

## Impact of Forest Fire to Economic and Environment in Riau Province Indonesia

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**Abstract:** This study discusses issue of the environment in the province of Riau, Indonesia because of impact the forest fires into environmental. There are two important factors of forest fires, namely natural factors and human factors of the loss forest fires on forest ecosystems of various benefits and other potential contained in it, including biodiversity. In 1997-1998 according to WWF (World Wildlife Fund) and the Canadian IDRC'S Economic and Environmental Project in South East Asia (EEPSEA), the value of losses from forest fires reached 1.45 billion dollars (US). This year is the worst haze in the whole areas, according to the Center for International Forestry Research (CIFOR) estimates losses caused by catastrophic forest fires and haze in Indonesia reached >Rp200 trillion in the Indonesia-Malaysia-Singapore.

**Keywords:** Forest, economic, environment, Riau, Cifor

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### INTRODUCTION

Lately, environmental issues happened is air pollution increasingly displaying very poor conditions. Sources of air pollution can be from a variety of activities such as industry, transport, offices and housing. This activity is the largest contribution of air pollutants are discharged into the atmosphere. Sources of air pollution can also be caused by a variety of outdoor activities such as forest fires, volcanic eruptions, toxic natural gas and others. The impact of air pollution is causing a decrease in air quality which has a negative impact on human health.

Land and forest fires are disasters that are always associated with environmental issues. Environmental issues, in addition to the reduction of biodiversity, air increased. Air pollution from forest fires is not only felt by people around the forest but also include other provinces even to cross borders. The impact of fire that is perceived human form of economic loss and benefit of the potential of forests such as forest tree stands are commonly used by humans to meet their needs for building materials, foodstuffs and pharmaceuticals as well as animals to meet the demand for animal protein and recreation. The other disadvantage is the reduced form of the loss of ecological forest area, unavailability of clean air produced forest vegetation and loss of forest functions as a regulator of water and prevention of erosion (Fachmi, 2014). The global impact of land and forest fires are directly impacting air pollution from smoke produced resulting in respiratory distress and interfere with daily activities.

Table 1 shows the data of the Ministry of Environment and Forests of data 2010-2015 forest fires 29 provinces in Indonesia as follows: It is not only forest fires such as environmental issues Natural hazards: floods, droughts, tsunamis, earthquakes, volcanoes, forest fires, mud volcanoes, landslides, industrial waste, tourism waste, hospital waste. To solve this problem which should be done is Preserving the environment is a necessity that cannot be postponed again and not just the responsibility of government or heads of state but rather the responsibility of every human being on earth. Everyone should make an effort to save the environment around us in accordance with their respective capacities (Isyana, 2015).

### MATERIALS AND METHODS

**Forest and land fire in Riau province:** Forest and land fires in Riau Province happened since 1997, high attention to this incident in 1999, estimates the amount of land exposed to fire reached 750,000 ha where the haze to Malaysia and Singapore. Losses because of forest fire in Singapore and Malaysia about US\$ 14-20 billion. In 2004, No. <1,008 ha of land in Riau burned. In this year the Minister of Environment and Forestry explained, land and forest burning in Riau Province reached 174 thousand hectares. Weather forecasts in early 2016 Riau Province will experience the summer or dry earlier than other area and then of courses this could cause similar problems if not anticipated as early as possible.

**Table 1: Data of forest fire in year 2010-2015 (ha)**

Province	2010	2011	2012	2013	2014	2015
Aceh	5,00	-	13,00	-	155,66	-
Bali	10,10	-	250,00	60,50	30,00	-
Banten	-	-	-	-	2,00	-
Bengkulu	-	0,50	-	-	5,25	-
Jambi	2,50	89,00	11,25	199,10	3.470,61	2.217,00
Jawa Barat	-	1.278,55	1.945,50	252,80	552,69	1.029,70
Jawa Tengah	-	712,24	454,00	31,20	159,76	424,73
Jawa Timur	204,90	48,35	2.960,05	1.352,14	4.975,32	553,30
Kalimantan Barat	-	-	577,40	22,70	3.556,10	995,32
Kalimantan Selatan	-	-	60,50	417,50	341,00	185,70
Kalimantan Tengah	-	22,00	55,15	3,10	4.022,85	1.220,40
Kalimantan Timur	-	148,80	51,50	-	325,19	109,00
Lampung	106,00	31,00	-	-	22,80	10,00
Maluku	-	-	-	-	179,83	-
Maluku Utara	10,00	-	-	-	6,50	-
Nusa Tenggara Barat	2,00	-	-	12,00	3.977,55	-
Nusa Tenggara Timur	95,00	-	553,20	649,90	980,87	3,05
Papua	39,00	-	-	-	300,00	177,40
Papua Barat	1,12	-	-	-	-	-
Riau	26,00	74,50	1.060,00	1.077,50	6.301,10	2.643,00
Sulawesi Barat	-	-	-	-	-	-
Sulawesi Selatan	28,00	31,75	45,30	40,50	483,10	762,05
Sulawesi Tengah	-	-	30,83	1,00	70,73	-
Sulawesi Tenggara	16,00	85,90	346,10	13,00	2.410,86	284,31
Sulawesi Utara	-	-	1,80	0,25	236,06	-
Sumatera Barat	56,00	-	3,50	-	120,50	0,25
Sumatera Selatan	-	84,50	-	484,15	8.504,86	476,57
Sumatera Utara	80,00	5,00	1.181,00	295,40	3.219,90	146,00
Yogyakarta	2.818,50	-	6,45	6,00	0,27	-

[http://sipongi.menlhk.go.id/hotspot/luas\\_kebakaran](http://sipongi.menlhk.go.id/hotspot/luas_kebakaran)

**Caused of forest fire:** Forest fires and associated land by unscrupulous government and public agencies, including farmers, plantation companies and Industrial Timber Estates (HTI). Some factors contributing to forest fires, among others:

- El Nino weather phenomenon which led to almost all parts of the Indonesian archipelago was dry, not a source of forest fires in Sumatra and Kalimantan
- Based on the report of a research institute, the human factor is the cause of forest fires in a number of provinces. About >90% of forest fires caused by humans or intentionally burned

**Individual (Community):**

- Use of fire in land preparation
- Forest management systems
- Habits of the people burn garbage, especially, anywhere
- Smoking habits so throw away any pieces of cigarettes
- Illegal logging
- Forest encroachment migration of the population in forest areas (forest dwellers)
- The need for Forage Animal Feed (HMT)
- Another cause could be the trigger fires is factor of the lack of public awareness of the dangers of fire

**Private company:** Generally companies do habits burn land clearing costs to be more efficient. The cost of clearing land by burning only need Rp600-800 thousand per ha whereas without burning need Rp3.4 million per ha for land clearing. Research data from CIFOR take notes that there is an increase in land prices around Rp3 million after the burning of the area. Normal land prices range from Rp8 million and after the burn to Rp11 million per ha. Once planted with oil, the price doubled again, about USD 50 million and could reach Rp100 million per ha when planted with palm oil quality seeds.

**RESULTS AND DISCUSSION**

**Impact of forest fire:**

- Here are some of the consequences caused by the forest fires and other air quality decline due to the smoke arising from the forest fires in Riau region adversely affected
- Public health, it can be seen impact of increasing number of patients with Acute Respiratory Infections (ARI) and even death
- Threatens the sustainability of various protected wildlife
- The environmental damage
- The poverty rate increases

- The loss of a number of livelihoods that depend around the forest products
- Disruption of daily activities because of smoke
- Increase the number of pests
- The economic impact

**Economic impact to forest fire and haze:** In 1997-1998 according to estimates by the WWF (World Wildlife Fund) and the Canadian IDRC'S Economic and Environmental Project in South East Asia (EEPSEA), the value of losses due to forest fires that covered three countries (Indonesia, Malaysia and Singapore) reaches 1, 45 billion dollars (US). While the fires in 2014 about 620 billion cost of prevention. This year is the worst in the whole government, according to the Center for International Forestry Research (CIFOR) estimates losses caused by catastrophic forest fires and haze in Indonesia reached more than Rp200 trillion in Indonesia, Malaysia and Singapore. The calculation is calculated from the accumulation of economic calculation, the plants burning contaminated water, emissions and fatalities and transportation. A decline in turnover of 24.95% and a 25% increase in operational costs, losses in transportation services 50%.

Seven sectors that effect among others and transport sector, shipping services, also the trade, the accommodation provider of food and beverage services. Then the education and health services sector, plantation, construction and property and the banking sector. While the economic impact among other things, the cancellation of the land-water transportation schedules and air, loss of vegetation, especially plants that have high economic value, the cost of treatment of the community, the decline in industrial production and offices as well as the drop in tourism business (Rusby *et al.*, 2016). Impact of haze affects the transport sector to make the sales decline, rising prices of basic commodities caused due to disruption of distribution, the price of goods - retail goods raised 15-20%. While the prices of basic commodities have been increase by 10-15% follow by increase in fuel price subsidies.

**Effort to solve forest fire:** The Role of Government in Forest Conservation In conserving the government to be proactive and act as a driving force and as the main protector of the forest. The following things have to be done by the government (Metro, 2015). Supervising the implementation of permit requirements that have been given to the company as well as firmness. Firmness Law Enforcement Government in the measures taken should be thinking about sustainability. Government and law enforcement officials must also give the harshest

punishment to the perpetrators of illegal logging and the financiers behind the perpetrators of illegal logging. Faster to handle the problem of smoke, it means not to have been the center of a new emergency government can disburse funds to the regions. Here, required some issue in the central and local teams.

Promoting forest tourism by doing preservation of the forestry economy is reduced as a result of the termination of logging for the furniture industry, the paper and building materials. Instead the government can promoting forest tourism. The government could build a nature that had been built in some places, for example in the forest park "Gunung Leuser" North Sumatra and "Ujung Kulon National Park" in West Java. The policy of all forests are protected areas, the government should implement a policy that all forests are protected areas which must be protected and preserved. Follow the weight to anyone doing illegal logging in every forest in the country. With this policy, the destruction of forests can be reduced gradually.

Target afforestation and reforestation post treatment, the government should conduct reforestation is right on target and had to do supervision and care after reforestation. Cares of the planted trees require funding that is not cheap. Especially for fertilizing and watering each tree planted. It is closely related to the success of reforestation process itself. Not infrequently planted trees damaged by the irresponsible or even a newly budding trees eaten by wild animals or even the cattle belonging to the community. If there is no supervision and care reforestation does not work with the optimum.

**Civil society against forest sustainability and reforestation:** Besides the government, the public must also play an active role in the preservation and reforestation. Without the participation and support of community forestry sustainability cannot be controlled. Here is some of the role of the community that is important in forest conservation in Indonesia. Eliminating habits of people burning trash with the process into fertilizer and other forms. Namely the separation civilizes regular trash with plastic and so forth. Instilling awareness importance of forests as has been described above. The forests as the lungs of the world and the planet depend on forests as a guard Earth's temperature to remain stable (global warming). Wherein if the forest is gone, the earth's temperature is not stable so that any damage other ecosystems will be one after another. Eliminate habits field move, for the farmers to avoid forest clearing for making fields on the move. It also causes damage to forests may still occur, especially in remote areas. Habits tree planting, people especially the younger

generation are expected to have a habit of planting trees in the environment where he lives. Good house area or on the edge roadside village. These habits need to be nurtured from an early age. Indeed, it is difficult to apply in urban areas. But this practice can still be applied in the villages and the major project for rural communities.

**The role of private enterprise:** Institutional environment that has been established as of local government and non-government agencies such as WALHI and the wider community need to take control of government policies that do not favor the interests of the people. In the corporate sector that directly manage local natural resources such as large corporate companies should pay attention to deal ISO-14000 which is mandated to improve the pattern of production of environmentally sound, build factories or companies green (green company) with the goal of safety, health and environment are maximized and patterns of production with zero waste.

### CONCLUSION

The impact of forest fire to the environment is very significant, haze caused by forest fire be able to go very far away according the wing direction, recent case haze blow up to several countries in South East Asia (SEA) especially for Malaysia and Singapore that caused by Sumatera fires. Impact of forest fire is not only for

environment but more on daily activities for the residence and local people, many flight delays and cancel made economic is stuck with not much movement of people. Data as shows in early, number of area fired caused by forest and this can solve while everyone is taking part according to the task and profession. Based on analysis, most of forest fired caused by local people fired to open the land for agriculture activities and need some socialization and education impact of forest fire to the environment. Beside that government and industries have to do some action for people who did fire and give fine and law action.

### REFERENCES

- Fachmi, R., 2014. Problem and impact to forest fire. J. Lingkar Widyaaiswara, 1: 47-59.
- Isyana, A., 2015. Economic impact of haze more than Rp20 triliun. Indonesia. [http://www.bbc.com/indonesia/berita\\_indonesia/2015/09/150917\\_indonesia\\_kerugian\\_kabutasap](http://www.bbc.com/indonesia/berita_indonesia/2015/09/150917_indonesia_kerugian_kabutasap). 17 September 2015.
- Metro, T.V., 2015. Economic losses because of haze to Rp200 Trillion. Indonesia. <http://video.metrotvnews.com/play/2015/10/31/446345/cifor-kerugian-ekonomi-akibat-kabut-asap-capai-rp200-tr>.
- Rusby, Z., Z. Hamzah, D. Karya and E.A. Kadir, 2016. Application of mudharabah financing toward small and medium entrepreneur in bank muamalat pekanbaru branch Indonesia. Intl. Bus. Manag., 10: 778-783.