

# Forest and Environmental Fires in Sustainable Palm Oil for Independent Smallholders

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**Abstract**— *Farmers' understanding of several Indonesia Sustainable Palm Oil (ISPO) parameters, including land legality and forest fires, is the focus of this study. ISPO certification poses a risk to households with a diverse income structure. The threat posed by oil palm plantations to natural resources and the environment will continue to be significant challenges.*

**Keywords**— *ISPO; Oil Palm; Independent Smallholders; sustainability; environment; Forest fires.*

## I. INTRODUCTION

The plantation sector in Indonesia has developed into one of the country's most important non-oil and gas sources of foreign exchange [1]–[3]. In 2016, the total production of oil palm plantations in Indonesia was 33.23 million tons. Large private companies manage 54.64 percent of the nation's oil Palm plantations [4], [5]. The pattern of self-help productivity is lower than that of large corporations. The expansion of oil palm plantations is an important keyword to understand the scope of the oil palm problem in Indonesia. CPO production centers in the provinces of Riau and North Sumatra account for 23.75 percent and 16.24 percent of total CPO output [6].

The Indonesian oil palm plantation industry is confronted with a number of challenges [7], [8]. A common accusation leveled against the palm oil industry is that it is unsustainable [9]–[11]. Using the Indonesia Sustainable Palm Oil (ISPO) certification, the Indonesian government seeks to mitigate the negative perception of palm oil. Indragiri hilir region has three distinct patterns of oil palm plantation management [12], [13]. Lower Indragiri is characterized by land typologies, tides, and coastal areas that characterize the downstream geographical conditions of the river [14]. The selling price of FFB received by independent smallholders is significantly lower than that received by PIR pattern farmers (people's core company). Based on the description above the research aims to identify the role of farmers in the sustainable palm oil industry [15], [16].

## II. RESEARCH METHOD

### 1. Research Sites

The research was carried out on smallholder oil palm plantations (smallholders) in three villages in the Indragiri Hilir Regency. The goal of this study is to determine how well independent oil palm farmers are prepared to deal with the Indonesian Sustainable Palm Oil (ISPO) policy. The expansion of oil palm plantations into forest areas poses a significant threat to the long-term viability of palm oil production, with the majority of the threat stemming from deforestation activities.

### 2. Data Analysis

Data was gathered through a survey method involving a questionnaire as well as in-depth interviews. There were as many as 30 respondents per village chosen at random, with a margin of error of 20%, assuming that this number met the minimum number of respondents required to be surveyed. The researchers carried out their investigation from November 2019 to March 2020. They are primarily concerned with the livelihood aspects of land, seeds, and the environment. This study is limited in scope because it is only concerned with implementation of the ISPO assessment principles for smallholders.

### III. RESULT AND DISCUSSION

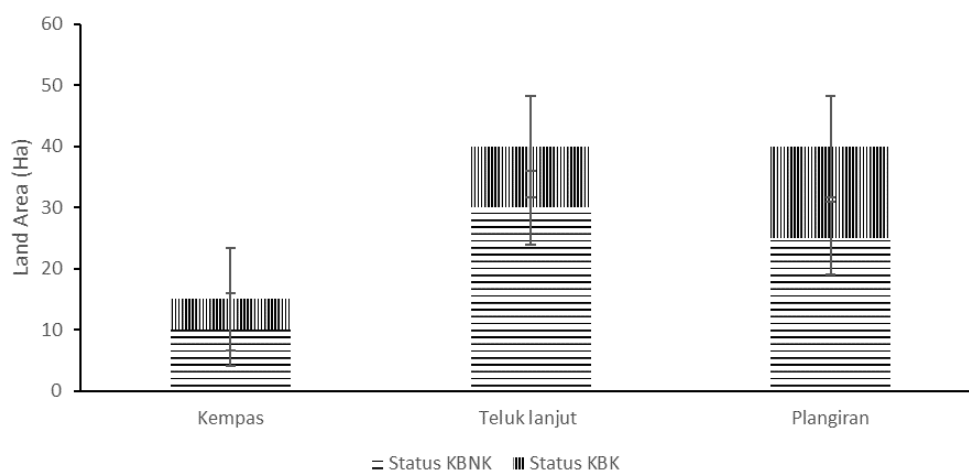
There are very few independent household farmers whose livelihoods are dependent solely on the support of oil palm plantations in the field, according to the facts on the ground [3], [17], [18]. The greater the importance of the oil palm plantation sector as a source of livelihood within the structure of the farmer's livelihood, the greater the likelihood that they will be more prepared to implement ISPO certification [19], [20].

Figure 1 shows that the livelihood structure of independent smallholders in three non-oil palm villages does not generate the majority of their income, despite the fact that they are self-sufficient [10], [21]. It can be seen that the real source of income from oil palm plantations is not significant enough to support the claim that these three villages are the hubs of community oil palm plantation [22]. Unless the independent oil palm farmer household expands their land (which will result in extremely serious environmental consequences), they will not be able to increase the economic contribution of the oil palm [21]



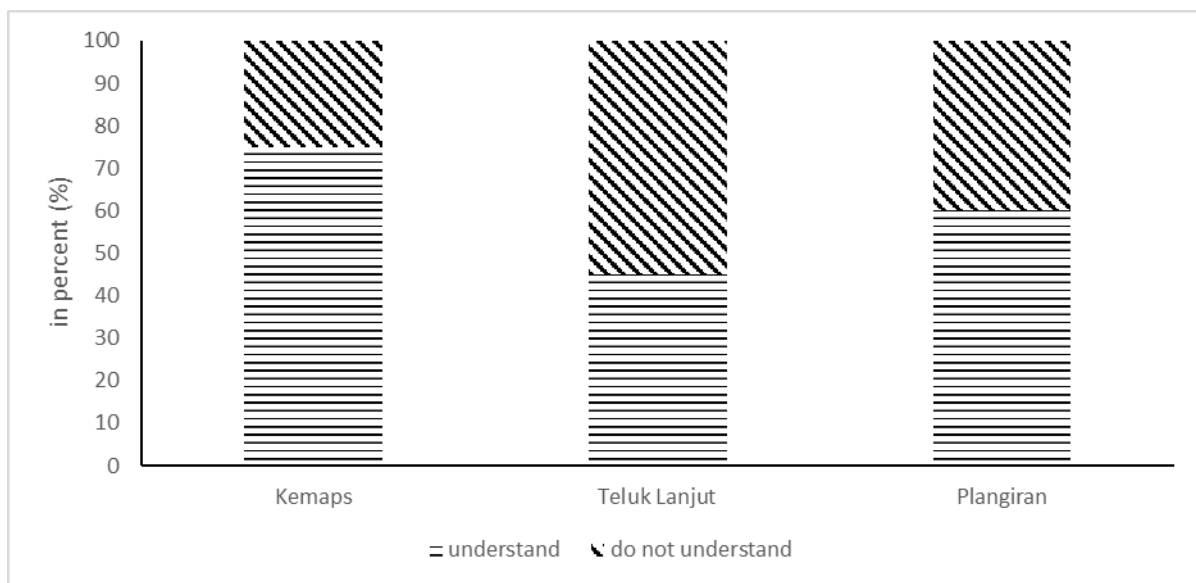
**FIGURE 1: Household infrastructure in Kempas Jaya Village, Teluk Continue Village, and Plangiran Village that is self-sustaining.**

Indonesia's Ministry of Agriculture, Permentan OT.140 3/2011, issued a decree prohibiting the use of genetically modified organisms (GMOs) in food production [23]. Independent palm oil farmers in Indonesia will be able to become certified under the ISPO certification scheme [1]. Having oil palm plantations in the Forestry Cultivation Zone indicates that you are in the second status, which is indicated by the presence of these plantations (KBK) [24]. Planting oil palm on land with this designation is prohibited by law and does not comply with the principles of sustainability in plantation cultivation [25].



**FIGURE 2: Individual independent palm oil farmer households in three research villages had a varying average area of mastery, which was measured in hectares, depending on their location and legal status (Ha).**

As depicted in Figure 2, the agrarian structure of illegal oil palm plantations (oil palm in the Forestry Cultivation Area / KBK) in three villages is extremely low when compared to oil palm plantations on legal land (oil palm in the Non-Forestry Cultivation Area / KBNK), which is extremely high when compared to oil palm plantations on illegal land (oil palm in the Non-Forestry Cultivation Area). As evidenced by this finding, independent farmers in the three villages have had no problems with the legality or status of their cultivated land [7], [26]. Moreover, this fact implies that all oil palm production originating from the three villages is not at risk from agrarian conflicts, degradation of environmental quality, or unsustainability, thus enabling it to be certified by the International Sustainable Palm Oil Organization [27]. Many oil palm plantations are being established in conservation areas (forest conservation land) or production forest areas, resulting in the area being labeled as illegal land by the local authorities [28]. It is common knowledge that illegal land is associated with the pattern of oil palm expansion carried out by independent oil palm farmers as a result of a scarcity of available land in the area during a particular period in time [29]. The possession of land certificates can also serve as evidence of legal ownership of land in certain circumstances [30]



**FIGURE 3: Farmers' Knowledge in Environmental Management**

A gap analysis is being conducted in three villages as part of this study [31]. From the farmer's perspective, chasm differences are enforced in multiple interpretations of ISPO certification principles [20]. The level of knowledge that farmers have about palm oil that is independent of the ISPO principles is referred to as diversity. Self-help groups apply pesticides to oil palm plantations at varying dosage levels [32], [33]. While pesticides are used to control pests, they also have the potential to cause environmental damage [34]. The use of independent palm oil for gardening purposes is still not being implemented intensively or extensively in third-world countries.

In the three research locations, fire prevention activities were deemed less important because villages were rarely affected by land fires [27], [35]. As a result of the expansion of monoculture palm plantations on the lands of coconut plantations, several types of plants are becoming increasingly scarce. The deliberate extermination of more than a dozen species of animals was carried out [16]. Government efforts to help smallholders to strengthen principles of natural resource management and environment adequately, very crucially, and critical.

Independent smallholders are encouraged to participate in certification processes because of the dominance of oil palm products [16], [36]. Farmers in rural areas of developing countries have three sources of income: farm income, off-farm income, and nonfarm income [37]. This study will be simplified into three sources in order to make classification easier. These conditions include ensuring that smallholders are not disadvantaged by the low proportion of their income derived from oil palm farming, and that lands are not excluded from certification [16].

Indonesia's CPO credibility in international markets will remain low or gloomy as long as the livelihood structure of independent oil palm farmer households does not improve fundamentally [38]. The current livelihood condition is not ready for ISPO certification process unless fundamental improvements are made to the productivity aspect first [39].

Land certificates [40], [41], which are one of the requirements for ISPO certification, had not yet been obtained in all cases, according to the findings [24], [42]. In the three study locations, land certificates were not available to nearly all independent coconut farmers. Instead, they were restricted to Land Certificates (SKT) or Compensation Certificate (SKGR).

#### IV. CONCLUSION

Independent oil palm farmers are not prepared to face ISPO implementation, according to research carried out in Indonesia. The income from palm oil is not their primary or dominant source of income, the findings found. It is possible to establish the legality of independent smallholders because the majority of oil palm cultivation plantations have received compensation letters.

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