

## Impact of Indonesian Sustainable Palm Oil (ISPO) Certification to Environmental Behavior of Palm Oil Plantation Companies

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### ABSTRACT

*In order to realize sustainable palm oil plantations and to overcome negative impacts of it, Indonesian government has required Indonesian Sustainable Palm Oil (ISPO) certification to palm oil plantation companies. After 10 years of implementation, it is important to know the impact of ISPO certification on environmental behavior of palm oil plantation companies, especially related to deforestation and land fires. Using qualitative method, this study investigates environmental behavior changes in seven palm oil plantation company related to deforestation, and land fires as results of ISPO certification and to analyze the cause of the changes. This study showed that the implementations of ISPO certification are able to change the company's environmental behavior to reduce forest conversion in concession areas and increase conservation areas as a fulfillment of ISPO principles and criteria. The change of those company's environmental behavior caused by the pressure to issue ISPO regulation, the influence of the company's internal stakeholders in responding and understanding ISPO, and encouragement to get easy finance access from banks.*

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### Keywords:

*Certification; Environmental Behavior; Palm Oil Plantation Companies; Deforestation; Land Fires*

### 1. Introduction

Palm oil is one of the plantation commodities that takes a strategic role, for it has a great potential to be a source of the country's foreign exchange. It is considered as a sector that can provide a rapid source of income for developing countries and is regarded as an economic boon for thousands of people living in tropical villages, even though the benefits are still not evenly distributed (Oudenhoven et al., 2011). The result of a study from Syahza (2007) found that the development of palm oil plantation can reduce the inequality income among regions/towns, create an economic multiplier effect and improve the rural communities welfare and the exports of Crude Palm Oil (CPO) can stimulate the regional economic growth. Palm oil production is a beneficial source of income by offering a high return of land and labor and generating large amounts of export income so that it functions as an important tool for rural development (Brandi et al., 2013). The area of Indonesian palm oil plantations increased 12 times from 1990 to 2018, which is from 1.12 million ha to 14.32 million ha then followed by 16 times rose in crude palm oil production, which is from 2.41 million tons to 40.56 tons (Ditjenbun, 2018). The large palm oil plantation areas in Indonesia

spread in Sumatera (59%), Kalimantan (34,7%), Sulawesi (3,7%), Papua-Maluku (1,7%), and Java (0,9%).

On the other hand, the rapid expansion of palm oil plantations has severe negative impacts on ecological and social sustainability, including a large carbon footprint, deforestation, biodiversity decrement, and conflicts over land rights (Brandi et al., 2013). The commercial development of oil palm plantations is responsible for accelerating deforestation starting from the 1990s to the present (FWI, 2017). It is estimated that around 12-15 million ha of forest in Indonesia have been lost, including tropical forests with extremely high biodiversity and peat swamp forests that have been licensed for palm oil developments (Carlson et al., 2013; McCarthy, 2010; Brandy et al., 2013). The clearing of natural forests for palm oil establishment affects the decrease of Orang Utan, Gibbons, Tigers, and other special species such as the Muscicapidae bird family (Meijaard et al., 2018). The expansion of palm oil plantations also causes a 30-40% reduction in water discharge in the sub-watershed area (Taufiq et al., 2013).

Many initiatives appear due to many complex issues of palm oil plantation, ranging from international commitments like Amsterdam Declaration, voluntary promises by companies (example: zero-deforestation commitments), voluntary certification standards, to national policies governing land allocation in oil palm production such as Indonesia's moratorium on forestry permits (Meijaard et al., 2018). The relation between palm oil production and deforestation encourages World Wide Fund for Nature (WWF) to collaborate with Aarhus United UK Ltd., Karlshamns AB (Sweden), Malaysian Palm Oil Association (MPOA), Migros Genossenschafts Bund (Switzerland), Unilever NV (Netherlands) to establish the Roundtable on Sustainable Palm Oil (RSPO) in 2004 (RSPO, 2016).

In the Indonesian case, the development of sustainable oil palm plantations is not only a market demand, but it has also become a mandate of the Law Number 39 of 2014 about Plantations states that the management of plantations is aimed at (1) improving the welfare and prosperity of the people; (2) increase the country's foreign exchange sources; (3) providing employment and business opportunities; (4) increase production, productivity, quality, added value, competitiveness and market share; (5) increase and meet the needs of domestic consumption and industrial raw materials; (6) provide protection to plantation business actors and the community; (7) manage and develop plantation resources in an optimal, responsible and sustainable manner; and (8) increasing the utilization of plantation services. Efforts made to fulfill the mandate of plantation management must be based on the principles of sovereignty, independence, usefulness, sustainability, integration, togetherness, openness, efficiency-justice, local wisdom and environmental sustainability. The Indonesian government has stipulated and enforced a standard for the development of sustainable palm oil plantations in Indonesia since 2011 through the Indonesian Sustainable Palm Oil (ISPO) certification system (Fahamsyah and Pramudya, 2017). There is a standard of Good Agriculture Practices (GAPS) in RSPO and ISPO that can overcome sustainability issues and increase palm oil productivity if it is implemented in an integrated manner, such as plantation management principles that regulate how to clear land that does not damage the environment, the legality of the seeds used, planting techniques to harvesting methods. Effective significant cooperation between the stakeholders, especially businessmen, government, and market support, is needed in realizing the standard.

Environmental behavior is defined as actions that affect the quality of the environment, whether it is in positive or negative ways Steg et al. (2014). Kollmuss and Agyeman (2002) define environmental behavior as a conscious behavior to minimize the negative impact of a person's or group's actions on nature and build the world. This kind of behavior is labeled as pro-environmental behavior that is led to a behavioral goal, where people conduct it with an explicit purpose for something beneficial for the environment. Sustainable certification is a form of environmental regulation and development in which companies can voluntarily choose to comply with the process of goals set by the certification service (Nebel et al. 2005). Most of the certification services have a standard that can be implemented to the products and considered as the responsibility of the companies to fulfill their obligations in minimizing the negative impacts on the environment (Thomson et al. 2009). The ISPO certification is capable to be an improving instrument for the behavior of oil palm plantation business actors (planters and plantation companies) so that it can be a solution to overcome the negative impacts of palm oil plantation. It raises the question, whether the certified palm oil plantation companies have obviously implemented environmental instruments and can guarantee improvements to overcome problems caused by oil palm development. This study focuses on the impact of ISPO certification on the environmental behavior of palm oil plantation companies in reducing deforestation, prevent fires in the concession area of oil palm plantation companies and to analyze the cause of the changes.

## **2. Materials and Methods**

### ***2.1. Framework***

Palm oil plantation companies must have an ISPO certification in producing Crude Palm Oil (CPO). It is a sign of acknowledgment that they run a sustainable plantation activity in generating a sustainable palm oil product. Those who are required to have ISPO certification are the companies that have obtained plantation business value, which is Class I, II, and III. Currently, the fact shows that not all plantation companies, which have obtained plantation business value, have ISPO certification. ISPO certification is executed by a certification institution that has been recognized by the ISPO Commission. Meanwhile, the financing of the certification fully becomes the responsibility of the company.

The implementation of ISPO is not only considered as a fulfillment of the obligations but also expected that the companies can obviously implement the environmental behavior contained in the ISPO standards and criteria. Seeing the improvement can be done by comparing the behavior of the companies after and before having the ISPO certification. Base on the comparison, it can obtain whether the ISPO certification has positive impacts on the company's environmental behavior and the reasons why the companies want to change their environmental behavior after getting the ISPO certificate.

This research used the qualitative method by collecting and analyzing human words and actions without any attempt to quantify the obtained data (Afrizal, 2014). Moreover, this research also collected and analyzed numbers to support the argument and interpretation. The qualitative research strategy used in this research is a case study, where the researcher carefully investigated a program, event, activity, or process (Creswell, 2009) and focused on a particular unit, which can be an individual, group, organization, or community (Krampen and Krampen, 2016).

## **2.2. Scope of Discussion**

This research investigated the impact of the ISPO certification on the environmental behavior of palm oil plantation companies that can affect deforestation and land fires in concession areas. This research focused on the palm oil plantation companies that have obtained ISPO certification selecting based on the following criteria:

1. The ease of access to obtain the required data virtually. Due to the covid-19, it is impossible to have a direct observation in the fields;
2. The location of the plantations represents the central areas of palm oil in Indonesia, which are Sumatera, Kalimantan, and Papua;
3. The company uses a different ISPO certification institution;
4. The whole or most of the concession area is derived from the forest area.

Based on the consideration and criteria above, the researcher selected seven palm oil plantation companies that had obtained ISPO certification, which is PT. TKA, PT. IKS, PT. TBPP, PT. PEU, PT. Hdl, PT. KDP, and PT. BCA and obtained permission from each company by the condition only mentioned their initials in the research.

## **2.3. Time and Place of the Research**

This research was conducted in Padang by collecting the data via email, zoom meeting, and phone. It was due to the covid-19, which make it impossible for the researcher to have an observation in the field. This study was undertaken from 2020 to 2021.

## **2.4. Types and Methods of Data Collection**

Primary and secondary data were used in this research. The primary data was directly obtained from the first source through a virtual interview via email. Meanwhile, secondary data is the dominant data that is obtained through related documents with research questions. The collecting documents in this research are:

1. Regulation of the Minister of Agriculture No. 11 of 2015 regarding the Indonesian Sustainable Palm Oil Certification System (ISPO) and the supported regulation for the ISPO principles and criteria.
2. The development and assessment report of the plantation business of PT. TKA, PT. IKS, PT. TBPP, OT. PEU, PT. Hdl, PT. KDP and PT. BCA by the institution in charge in the district/province submitted to the Directorate General of Plantations.
3. The audit report of PT. TKA, PT. IKS, PT. TBPP, OT. PEU, PT. Hdl, PT. KDP and PT. BCA by ISPO certification institution.
4. Surveillance report of PT. TKA, PT. IKS, PT. TBPP, OT. PEU, PT. Hdl, PT. KDP and PT. BCA by the ISPO certification institution.
5. Summary of supervision result of the companies that have been certified from the secretariat of the ISPO Commission.
6. Data of thermal hotspots and fire incidents in the palm oil plantation companies from the Directorate of Plantation Protection.
7. Annual report of PT. TKA, PT. IKS, PT. TBPP, OT. PEU, PT. Hdl, PT. KDP and PT. BCA that were downloaded via google, company site, or sent via email.
8. Reputable national and international journals related to research problems.

The researcher also used official document reports from credible and authorized institutions to account for the validity and justification of the data, then checked from various sources related to the findings obtained from the documents. The limitation of this research is the lack of checking and references from the society around the

plantation companies due to the covid-19 pandemic and the location of the companies spread in several islands. The following is Table 1, which describes the types of data, data sources, and data collection techniques used to obtain the research objectives.

**Table 1.** Variables Data, Data Indicators and Data Collection Techniques

No	Objectives	Variables Data	Data Indicators	Data Collection Techniques
1.	Analyzing the impact of ISPO certification on the environmental behavior of palm oil companies.	<p>1. Trends in deforestation in the concession areas of palm oil plantation companies.</p> <p>2. Land fires in the concession areas of palm oil plantation companies.</p>	<ul style="list-style-type: none"> <li>• The era of forest converted to non-forest in the concession area before having ISPO certification.</li> <li>• Total conservation area in the concession of palm oil plantation companies before having ISPO certification.</li> <li>• ISPO principles and criteria related to forest protection in the concession areas of palm oil plantation companies.</li> <li>• The area of forest converted to non-forest in the concession area after having ISPO certification.</li> <li>• Total conservation area in the concession of palm oil plantation companies after having ISPO certification.</li> <li>• Land clearing method before ISPO certification.</li> <li>• Fire incident in concession area before having ISPO certification.</li> <li>• ISPO principles and criteria related to land clearing and fire prevention methods within concession areas.</li> <li>• Land clearing method after ISPO certification.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the development and assessment report of plantation businesses by the institution in charge of plantations in the district/provinces.</li> <li>• Review the development and assessment report of plantation businesses by the institution in charge of plantations in the district/provinces.</li> <li>• Review of the Minister of Agriculture regulation No. 11/15 and other related regulations.</li> <li>• Literature search of related journals.</li> <li>• Review of audit report of the companies by ISPO.</li> <li>• Review of companies` surveillance report.</li> <li>• Review of summary of supervision result by the secretariat of the ISPO Commission.</li> <li>• Review of the company's ISPO audit report.</li> <li>• Review of companies` surveillance report.</li> <li>• Review the development and assessment report of plantation businesses by the institution in charge of plantations in the district/provinces.</li> <li>• Review of regulations related to plantation land clearing.</li> <li>• Review of the company's ISPO audit report.</li> <li>• Review the development and assessment report of plantation businesses by the institution in charge of plantations in the district/provinces.</li> <li>• Review of the company's ISPO audit report.</li> <li>• Review the Minister of Agriculture regulation No. 11/15 and other related regulations.</li> <li>• Literature search of related journals.</li> <li>• Review of the company's ISPO audit report.</li> <li>• Review of companies` surveillance report.</li> <li>• Review of summary of supervision</li> </ul>

No	Objectives	Variables Data	Data Indicators	Data Collection Techniques
				result by the secretariat of the ISPO Commission.
			<ul style="list-style-type: none"> <li>• Fire incident in concession area after having ISPO certification.</li> </ul>	<ul style="list-style-type: none"> <li>• Review of the company's ISPO audit report.</li> <li>• Review of companies` surveillance report.</li> <li>• Review of summary of supervision result by the secretariat of the ISPO Commission.</li> <li>• Review of Data of thermal hotspots and fire incidents in the palm oil plantation companies from the Directorate of Plantation Protection.</li> </ul>
2.	Analyze the causes of behavior change of the palm oil plantation companies through ISPO certification.	1. Regulatory pressures or regulations for sustainable certification on oil palm plantations. 2. Company internal stakeholder factors. 3. The ease of access to the financial institutions.	<ul style="list-style-type: none"> <li>• The characteristics of ISPO regulations.</li> <li>• Shareholders` responses to the regulations.</li> <li>• Understanding of the operational manager toward the ISPO principles and criteria.</li> <li>• Knowledge and capability of the employees in the plantation management practices.</li> <li>• Relationship between oil palm plantation companies and banks.</li> <li>• Banking considerations in providing loans or financing.</li> </ul>	<ul style="list-style-type: none"> <li>• Review of the Minister of Agriculture regulation No. 11/15 and other related regulations.</li> <li>• Literature search of related journals.</li> <li>• Interviews with GAPKI and the Directorate General of Plantations.</li> <li>• Interviews with GAPKI and palm oil plantation company.</li> <li>• Literature search of related journals.</li> <li>• Interview with the auditor of ISPO certification institution, palm oil plantation companies, General Directorate of Plantation.</li> <li>• Literature search of related journals.</li> <li>• Interview with the auditor of ISPO certification institution, palm oil plantation companies, and institutions in charge with plantation.</li> <li>• Literature search of related journals.</li> <li>• Interviews with GAPKI and plantation companies.</li> <li>• Literature search of related journals.</li> <li>• Interviews with plantation companies and the Financial Services Authority.</li> <li>• Literature search of related journals.</li> </ul>

Source: Data processed (2020)

### 2.5. Data Analysis

Data analysis in qualitative research is defined as a systematic process to determine the parts and interrelationships between the parts and the whole of the data that has been collected to produce a classification or typology (Afrizal, 2014). In this research, data analysis ranges from collecting the data to writing the report. Thus, data collection and data analysis are two inseparable things.

The steps taken to find answers to the questions in this research are:

1. Analyze the impact of ISPO certification on the environmental behavior of palm oil companies:
  - a. Collecting the relevant data and recording the interview.
  - b. Interpreting and clarifying the findings based on determining data indicators.
  - c. Presenting the findings and comparing the changing data on the forest area that converted into non-forest area and conservation area in the period before and after the ISPO certified company. Then look for the relationship between these changes and the company's ISPO certification.
  - d. Creating assumptions or hypotheses about the impact of ISPO certification on the environmental behavior of oil palm plantation companies in influencing deforestation and land fires.
  - e. Evaluating the assumptions or hypotheses created based on the collected data and the results of other relevant research.
  - f. Drawing conclusions.
2. Analyze the changing and unchanging environmental behavior factors of oil palm plantation companies in ISPO certification:
  - a. Collecting the relevant literature and recording the interview.
  - b. Interpreting and clarifying the findings based on determining data indicators.
  - c. Presenting the findings and finding the causes of environmental behavior change in palm oil plantation companies in implementing ISPO.
  - d. Creating assumptions or hypotheses about the reasons why the companies have environmental behavior change during the process of ISPO certification.
  - e. Evaluating the assumptions or hypotheses created based on the collected data and the results of other relevant research.
  - f. Drawing conclusions.

### **3. Results and Discussion**

#### ***3.1 Impact of ISPO Certification on Environmental Behavior of Palm Oil Companies***

##### ***3.1.1. Deforestation***

Palm oil plantations in Indonesia began to be associated with massive deforestation in the 1990s and 2000s. Many researchers stated that deforestation is caused by the expansion of palm oil plantation: Gunarso et al. (2013) and Koh and Wilcove (2008) reported that 52%-79% of Indonesian palm oil plantations carried out deforestation for the establishment of new plantations; Carlson et al. (2013) stated that 89%-90% of plantations in Kalimantan were previously forest. The ISPO requirements regarding forest conversion follow the Indonesian regulations. Forest clearing is allowed if (a) the area is designated for plantations according to the spatial plan, (b) it is not recommended for conservation in the Environmental Impact Analysis (AMDAL), and (c) it has obtained the necessary permits from the government such as Permits for Release of Forest Areas and Permits Plantation Business. Indonesian regulations prohibit land clearing that (a) is intended for protection under the national moratorium (Presidential Instruction No. 10 of 2011, which is extended every two years), (b) is located on peatland > 3 m deep, (c) on slopes > 40%, or (d) hydrological support sections along a river (50-100 m on both sides of the river) or a lake or spring (200 m radius). These requirements are confirmed through ISPO in Principle 3 and several criteria in Principle 2.

By having ISPO certification, palm oil plantation companies commit to fulfill and implement the ISPO principles and criteria, including the principle of protecting the forest from deforestation. The seven oil palm companies analyzed in this research have Plantation Business Permits whose lands originate from the Other Use Areas (APL) and/or forest areas. The area has obtained a Forest Land Release Permit from the Ministry of Environment and Forestry. The permission is given to the area that has been determined based on its function as a Convertible Production Forest (HPK). Forest areas also have areas covered with forest or “forested” and areas that are not covered by forest and/or “not forest-covered”. Similar to APL, the areas can be in the form of “forested” land and/or “non-forest covered” area. The comparison of the area loss due to the conversion of palm oil plantations and the conversion area before and after implementing ISPO certification can be seen in Table 2.

**Table 2.** Data on Conversion of Forest Land and Conservation Areas in Oil Palm Plantation Company Concessions

No	Companies	Region, Province	Concession Land Cover IUP			Before Getting ISPO Certification		After Getting ISPO Certification	
			Non-forest (ha)	Forest (ha)	Total (ha)	Conversion of Forest to Non Forest (ha)	Conservation Area (ha)	Conversion of Forest to Non Forest (ha)	Conservation Area (ha)
1.	PT. TKA	Solok Selatan-Dharmasraya, West Sumatera	20,660.77	7,404.00	28,064.77	2,495.00	2,400.00	0.00	463,00
2.	PT. IKS	Sorong, West Papua	18,644.65	19,655.35	38,300.00	4,398.77	2.00	1,384.00	384.42
3.	PT. TBPP	Berau, East Kalimantan	7,504.27	678.68	8,182.95	294.56	0,8	29,12	113,20
4.	PT. PEU	Kampar, Riau	5,959.00	5,543.00	11,502.00	4,712.06	7.20	434.60	68.17
5.	PT. HdI	Musi Banyuasin, South Sumatera	8,632.00	1,368.00	10,000.00	112.72	17.40	3.20	396.00
6.	PT. KDP	Katingan, Central Kalimantan	12,891.80	4,608.20	17,500.00	2,795.30	23.40	916.83	500.20
7.	PT. BCA	Merauke, Papua	2,356.78	12,169.02	14,525.80	9,048.40	17.00	336.00	237.00

The company's compliance with the ISPO principles and criteria as a condition for obtaining an ISPO certificate has a positive influence on companies related to forest protection commitments. Six of the seven companies were proven to reduce the area of forest loss in concession areas due to compliance with ISPO principles and criteria, while one company, which is PT. TKA started to commit forest conservation before having ISPO certification. The percentage of forest conversion to oil palm that causes forest loss in the concession area before and after the company implements ISPO certification can be seen in Figure 1.



**Figure 1.** Comparison of Forest Loss in Company Concession Areas Before and After Obtaining ISPO Certification

In addition to the restrictions on palm oil development in forest areas, ISPO also requires companies to conduct conservation in the protected areas like river borders, reservoir/lake edges, cliff edges, and other protected areas within the concession areas as a fulfillment of Criteria 2.2.1.1; 2.2.5; and 4.8. During the process of ISPO certification, it found many violations conducted by the companies, which was by planting palm oil beyond the permitted distance limit from river borders. ISPO has a policy regarding such this finding. If the plantation is mature (>4 years old), the company must implement a rehabilitation program during the replanting, like what has been done by TBPP, PT. TKA and PT. PEU. However, if it is less than 4 years old, the company has to unload and rehabilitate the plantation, like what has been happened in PT. KDP.

The nature of the ISPO principles and criteria, which must be met entirely without any major and minor elements in the assessment, forces the company to fulfill every principle and criteria. As a result, six of the seven analyzed companies have an increase in the conservation area in the company's concessions after getting ISPO certification shown in Figure 2. However, PT. TKA seen a decrease in conservation area after ISPO certification, this is because PT. TKA has started a commitment not to convert forest areas within its concession areas into plantation, long before the regulations related to ISPO. PT. TKA considers it necessary to continue to preserve forest areas, especially primary forest in their concessions to maintain balance and avoid animal conflicts because PT. TKA is directly adjacent to the Kerinci Seblat National Park. So that during the ISPO certification process, PT. TKA only adds

conservation areas for certain category areas required by the ISPO criteria, such as river borders, cliff edges, unsuitable contours and areas of customary sites. The conservation area presented in Figure 2 is the conservation area of forest and non-forest within the company's concession area.

**Figure 2.** Comparison of Conservation Areas in Company Concession Areas Before and After Obtaining ISPO Certification

The analysis of the seven oil palm plantation companies above found that ISPO certification can reduce forest loss or decrease forest conversion area to palm oil in the company's concession area by 60-100% and increase the conservation area in the company's concession after getting ISPO certification. ISPO certification has also proven to be an instrument for improving palm oil management that has already violated the established regulations.

### *3.1.2. Land Fire*

The investigation by Gaveau et al (2014) on the 2013 fire incident in Sumatra stated that there were 163,336 ha of burned area out of a total of 3 million ha of the study area observed through LANDSAT satellite imagery. The study found that 52% of the total burned area (84,717 ha) was within concessions, i.e. land allocated for plantation development. However, 60% (50,248 ha) of the burned area in plantation development concessions is land cultivated by communities. The 40% remaining (34,469 ha) is plantation areas managed by the company.

The development of oil palm concessions can lead to an increase in fires incidence for it is often used for clearing land at the beginning of planting, before replanting after the harvest cycle is complete, or to clear shrubs or remove pests midcycle (Purnomo et al., 2018). One of the main reasons for clearing land by burning is that it is easier and

requires less cost. The difference in the cost of planting oil palm with and without burning from the dense forest on mineral soils in Riau is about 44% (Simorangkir, 2007). The cost of developing an oil palm plantation with fire is around USD 3007/ha, while the cost of developing an oil palm plantation without fire is around USD 180-1323 higher than using fire (Purnomo et al., 2017).

The practice of land preparation must be carried out legally under the central and regional laws and regulations, such as Law Number 18 of 2004 that every plantation business actor is prohibited from opening and/or processing land by burning, which causes pollution and environmental damage. What is meant by the local wisdom is to burn land with a maximum of 2 hectares per family to be planted with local varieties and surrounded by firebreaks to prevent the spread of fire to the surrounding area. ISPO prevents land fires in the company's concession areas through Criterion 2.2.1, which requires companies to provide documentation of land clearing activities without burning since 2004. ISPO also requires oil palm plantation companies to prevent and control fires through Principle 4.3.

Considering that the principles and criteria of ISPO are the requirements that must be fulfilled by palm oil plantation companies as a unit of certification, ISPO should be an instrument to prevent land clearing by burning and improve the fire prevention and control system in the company's concession areas. To prove this theory, the authors analyzed land clearing methods, fire activities, and the behavior of seven oil palm plantation companies before and after obtaining ISPO certificates, as presented in Table 3.

**Table 3. Conditions of Land Clearing, Fire Incidence and Fire Prevention in Oil Palm Plantation Company Concessions**

No.	Companies	Region, province	Before Getting ISPO Certification				After Getting ISPO Certification			
			Land Clearing by Burning	Fire Incidence	The Availability of Emergency Response System	Land Fire Monitoring Activities	Land Clearing by Burning	Fire Incidence	The Availability of Emergency Response System	Land Fire Monitoring Activities
1.	PT. TKA	Solok Selatan-Dharmasraya, West Sumatera	√	x	x	√	x	x	√	√
2.	PT. IKS	Sorong, West Papua	x	√	x	x	x	x	√	√
3.	PT. TBPP	Berau, East Kalimantan	√	√	x	√	x	x	√	√
4.	PT. PEU	Kampar, Riau	√	√	x	x	x	x	√	√
5.	PT. HdI	Musi Banyuasin, South Sumatera	x	√	x	√	x	x	√	√
6.	PT. KDP	Katingan, Central Kalimantan	x	√	x	x	x	x	√	√
7.	PT. BCA	Merauke, Papua	x	x	√	√	x	x	√	√

Expl: x: no; √: yes

ISPO attempts to stop the burning activities in a land clearing in palm oil companies through Criterion 2.2.1, which requires companies to clear land without burning since 2004 because it refers to Law No. 18 of 2004. As evidence to be able to meet these criteria, the company must provide documentation related to land clearing, and will

be verified by the auditors to the related parties to check the accuracy of the documentation. If there were cases of land clearing by burning in 2004 and after, the certified company must have carried out the consequences of the violation as per the applicable regulations. SPO certification can change the behavior of the three companies (PT. TKA, PT. TBPP, PT. PEU), which previously cleared the land by burning. In addition, surveillance activities on ISPO certification also become a controlling instrument for the seven companies to maintain the behavior of clearing land without burning, and it is proven from the audit stage until the last surveillance that no land clearing by burning has been found in the seven companies analyzed.

Stopping burning for land clearing is not enough to prevent land fires in palm oil concession areas since the potential fire can be caused by other activities both within and outside the concession. Thus, ISPO emphasizes the companies have a trained team to prevent and overcome fire, an emergency response system or an early warning system supported by fire control facilities and infrastructure, carry out periodic monitoring for fire prevention. All of these requirements must be met by oil palm plantation companies as stipulated in ISPO Principle 4.3.

The ISPO certification process forces companies to provide or complete the mechanisms and procedures for fire emergency response systems to meet the certification requirements. Emergency response systems that should provide by the company include:

- a. Information of fire danger rating system and the equipment that can be downloaded from the Meteorology, Climatology and Geophysics Agency (BMKG) website.
- b. Information board regarding land fires (regulations, causes, and sanctions) that is easy to read in the bordering area between community and concession area as reminder for the employees.
- c. The availability of a map of fire-prone locations and a map of the water sources.
- d. The readiness of fire control facilities and infrastructure is communicated with the competent authority.
- e. Capacity building of firefighters through regular training and coordination with government and community firefighting units.

It is similar to the land fire monitoring activities, companies must monitor:

- a. Hotspot monitoring which can be downloaded via the fashionable-catalog.lapan.go.id link.
- b. Conduct integrated patrols.
- c. Monitoring fire towers or using drones or other technology.
- d. Gathering information on the possibility of a potential fire in the community area around the concession area.

### ***3.2 Causes of Changes in Company Environmental Behavior Through ISPO Certification***

The company's environmental behavior is manifested in a series of strategic plans intended to reduce the impact of the company's activities on the natural environment (Valentine, 2010). Stakeholder participation is one of the important factors influencing companies in formulating corporate environmental strategies (Russo and Fouts, 1997). Responding to the environmental pressures from different stakeholders, different companies may have different environmental strategic responses.

ISPO was established as a government effort to overcome environmental problems in oil palm plantations. Plantation companies are the targets that are currently required to implement governance on oil palm plantations under ISPO standards as the only sustainable palm oil plantation standard compiled under Indonesian law. The application of ISPO certification to palm oil companies has brought changes in the environmental behavior of oil palm plantation companies to pro-environmental behavior according to ISPO standards. To achieve this pro-environmental behavior, several factors influence the company's willingness to make changes in oil palm plantation practices. Based on the results of the interview with related parties (Palm Plantation Companies, GAPKI, Certification Agencies, Ditjenbun), factors that influence changes in the behavior of oil palm plantation companies include regulatory pressures, factors from internal company stakeholders, and the ease of access to the financing institutions.

Basically, regulations have three main functions, which are a) as a means of order or behavioral guidelines, b) development instruments that mobilize resources to achieve a predetermined goal, and c) integrate areas and policies in the context of state administration and development into a system. ISPO is a standard that is created based on a collection of applicable regulations in Indonesia. ISPO is different from other similar certifications, which are voluntary. The mandatory implementation of ISPO in Indonesia has a great potential to generally improve the practice of the palm oil industry (Daemeter, 2014). ISPO certification, which is issued in the form of a Minister of Agriculture Regulation, regulates sanctions for plantation companies that do not implement ISPO certification. Compliance with regulations and avoiding the risk of sanctions that will threaten the license to do business are the first factors that palm oil plantation companies implement ISPO certification. According to GAPKI, compliance with the regulation cannot be ignored by the companies since it refers to the action to fulfill the legal obligations. The most obvious consequence of compliance is that it reduces the risk of fines, penalties, termination of employment, lawsuits, or business closure. In addition, compliance with regulations is important for companies to protect the company's brand and reputation.

ISPO is described in principles, criteria, and indicators, all of which must be met by the company. If the companies cannot meet one of them, they will fail to obtain the ISPO certificate. Management of compliance with regulations makes oil palm plantation companies prepare a series of processes, procedures, Human Resources (HR), and technologies that are applied to ensure compliance with regulations. For example, for forest protection criteria in concession areas, oil palm plantation companies must make commitments, forest management plans in concession areas, providing human resources, who can execute these commitments, to achieve compliance with the required criteria. In this case, an audit is an important element in ISPO because it provides a way for the certification institution to monitor whether compliance obligations with the principles and criteria are being enforced or ignored.

To achieve sustainable management of palm oil plantations, all the involved stakeholders must have the same vision. On the side of the company, to meet the environmental demands of various external stakeholders, companies need to develop strategies to improve their environmental behavior, pay attention to the construction of their environmental strategy, and change the way they respond to environmental pressures from different stakeholders to gain legitimacy (Aragón and Sharma, 2003).

One who plays an important role in realizing the objectives of ISPO certification is the one who manages the palm oil plantation company. Meanwhile, shareholders, operational managers, and employees are those who play a role in the environmental strategy of oil palm plantation companies. The position of shareholders will be affected by a positive reputation. Current reputation cannot be separated from a good environmental reputation in business activities. The issuance of ISPO regulations encourages the shareholders of the company to respond to the government regulations. Shareholders have a responsibility to retain investors by providing a positive image for the company, which is currently characterized by responsible and sustainable business practices. Moreover, in the oil palm plantation business, sustainable plantation practices are emphasized through ISPO regulations. Shareholders will encourage the company to realize sustainable plantation practices so that it can provide confidence for investors to invest in the company.

Managers are the actors who are responsible for daily activities of the company, which directly involve management practices. A manager's environmental perception is one of the core elements that influence the company's environmental behavior. Companies usually appoint the plantation manager as one of the internal auditors and must attend ISPO internal auditor training. Internal auditors have the task of conducting preliminary examinations and assessments of the existing palm oil plantation business governance related to ISPO principles. The results of the internal audit will provide certainty which governance is in accordance with the ISPO principles and criteria and/or what improvements the company must make to meet the ISPO principles and criteria. Therefore, the plantation manager's understanding of the ISPO principles and criteria will influence the company's actions to be able to meet the ISPO principles and criteria.

In addition to shareholders and operational managers, employees are also the source of the company's success. Employees are not only stakeholders but also human resources of the company. Employees have a significant influence on behavior change in the management of oil palm plantations. In one interview statement with the oil palm plantation company, employees give influences through ideas and reports on the results of work implementation so that they can be a record of recommendations for operational improvements and even policies. That's why it is the important for the companies to recruit and place employees according to their knowledge and expertise so that they are able to give influence in the practice of managing oil palm plantations.

Plantation business activities require funding for business continuity. It can come from internal sources such as retained earnings, depreciation, or paid-in capital, and/or external sources such as creditors who are debts to the company. Structures with the use of long-term debt can provide benefits to the company because of the tax protection on interest payments. However, the use of high debt can lead to high-interest expenses and increase the risk of the company. This capital structure decision is influenced by many factors, including the company's internal factors in the form of company characteristics and external factors such as macroeconomic conditions.

The seven analyzed companies in this research use debt through financial institutions, which are banks in a part of their capital structure. The ease of access to financial institutions is one of the reasons why companies are willing to implement ISPO certification. Banking as a financial institution is currently required to transform its activities, in line with the strengthening of world attention to environmental problems. The concept of sustainable development that encourages economic activity

must minimize environmental impacts, and is also adopted by banks through the concept of sustainable banking.

Basically, banks are not classified as direct contributors to environmental damage or pollution but their activities of loan or financing providing for the business actors can be a trigger for activities that have a bad impact on the environment. Therefore, as a follow-up to regulations related to environmental management and protection, Bank Indonesia encourages national banks to consider the environmental feasibility factor of a business that will be provided with financing through Bank Indonesia Regulation No. 14/15/PBI/2012 concerning Asset Quality Assessment for Commercial Banks. Regarding the issuance of ISPO certification, banks have begun to consider ISPO certificates as a consideration in providing financing to oil palm plantation companies. This policy is also fully supported by the Financial Services Authority (OJK), which is manifested by the publication of a sustainable banking book as a guide for financial service institutions in the business processes of the plantation and palm oil industry.

#### **4. Conclusion**

The implementation of ISPO certification in the seven companies analyzed in this research can change the company's environmental behavior to reduce forest conversion in concession areas by 60-100% compared to before having ISPO certification, and increase the conservation areas for the areas that are included in the protected category as a fulfillment of ISPO principles and criteria. The change is caused by 1) the pressure of ISPO regulations that obligate the palm oil plantation companies to fulfill all the ISPO principles and criteria to obtain ISPO certification; 2) the response of the company's shareholders to the ISPO regulations, the ability of plantation managers to understand the ISPO principles and criteria and the knowledge of employees in oil palm plantation practices affect the company's strategy to change environmental behavior to meet ISPO standards; and 3) to get easy access to financing from banks, where ISPO certification is starting to be considered by banks in providing credit to oil palm plantation companies.

ISPO certification can be an instrument that reduces deforestation and prevent fires in the concession area of oil palm plantation companies. However, deforestation due to the development of oil palm plantations is not only carried out by companies. As known, oil palm plantation business actors consist of independent smallholders, plasma, and plantation companies. Currently, ISPO certification is mandatory for oil palm plantation companies. To expand the impact of ISPO certification to reduce deforestation in Indonesia, it is necessary to expand the scope of ISPO to independent smallholders and plasma smallholders. To accelerate the implementation of ISPO for business actors other than plantation companies, the main challenge is to simplify the process and reduce the cost of implementing certification, especially for independent plantations and plasma plantations, without compromising the objectives of the principles and criteria.

Reducing deforestation in Indonesia is not enough if only being implemented through ISPO certification policies because ISPO certification can only be implemented in operational business units so that it functions to improve the governance of palm oil plantations for the better. To reduce deforestation more significantly, it is important to harmonize regulations, including spatial regulations and plantation business permits, which regulate future oil palm development so that no longer allowed if they come

from forest areas. As a result, the downstream regulations are in line with the upstream policies.

Meanwhile, in terms of monitoring how ISPO certification can become an instrument to prevent land fires, currently, palm oil plantation concession maps have not been compiled spatially in one system by the ISPO certification scheme holder (Ministry of Agriculture). This restricts the government to evaluate the impact of certification on the occurrence of fires or potential fires in the concession areas of ISPO-certified oil palm plantation companies. The government is currently monitoring forest and land fires through an early forest fire detection application called Sipongi, which uses satellite imagery to monitor hotspots. If the detection of hotspots or fires is within the concession of an oil palm plantation company, it will be overlaid with a map of the company's Business Permit. These maps are often different from maps of concession boundaries that have been certified by ISPO. To comprehensively evaluate whether fire activity is reduced in ISPO certified company concessions, it is important that ISPO certified concession spatial data are publicly accessible, accurate, current, and recognized by all interested parties.

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