cause various losses in terms of health, economic, ecological and political aspects.

1. Health  
 The accumulation of smoke arising from forest and land fires will result in air pollution, which will have an impact on public health.
2. Economic  
 Losses due to forest fires can be seen from the economic side which is usually also related to the social and cultural side. The type of real loss is generally in the form of damaged or loss of value of forest stands, especially timber and other forest products for trade, aesthetics for tourism purposes, forest stand integrity for the benefit of social, cultural, religious activities and so on.
3. Ecology  
 Losses due to forest fires in terms of ecology or environmental interests are often not addressed, among others:
  - a. Flora and Fauna  
 Forest fires kill microorganisms on the surface and topsoil. Bottom vegetation is also generally burned so that many types of flora are lost, some species may disappear forever. Fires also damage nests, shelter for wildlife and animal food. In addition, fires can directly kill wild animals that cannot save themselves.
  - b. Nutrient Stability and Soil Physical Properties  
 In the event of a fire, high temperatures can damage a number of soil nutrients by breaking it

down, so that it becomes volatile or eroded. Repeated fires in an area cause damage to pores and soil texture.

- c. Ecological Stability  
Forest fires cause damage and disruption to the forest ecosystem and its functions, loss of biodiversity and loss of representation of the ecosystem of the area.
- d. Global Warming and Pollution  
Forest fires result in the accumulation of pollutant gases which at certain concentration levels become air pollution.

#### 4. Politics

The frequency and scale of forest fires (especially the large ones) have had political influence on ASEAN regional relations. The occurrence of haze/smog due to forest and land fires in Indonesia had led to protests of several neighboring countries to the Indonesian government which is considered to be less serious or even unable to conduct the forest and land fire disaster management handling.

### The Causes of Forest and Land Fires

The effort to recognize the characteristics of forest and land fires that often occur in Central Kalimantan is a preventive effort because with the recognition of these characteristics, we can understand the behavior of the threats so that steps can be taken to overcome them or at least reduce the possibility of their impacts. As the first step in the efforts of forest and land fires handling is the identification of prone areas. Areas that are prone to forest and land fires that threaten need to be understood by government officials and the community, especially those living in the prone areas. To identify the areas that prone to forest and land fires, then our first step is to find out the causes of forest and land fires. Based on the results of group discussions with residents in the Kereng Bangkirai Urban village and from various data obtained the information that the causes of forest and land fires, among others due to:

#### 1. Land Preparation

Preparation of land for farming, replanting of logged, Industrial Plantation Forest (HTI), oil palm plantations, various agricultural activities, transportation and others carried out in or around the forest are the main causes of forest fires in Indonesia. This is caused by negligence or intentional committed by individuals or groups.

This condition was also expressed by community members during a group discussion in Kereng Bangkirai. They said that the fire could have occurred as a result of land clearing by fire where even at the ground surface (on the ground) the fire seemed to be extinguished, but apparently below the ground surface (under ground) the fire still harbored embers. Especially on peatlands, these embers then gradually burn peat, so that causing a fire.

Land clearing by burning is still the easiest, cheapest, and fastest way to do it. In addition, there is no more effective and efficient solution from the government for land management without burning (*zero burning*). Therefore, local farmers still carry out land burning activities for farming or gardening.

Based on the experience of the residents of Kereng Bangkirai, suggested several efforts to prevent forest and land fires, namely:

- Alternate Burning. To avoid fire and haze/smog disasters caused by simultaneously and uncontrolled burning, it is recommended that residents report and plan land clearing activities in

groups and take turns. Burning grouping is done in the area or location that is adjacent so that there are more parties watching the fire, because the burning activities are carried out in groups and take turns.

- Boundaries Trench. The making of firebreaks above the land surface, especially on peatlands, may still be less effective in preventing fires, according to some residents in Kereng Bangkirai. Therefore, it is recommended that before the burning, conducted the making of firebreaks in the form of a trench that is hoed with a width of at least 2 hoes ( $\pm 60$  cm) with sufficient depth, half a meter or more, as a barrier to the area that will and is not burned. The deeper and wider the trench of firebreaks that can be made, the better it is to prevent and block the fire.

- Burning time. During the dry season, peat becomes drier so it becomes more flammable. It is recommended that land clearing by burning conducted at the beginning, not the end of the dry season.

#### 2. Hunting for wildlife and fish

Hunting of wild animals and fish hunters in the forest generally uses fire for various purposes, among others for camp fires and cooking in camps, for herding animals, smoking the catching fish or smoking the meat into beef jerky and others. Negligence of hunters and fish hunters that can be a source of fire is usually in the form of negligence does not extinguish the fire or embers before leaving the forest and throwing cigarette butts or matchsticks that are still burning carelessly in the forest.

#### 3. Collection of honey

In addition to using fire for purposes such as wildlife hunters and fish finders, namely for campfires and cooking, honey bee collectors generally use fire to drive bees out of the nest which will be harvested its honey. Failure to turn off fires and embers as well as cigarette butts and matchsticks that still ignite before leaving the forest can be a trigger for forest fires.

#### 4. Outdoor recreation

The use of fire in outdoor recreation in the forest, especially for campfires, cooking and smoking. Forest fires in several tourist forests are reported to be a lot due to negligence of tourists, especially campers. The increase in outdoor tourism should be balanced with increased vigilance and awareness of the dangers of forest fires so that existing tourism resources are maintained.

#### 5. Logging and other activities

Negligence of workers and the use of machinery such as chainsaws, tractors and bulldozers for logging operations and other logging activities in the forest can cause fires. Sparks from these machines, coupled with combustible materials such as gasoline, diesel or kerosene can cause a fire that if not immediately known and prevented can spread into forest fires.

#### 6. Other negligence

Various negligence from people in and around the forest can cause forest fires. Disposing of cigarette butts, matchsticks or other objects that are still burning by people which passing by in the forest, either the walkers, land or water or air vehicle passengers when hit on dry fuel can trigger forest fires.

Children who play using fire in or around the forest can also be a cause of forest fires.

#### 7. Intentionality

The act of intentional burning of forests may be carried out for two conflicting reasons. Intentionality for good reasons carried out generally to manage habitats, for example to stimulate the growth of grass in grazing land, stimulate the growth of desirable vegetation types while eliminating unwanted vegetation types, reduce the volume of fuel and so on.

Burning forests for bad or destructive reasons is usually done by people because of revenge or dissatisfaction with the forest manager or the government or just to fulfill the pleasure of watching the blazing fire. Such actions must be watched out for.

#### 8. Lightning

Lightning that strikes the trees in the forest can cause forest fires. This often happens in sub-tropical countries where lightning is not always accompanied by rain. In tropical regions like Indonesia, lightning is almost always accompanied by rain so that even if lightning strikes and burns trees, flames can be immediately extinguished by the coming of the rain.

#### 9. Volcanic Eruption

Volcanic eruptions that are common in Indonesia are often reported as the cause of forest fires. Because smoldering objects and smoldering lava can burn forests on mountain slopes. Such natural events should also be considered in the management of forest fires.

#### 10. Dry Wood Friction

Although it rarely happens, in theory, dry wood friction that occurs in the long dry season can also be a cause of forest fires, so it is not surprising if there is a fire spreading in remote areas and there is no indication of human activity around it.

### The Role and Participation of Women in Fire Hazard Prevention in the Perspective of Local Wisdom

Forests play an important role in the life of local communities (Dayak). Forests are not only to fulfill economic needs, but also to fulfill ritual functions, and the survival of the community in the future. The disruption of the forest function in the life of this community, will encourage the emergence of social conflicts such as those that occur between the community and the concession holders and the oil palm plantations businessman that developed a lot today. The findings of this study suggest that the role of women is important to the environment. This finding is supported by (Astuti, 2012) that environmental problems are also related to ecofeminism as an implication of feminist awareness on the environment. The awareness of feminist women towards the exploitation of nature makes them rise to play a role in saving the environment so that created an eco-friendly and Women friendly life. The key to this is participation and empathy for women in their role in the environment. Therefore it is necessary to understand local wisdom as a reference with the deconstruction of local wisdom so that appears a new local wisdom reconstruction that environmentally friendly.

This finding is supported based on the terminology of "ecofeminism" by Francoise D'Eaubonne through his essay *La feminism ou la mort Feminism* or the Death (Eaubonne, 1974). As a terminology that marries the concepts of ecology and feminism, ecofeminism by Warren, as discussed by Lorentzen and Eaton (2002), is likened to a philosophy that underlies or connects the diversity of feminist and environmental approaches. The connection between feminism and the environment is inseparable from the similarity of the situation and position of women and nature

which are always oppressed by patriarchal forces (Mies & Shiva, 2014)

In addition, the study of Priyatna et al. (2017) argues that domestic / feminine experiences as mothers and wives make them move to overcome and improve the environment around them. Although often regarded as something that simple and local, the activities and activism that they undertake with their communities can be categorized as an ecofeminism movement. Not only because of their position and status as housewives but also because the activities and activism were able to have an impact on environmental sustainability. In an eco-feminist perspective, women with all their specificities and knowledge are required to be present in managing nature and the sources of life. The involvement of women in the ecofeminist movement is important not only because of the issue of their uniqueness as women but also because their involvement plays a role in dismantling gender system issues in environmental management (Priyatna et al., 2017).

As stated Elbaar & Misrita (2019) that Ngaju Dayak culture in Central Kalimantan each individual in the family, both husband and wife have their own authority in accordance with existing social institutions and apply in society. Elbaar (2019) argues that women's roles are generally divided into domestic roles and public roles. In short, the domestic role is the role in the household (eg related to family food, raising children, cleaning the house and others), while the public role is the role outside the household (eg, related to livelihoods and social life). Domestic roles are often interpreted as being unproductive because they do not generate income. Instead, the public role is considered as a role that supports family income. The existence of Dayak women is important especially in Central Kalimantan in various spheres of life. The global issues about the feminism movement in Indonesia then seeped into regions and became one of the drivers to see the existence of women in various spheres of life. Where, Women have an important role in controlling climate change. With its potential, women can improve the environment.

In daily life, forests have an economic function to meet the necessities of life such as farming, searching for non-timber forest products: gemor, getah jelutung, resin, tengkawang, honey, medicines, rattan and rubber. *Alqadrie (2001)* reports that the presence of HPH has eliminated the livelihoods of people who are highly dependent on forests. Likewise with the condition that in Central Kalimantan, on the opening of one million hectares of land have been destroying the Dayak community effort in seven watersheds in Mengaktip resulting in losses of up to \$ 7 million at the exchange rate in mid-1997. *Cornelis Rintuh (1995)* states that around 80% of the HPH results capital flight from Central Kalimantan so that it is unable to create a multiplier effect in encouraging the economy in Central Kalimantan.

Research findings based on empirical studies, found that women can play a role directly or indirectly to prevent the dangers of forest and land fires based on a local perspective. The direct role is carried out when involved or intersect in activities related to forest and land use, direct participation in land opening or clearing by burning. The direct role of women is to ensure that the fire is really burning before they leave the location. If women are involved or accompanying in fishing or hunting activities, then women need to ensure that the fire for cooking rice, fish and the prey and boiling water has been completely extinguished, without leaving embers. This is very important to prevent forest and land fires.

The indirect role by continuously to inform, remind, convey about the causes and dangers of the forest and land fires to families, including their husbands, children, nieces and community members. Furthermore, women also play a role by continuously reminding and evaluating the actions of

family members and community members with respect to forests, land and fire. This action is expected to be a kind of deterrent so that all family members and community members are increasingly careful and alert in carrying out work related to forests and land.

Related to various local community businesses, the river becomes very important as a means of transportation and transportation of the community businesses results. Therefore, the location of the community's business location is always not far from the river and tributaries. Their attachment to this river causes a pattern of community settlement that spreads along the river. In this river, there is a Batang that not only functions as the toilet / MCK, but also functions as a means of information and communication. In addition, as a direction, generally Dayak people always relied when they stood on the riverbank. If they will go down to Batang they call it *ngiwa*, back to the top or to the land is called *ngambu*, to *ngaju* (upstream) and to *ngawa* (downstream).

In connection with the use and management of these natural resources, there are several traditional activities that must be carried out so that their efforts do not get disturbances from the spirits who inhabit the natural environment in which they are trying.

*Manyanggar* ceremony usually they conducted to open a new business as a way to ask permission from the spirits of the ancestors who inhabit the location so that their efforts get good results. Likewise with the *Pakanan Batu* ceremony, is a thank you to the agricultural equipment used, with the understanding that in the equipment there is a *gana* (spirit) so that in the next activity the equipment used will give good results to the owner. While *Manajah Antang* is a means to ask for guidance to the ancestral spirits of new, better business locations, for example for fishing or cultivation locations.

The philosophy of life of the Dayak community originates from the *Batang Garing* symbol embodied in the *manyanggar* and *memapas lewu* traditional ceremonies which are local wisdom with the principle of maintaining a balance of relations between people; human relationship with the universe and relationship with the Creator. The manifestation of local wisdom practiced in daily life is also in line with the concept of sustainable development as an effort to maintain the balance of the physical environment, economic environment and socio-cultural environment.

The basic reason for this balance is also reflected in the *Pahewan* concept which provides an understanding that efforts to preserve the environment must be supported by efforts to improve welfare and socio-cultural development in people's lives, so that in the dynamics of people's lives there is interaction and integration of values that encourage social transformation. In the area of management that they call with *eka malan manan satiar*, Besides from being a community business area, there are also cultural sites which are the identity of the Dayak community, so that efforts to preserve sustainability and prevent fires are part of what the community must do.

The Local Regulation of 1979 concerning the Dayak Ngaju Customary Law states that what is meant by *eka malan mana satiar* is the community management area which is located 5 km from the left and right of the river. The function of the management area is as farming, rubber plants, fishing, hunting, and looking for non-timber forest products such as gemor, jelutung, agarwood, medicinal plants and rattan. In this management area often founded cultural sites which are the *pasca Tiwah* (death ceremonial) equipment such as *sandung*, *pantar*, namely long poles leading to *lewu tatau* (heaven). This rationale/basic reason places the area of community management not only as economic interests, but

also as the identity of the Dayak community. Therefore the area must be preserved and protected from fire.

The practice of fire management has become an important part of the planting patterns of the Dayak tribe community. Ahead of burning, cultivators specifically clean the edges which bordering with wild shrubs and forests or make firebreaks. The purpose of making these firebreaks is that if later fires cannot spread to burn shrubs and forests outside the boundaries of fields.

The burning season must be suitable before the rainy season arrives. Farmers realize that the burning of slash and felling is the most dangerous activity of all field farming activities. Therefore, before burning, around the area that bordering with the forest / shrub / kampong is made the stub (cleaned) according to the need so that the fire does not spread / spread out of the cultivation area. This stub in terms of the community in the study area called *manatas*, the width of this manatas lane depends on the thickness of the bush that is cut down. The wider the manatas lines, the wider the buffer lines are but not more than 3-4 meters. The burning season is usually between August to October and it's depending on natural conditions. The burning time is carried out in the middle of the day, but in the long dry season it takes place in the afternoon at 15.00 WIB.

Usually after burning the cultivators/farmers do not directly plant rice or other crops. Every farmer always expects that the burning will occur evenly throughout the field so that the field is really clean, more evenly distributed would certainly produce a lot of ash wood that burned, so that food substances released is channeled as much as possible into the soil.

#### Customary Sanctions of the Dayak Community as Local Wisdom Related to Forest and Land Fires

Local communities recognize the provision of sanctions against the perpetrators or the cause of the fire that resulted in another man's field on fire called *kehun Apui* customary fine. *Kehun apui* is a customary fine if when burning the field, the fire propagates to the location of another person's garden or field (Damang Salilah).

*Article 26. Singer Manusul tana dia mansanan labih helu*  
*Singer manusul tana dia mansanan labih helu*, Meaning: Mistakes always burn the field by not informing the person who adjacent.

Whoever burns his/her field that is adjacent/borders to someone else's field, the fire spreads to other fields, the other fields do not burn completely, he/she does not want to deal in advance, the person concerned is punished by the custom /adat paying a fine of Rp.30,- (1970) every pad that borders that is damaged does not burn properly, except if there is someone's garden on fire, then it is included in the case of burning the fields.

*Article 27. Singer Manusul dia manatas*

*Singer manusul dia manatas* meaning : a charge on a guilty person burning the field without tatas then if he/she is farming very close to a person's garden, he/she must notify the people whose garden is near his/her field, should before burning the field firstly make the tatas above the ground at least 2 fathoms/depa width so that the fire does not spread across the tatas.

The second must be one week previously the cultivator/farmer tells the people who have a garden, so that together guarding the fire. Anyone who burns their fields that bordering with other people's fields by not informing them first, then the guilty person first pays to the village custom with a singer of Rp. 90,- (1970) and secondly pay according to customary decisions according to the side by side damage, he/she must pay.

**Article 29. Singer Tusul Dirik Tana**

*Singer Tusul Dirik Tana* meaning : a charge on a guilty person burning a slash of fields that have not yet been cut. Anyone who guilty of burning slashes in a field that has not yet been felled, is punished by the custom/adat by his/her mistake intentionally or unintentionally, paying Rp. 20, - (1970) to people who own fields.

The Local Regulation of 1979 on the Dayak Ngaju Customary Law states that what is meant by *eka malan mana satiar* is the community management area which is located 5 km from the left and right of the river. The function of the management area is as farming, rubber plants, fishing, hunting, and looking for non-timber forest products such as gemor, jelutung, agarwood, medicinal plants and rattan. In this management area often founded cultural sites which are the *pasca Tiwah* (death ceremonial) equipment such as *sandung*, *pantar*, namely long poles leading to *lewu tataat* (heaven). This rationale/basic reason places the area of community management not only as economic interests, but also as the identity of the Dayak community. Therefore the area must be preserved and protected from fire.

Forest and land fires are disasters that recur almost every year. Various efforts to reduce the number of forest and land fires have been carried out both preventively and by law enforcement with all laws and regulations and policies from the central to the provincial level.

Central Kalimantan Province has regulations that govern the institution of Forest and Land Fire Control namely :

- Regional Regulation of Central Kalimantan Province No. 5 of 2003 on Forest and / or Land Fire Control.
- Central Kalimantan Governor Decree No. 77 of 2005 on Guidelines for the Implementation of Forest and Land Fire Control in the Province of Central Kalimantan.
- Central Kalimantan Governor Decree No. 78 of 2005 on the Technical Guidelines for Forest and or Land Fire Control in the Province of Central Kalimantan.
- Decree of the Governor of Central Kalimantan on the Establishment of Operational Control Nodes Post / Pos Simpul Kendali Operasi (Posko) of the Forest and Land Fires Management (renewed annually).

**CONCLUSION AND RECOMMENDATION****Conclusion**

Women can play directly or indirectly to prevent the dangers of forest and land fires. A direct role is carried out when involved or intersecting in activities related to forest and land use. For example when doing or joining a husband or family to conduct opening or clearing the land by burning. The direct role of women is to ensure that the fire is really burning before they leave the location. If women are involved or accompanying in fishing or hunting activities, women need to ensure that the fire for cooking rice, fish and game animals/prey and boiling water has been completely extinguished, without leaving embers. This is very important to prevent forest and land fires.

The indirect role of women in preventing forest and land fires is to always and continuously inform, remind, convey about the causes and dangers of forest and land fires to families, including their husbands, children, nieces and community members. Furthermore, women also play a role by continuously reminding and evaluating the actions of family members and community members in relation to forests, land and fire. This action is expected to be a kind of deterrent so that all family members and community members are increasingly careful and alert in carrying out the work related to forests and land.

**REKOMENDATION**

The enhancement of the participation and involvement of women in the prevention of forest and land fires can be done through campaigns and socialization of land and forest fire control policies, especially by involving religious and community leaders; Early detection and establishment of effective and responsive coordination mechanisms for the dangers of forest and land fires; The making reservoirs (retention basin) and artesian well installations in each fire-prone area in preparation for fire fighting; involved in the Campaign to make firebreaks, especially among the land, plantations, agriculture with forests, by being dug up or ditches; involved in monitoring the land burning for land clearing strictly; involvement in the reduction of land clearing by burning and conduct the replanting in areas that have been burned with heterogeneous plants; involvement in the development of land clearing technology without burning, for example, making compost, charcoal briquettes, and others.

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