

## Forest and Wetland Fire in Ogan Ilir Regency

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**Abstract** – Forest fires and wetlands has become one of the most serious issues faced by Indonesia these days. Wetlands is an area with a high potential for fires, especially when entering the dry season. Fires keeps occurring in forest and lands all over Indonesia, including Ogan Ilir Regency, South Sumatra Province. In topography, Ogan Ilir Regency was one of areas that has quite extensive wetlands. Data from the Regional Disaster Management Agency of Ogan Ilir Regency recorded that, as of September 2019, there were 738 hectares of land that burned during the year of 2019. Thi study aimed to map the occurrence of forest and wetland fires in Ogan Ilir Regency in 2019. The method used is the Geographic Information System (GIS), where data related to fire is processed through the Geographic Information System (GIS) application. The data obtained is secondary data from the Regional Disaster Management Agency of Ogan Ilir Regency. From the results of the forest and wetland fires mapping in Ogan Ilir Regency, it is discovered that areas where forest and wetland fires often occur are in North Indralaya District, Pemulutan, and West Pemulutan. From the results of this mapping, identification of forest and wetland fire causes can be carried out, especially in sub-districts where fire occurrences are most frequent, so that effective prevention and mitigation efforts can be determined to dealing with this incident in the future.

### I. INTRODUCTION

Wetland is a land that is permanently or seasonally flooded with water or has high

water content [1]. Wetland occurs in every countries and climate zones, poles to tropics, highlands to dry lands[2]. Its ecosystem includes swamps, peat lands, mangroves, river, lake, delta, flood forest, flood runoff, coasts, crop fields to coral reefs [1,2,3].

Some wetland ecosystem has been converted into residential lands and agricultural lands in the forms of crop fields or ponds [4,5]. The increasing population became one of the main cause of wetland functional shift. The population growth I directly proportional with the increasing need for lands to settle and grow crops. However, the negative impact of this functional shift is closely related to the occurrences of land fires.

According to history, the world's biggest forest and wetland fire occurred in 1997 with a total of 25 million hectare lands burnt worldwide [6,7]. In 2015, a large scale of fire occurred in Indonesia. Regional Disaster management Agency data shows that the 2015 Indonesia fire occurred to 2.089.911 ha lands or 32 times the size of DKI Jakarta [8].

Forest and wetland fire in Indonesia currently is seen as regional and global disaster. This is caused by the spread of forest and wetland fire impact to neighboring countries and emitted gases (such as CO<sup>2</sup>) potentially causes global warming [9].South Sumatera is the second province after Kalimantan which provides forest fire smog, and Ogan Ilir is one of regencies in South Sumatra Province where forest fire often occurs. Based on notes from Forestry Office of South Sumatra Province,

Ogan Ilir forest and wetland fires was recorded to occur in 2014 to 17,728 ha lands, in 2015 to 12,297 ha lands, in 2017 to 2,614 ha land and in 2018 to 3,925 ha lands [10].

Forest and wetland fire often occurred in dry season. This study aimed to provide a description of areas where forest fire and wetland in Ogan Ilir Regency through *Geographic Information System (GIS)*.

## II. METHOD

This study is a descriptive study where it provides description of forest and wetland fire

locations in Ogan Ilir Regency. The data processed is a fire incident data which occurred in Ogan Ilir Regency through the year of 2019 which was recorded up to September 2019. Data analysis technique used *Geographic Information System (GIS)* to acquire fire incident mapping in Ogan Ilir Regency.

## III. RESULTS

The analysis shows that there are three districts in Ogan Ilir Regency where forest and wetland fire often occurred, which are in Kecamatan Indralaya Utara, Pemulutan, dan Pemulutan Barat (Fig. 1)



Fig. 1. Forest and Wetland Fire Map in Ogan Ilir Regency in 2019

Villages where forest and wetland fire occurred the most are Lorok, Bakung, Sungai Rambutan, Pulau Semambu, Suak Batok and Palem Raya Village in Indralaya Utara District, Muara Baru Village in Pemulutan District, and Pulau Negara and Arisan Jaya Village in Pemulutan Barat District.

## IV. DISCUSSION

According to Brown (1973), fire process occurs through fire triangle which consists of three

components; fuel, oxygen and temperature which causes heat[11]. The fulfillment of these three components completed by chemical reaction, fire will continuously burn. Forest and wetland fire in Ogan Ilir Regency occur almost every year and in dry season. According to Regional Disaster Management Agency, fire

in Ogan Ilir is majorly caused by human negligence such as cigarette butt littering. Ogan Ilir Regency area I is dominated by wetland, where 65% of its area consists of swamps; glade swamps and tidal swamps [12]. In dry season, these areas would suffer fire because of its decreasing water contents. Aside from cigarette butt littering, locals' land management in dry season by burning also became the cause for the spread of land fires. Cost and efficiency factors became the reason for locals to burn their lands to open agricultural fields over it.

According to Seniorwan, et. al, factors that drive fire and wetland fires consist of topographical factor, human activity factor, climatology factor and government regulation factor [13]. Study carried by Seniorwan, et. al, shows that the most influencing factor in forest and non-wetland

areas in Luwu Timur, South Sulawesi is slope factor, land use/closing, and its distance from the road [13].

The negative impact for the environment and health from the forest and wetland fire occurrences is the smoke/smog and Upper Respiratory Tract Infection (URI). According to Perwitasari and Sukana, the increase of URI case in Batanghari Regency in 2008 is related to the increase of smoke produced by forest and land fires. Humidity and environmental sanitation are also the risk factors for the increase of URI case [14].

The occurrence of forest and wetland fire which happen almost every year has become the unfinished homework to this day. Prevention efforts must be maintained continuously to minimize and prevent forest and wetland fires from happening in the next years. According to Kamaliah, et. al, the forms of prevention of forest and wetland fire disaster includes; the provision of facilities and infrastructures for forest and land fires anticipation and management such as bore wells, human resources improvement through the forming of Community Fire Brigades, socialization of forest fire impacts, providing early warnings and strengthening the law against forest, wetland and crop land fire perpetrators [15].

## V. CONCLUSION

There are three districts where forest and wetland fires occurred the most in Ogan Ilir Regency, which are North Indralaya, Pemulutan, and West Pemulutan District

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