Challenges and possibilities of implementing sustainable palm oil industry in Indonesia

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Abstract. Indonesia has emerged into the largest palm oil-producing nation in just a few decades, leaving Malaysia behind. Undeniably, palm oil has substantially contributed to the country's economic development. Nonetheless, it comes with refutation for deforestation, environmental degradation, and social tensions, are also evident. The palm oil industry has been recognized as one of the major producers of greenhouse gases, including CO2. The Government of Indonesia (GOI) is committed to maintaining the palm oil industry, despite the strain of the European Union, as millions of workers depend on these industries for their livelihoods. The GOI requests that each palm oil firm pursue the Indonesian Sustainable Palm Oil (ISPO) certification regarding the adverse impacts. Around 20% of the country's entire palm oil industry has received an ISPO certificate. By 2023, all palm oil companies must be ISPO accredited, as this regulation is compulsory. By reducing CO2 and other greenhouse gasses, implementing all the ISPO guidelines in the palm oil industry will support the industry and protect the environment. This paper will review the implementation of sustainable Indonesia's palm oil industry under the current situation, corresponding with ISPO and RSPO (Roundtable Sustainable Palm Oil).

1. Introduction
Palm oil has been playing a crucial role in contributing to human welfare as it is widely used in various purposes in daily life. World demand for palm oil has spiked sharply due to the increase of world population, the rise of income per capita and the diversification of usages of palm oil, including for biodiesel feedstock, an alternative to fossil fuels. Compared to other oil-producing crops, palm tree lists the highest oil productivity per hectare at lower prices and can produce throughout the year. Consequently, palm oil becomes the most popular and most consumed vegetable oil today. These advantages placed palm oil on top list demand, making the palm oil commodities experienced a phenomenal increase in production in the last four decades. This makes palm oil the vegetable oil with the most significant production share in the world.

Data presented by the Central Statistics Agency of the Republic of Indonesia [1] indicated that in 2016 there were over 11.94 million hectares (ha) of oil palm plantation. Out of this cultivation area, around 4.66 million hectares are managed by cooperatives or community-owned plantations and 7,726
hectares by 1,592 large and small palm oil companies. A total palm oil production of 33.23 million tons came from both community and company plantations amounting to 10.87 million tons and 22.36 million tons, respectively. In Indonesia, the majority of oil palm plantations are situated on the island of Sumatra, the biggest of which is in the province of Riau. To date, Riau Province is hosting up to 146 Palm Oil Mills (POM) having a total production up to 7.33 million tons per annum [1-3]. With the increase of the plantation area all over the country, the palm oil industry supports the Indonesian economy from the export of the commodity and provides jobs for communities in the vicinity of the plantation.

Figure 1. Production volume of palm oil worldwide from 2012-2013 to 2019-2020 (in million metric tons) [4].

However, palm oil production's escalation is suspected neglecting the principles of sustainable development due to possible loss of forest area and land cover, disruption of ecosystem balance, an increase of greenhouse gas emissions, and generation of social conflicts with communities around plantations [5]. Based on these issues, the European Union released a Delegated Regulation, a derivative of the Renewable Energy Directive II (RED II), where palm oil is considered as a high-risk commodity towards deforestation or Indirect Land-Use Change (ILUC). This regulation has suppressed global palm oil production market from about 74.02 million metric tons in 2018/2019 down to around 72.27 million metric tons in 2019/2020, as shown in Figure 1. During the last decade, Indonesia and Malaysia are the leading exporters of palm oil in the world. In addition to Indonesia and Malaysia, other countries such as Thailand, Colombia and Nigeria are also new emerging players in world palm oil market [6].

Considering the fact that millions of workers depend on their livelihoods from the palm oil business, the Government of Indonesia (GOI) has expressed its commitment to prioritize such sector through its national policies. The objectives are then manifested through the Act of Implementing Laws in the Government Regulation concerning various aspects related to oil palm industry, from the guidelines on spatial planning, land, technology, management, human resources, environment, products and so on. Land acquisition mechanism for plantations is regulated through the Basic Agrarian Law, the Plant Cultivation System Act, the Spatial Planning Act, the Forestry Act, the Plantation Act and the Environmental Management Act. Similarly, supply procedures for pesticides, seeds, equipment and agricultural machinery have also been regulated through the Government Regulation. The Government also issued a specific regulation and standard, so-called Indonesia Sustainable Palm Oil (ISPO). ISPO is a certification process for the country's oil palm plantation as stipulated under the Agriculture Ministerial Regulation No. 11/Permentan/OT.140/3/2015, which is compulsory for every palm oil company. As a result, the ISPO has become an instrument for ensuring
the company adopts sustainable palm oil principles. In addition to ISPO, another universal certification called RSPO (Roundtable Sustainable Palm Oil) has also been introduced to Indonesia's palm oil industry [7]. Even though the RSPO certification is more globally accepted, the company may voluntarily take part in this certification in the view of Indonesian law. However, more and more palm oil companies in the country participate in RSPO certification, since studies have shown that RSPO companies protect the environment and financially perform better than those of non-certified ones. In 2017, the RSPO certified planted area in Indonesia had reached 1.7 million hectares, a significant increase from 1.54 million hectares in 2016 [5].

2. Roundtable on Sustainable Palm Oil (RSPO) and Indonesian Sustainable Palm Oil (ISPO)

Established in 2004, the RSPO, is an international multi-stakeholder organization which adopts the Millennium Development Goals (MDGs) related to People, Planet and Profit (3P) in its Principles and Criteria (P&C). The RSPO is a business initiative in which palm oil industries practice sustainability principles, prioritizing legality, the environment, and long-term socioeconomic feasibility [7].

The ISPO Guidelines were launched by the Indonesian Government via the Ministry of Agriculture in March 2011. The purpose of the ISPO is to ensure that legislation relating to palm oil plantations is enforced to certify sustainability in line with the President of the Republic of Indonesia's greenhouse gas mitigation objective. The ISPO is mandatory for oil palm plantation companies, unlike the RSPO, which is optional, but is voluntary for smallholder companies. In March 2015, the law was changed to become the Indonesian Sustainable Palm Oil Certification Scheme.

ISPO and RSPO have been intensively carrying various certification processes to help companies achieve a sustainable palm oil industry. As the results, out of 1,592 oil palm companies operating in Indonesia, as many as 494 firms have received the ISPO certification [2, 8]. Compared to the other more global certification; however, only 30 oil palm plantation companies are RSPO certified [9]. Inspection to the number of oil palm industries currently in operation in the country, only 30 and 2 per cent of all plantations participated in the ISPO and RSPO accreditation, respectively. These data indicate that many more palm oil companies are still running the business by ignoring or paying less attention to the environment and nature, primarily due to Greenhouse Gases (GHG) emissions in the form of CO₂ [8,10,11].

2.1 Implementation of ISPO in Indonesia

ISPO is a mandatory certification requirement for the production of palm oil with the goal of minimizing the environmental impact of the palm oil industry. The Government has established and adopted ISPO as steps comparable to international standards and commitments, such as the RSPO. ISPO supports sustainable practices to be implemented by oil palm companies operating in Indonesia. There were 15 ISPO certification bodies by the start of 2019, 7 of which were from overseas, and a total of 1,559 ISPO auditors. In an effort to ensure the independence of the certification process, eight consulting companies and three ISPO training organizations endorse ISPO certification. Although much progress has been recorded in terms of its implementation, as mentioned below, there are still hurdles, issues, challenges and crucial requirements related to the ISPO certification system [12]:

- Issue of sustainability. The definition and basic concepts of sustainability in the development and management of palm oil have never been discussed among the stakeholders to get a shared common understanding.
- Issue related to the organizing body responsible for the ISPO certification. The institutional ISPO mechanism's fundamental problem lies in implementing the ISPO certification process that some parties consider to be not independent, transparent, accountable, and credible.
- Issues of the principles, criteria and indicators related to the ISPO certification system. ISPO has been claimed by some parties to more reflect on national interests. The regulations, standards and indicators that have been made have not been able to answer the problems and weaknesses of licensing governance, supervision, policy inconsistencies, lack of transparency, and weakness in law enforcement that continue to occur.
Issues of legality and financing in relation to the ISPO certification system. The implementation of the ISPO certification system has so far been considered to have not run optimally due to several factors, including compliance with legal aspects and financing problems.

Issues of the ISPO certification system acceptance at the global market. Export of palm oil and its derivatives tends to apply RSPO certification, which raises a question by stakeholders on the importance of ISPO certification when dealing with export.

On 13 March 2020, President Joko Widodo officially released and signed the Presidential Regulation of the Republic of Indonesia Number 44 of 2020 on the ISPO Certification Scheme, promulgated on 16 March 2020 by Yasona H. Laoly, Minister of Law and Human Rights. Article 4(2) states that ISPO certification is carried out by applying principles including: (a) compliance with laws and regulations; (b) good farming practices in oil palm plantations; (c) management of the environment, natural resources and biodiversity; (d) accountability for manpower; (e) social responsibility and economic empowerment of the community; (f) transparency; and (g) transparency; In the meantime, point 4 of Article 4 states that further provisions relating to the principles and requirements of the ISPO referred to in paragraphs (2) and (3) are to be laid down in the Ministerial Regulation. Furthermore, Presidential Regulation No. 44 of 2020 also contains penalties, as recorded in Article 6, stating that any undertaking which breaches the provisions of the ISPO Certification Obligations referred to in Article 5 shall be subject to administrative penalties by the Minister. The administrative sanctions provided for in the Presidential Regulation shall be in the form of a written notice, fines, temporary suspension of the Oil Palm Plantation Company, suspension of ISPO certificates, and/or revocation of the ISPO certificate.

The issuance of ISPO certification is divided into two periods. First, the 2011-2015 period was based on Minister of Agriculture Regulation (Permentan) No.19 of 2011 for 127 companies and covering an area of 1.16 million hectares. Then, the 2016-2019 period based on Ministry of Agriculture Regulation No. 11 of 2015 for 494 certificates covering an area of 4.2 million hectares. Until January 2020, 5.45 million hectares of Palm oil has been certified through the ISPO. Out of 779 palm oil businesses registered for ISPO, as many as 621 certificates have been issued for 607 companies, 10 independent farmers, and 4 Village Cooperative Units, respectively. According to 2018 BPS data, the oil palm plantation industries in Indonesia manages 12,761 million hectares, meaning that only 42.70% of the total area of oil palm land in Indonesia are ISPO certified. It is expected that by 2023, all palm oil industries could be approved by ISPO because the regulation is obligatory [13, 14].

2.2 The purpose of ISPO
ISPO is the Government of Indonesia's strategy to increase the competitiveness of Indonesian palm oil in the world market and to comply with the President's pledge to minimize greenhouse gas emissions and to pay attention to environmental challenges [3]. Under Presidential Regulation No 44 of 2020 of the Republic of Indonesia, the goals of the ISPO implementation are as follows:

- Ensuring and improving the management and production, according to the ISPO principles and criteria, of Oil Palm Plantations;
- Growing the acceptance and competitiveness in the national and foreign markets of Indonesian Palm Oil Plantation Yields;
- Enhancing efforts to accelerate the reduction of greenhouse gas emissions.

However, the interest in having ISPO certification tends to be lower than that of the RSPO due to the lengthy certification process as shown in Figure 2 [15] and the concern among palm oil companies that ISPO tends to be more applicable in the domestic market but invalid at the international one. For instance, so far the European Union has not convinced with the supremacy of ISPO. Several steps have to be taken to strengthen the ISPO system, including:
a) Legal supremacy aspect. ISPO regulation level system has been upgraded from a Ministerial regulation to the level of Presidential Regulation. This is expected to provide a more vital legal umbrella in the administration of the ISPO system.
b) Legal apparatus aspect. The institutional mechanism managing ISPO certification must be refined and strengthened.
c) Legal culture aspect. A shared understanding of sustainability's definition and concept in the management and development of Indonesian palm oil must be reached [13].

2.3 ISPO Principles and Criteria
Indonesia continues to promote ISPO and lobby the European Union to lift the sanction against palm oil products from Indonesia. ISPO is implemented by applying the following principles:
- Principle 1: Plantation legality
- Principle 2: Plantation management
- Principle 3: Protection of primary natural forests and peatlands
- Principle 4: Environmental Management and Monitoring
- Principle 5: Workers' rights
- Principle 6: Social accountability and community economic empowerment
- Principle 7: Company sustainability

![ISPO certification process flowchart](image)

Figure 2. ISPO certification process flowchart [15].

In the requirements and more comprehensive regulations assembled from the current palm oil regulations of five separate ministries, the Ministry of Agriculture, Environment and Forestry, Agricultural and Spatial Planning, Manpower and Transmigration and the Ministry of Health, these principles are then elaborated. Producers must follow the specified procedures shown in Figure 2 [15] in order to be accredited. The method of ISPO certification starts with the local government's classification of plantations. Local governments determine the degree to which plantations comply with national regulations and comply with plantation management requirements in this classification [15].
2.4 RSPO implementation in Indonesia

To improve the implementation of sustainable palm oil schemes at the level of independent farmers, the RSPO sets a new standard that is expected to be acceptable to independent palm oil farmers in Indonesia. Referring to RSPO, the certification implementation flow will be made as simple as possible to avoid farmers' obstacles. The certification scheme will have a step by step approach so that farmers are able to meet all the criteria and standard indicators. Should they manage to meet basic indicator requirements, independent farmers will be able to enter the certification system. They can then proceed to comply with the other three standards towards full compliance, namely, Eligibility, Milestone A, and Milestone B [15-17].

Furthermore, the Principles and Criteria (P&C) adapted to the context of independent farmers. For example, they are not required to address the GHG effects, social impact assessment, the administrative system's burden, and others. Then, more comfortable and faster access to its benefits - generate smallholder credits and the availability of more support for independent smallholders to achieve compliance. Although the RSPO certification process shown in Figure 3 [7] looks more straightforward than the ISPO, there are barriers to RSPO certification for Indonesian palm oil farmers in terms of access to funding and land legality. The RSPO certification process requires a relatively
big fund for various purposes, including land legality, training, institutional, equipment, auditing, and so on. This issue requires the Government's intervention to synergize funds from various sources such as the Palm Oil Plantation Fund Management Agency and other sectors, to help independent smallholders. Also, the Government needs to revitalize institutions in the regions that carry out the assistance function for independent smallholders to resolve the legal aspects of plantation land ownership and improve the regulatory framework to become more valid.

2.5 Objectives of RSPO Certification
The Roundtable advocates sustainable practices to produce palm oil that help reduce deforestation, protect biodiversity, and value the lives of rural communities in countries that grow palm oil. The RSPO ensures that, for oil palm plantations, no new primary forests or other areas of high conservation value are lost. Plantations must also follow agreed best practices and completely respect the fundamental rights and living conditions of millions of plantation workers, small-scale farmers and indigenous citizens. In this regard, the RSPO works proactively with oil palm producers, palm oil processing plants, businesses, retailers, non-governmental organizations and investors to work together towards a global supply of socially and environmentally responsible palm oil [18].

2.6 RSPO Principles and Criteria
A global guide to the sustainable production of palm oil is the RSPO Principles and Standards for Sustainable Palm Oil Production (RSPO P&C). Eight important and 39 practical criteria for determining the sustainable production of palm oil have been identified by the Roundtable. They ensure that constitutional rights are completely protected and taken into account by former landowners, local communities, plantation workers, smallholders and their families. There are no primary forests or areas of high environmental value that have been cut down to grow palm oil. Two certification systems based on the RSPO P&C have been established by the RSPO. First, to ensure that palm oil is sustainably grown and to protect the reputation of the trade in sustainable palm oil. As a sustainable palm oil derived from certified plantations, the oil is sold. Second, there is a third-party verification body involved in the certification scheme. With a strict certification scheme, the palm oil industry and customers can be confident that sustainable palm oil is backed by their goods. Every five years, the RSPO P&C must be revised. The RSPO Standard Principles for Independent Smallholders are below.

Principle 1: Openness
Principle 2: Compliance with relevant laws and regulations
Principle 3: Long-term economic and financial sustainability
Principle 4: Best and acceptable practices in plantations and mills
Principle 5: Environmental stewardship and biodiversity conservation
Principle 6: Responsibilities to staff, people, and communities from farms to factories
Principle 7: Responsibilities for the production of new plantations areas
Principle 8: Commitment to quality improvement in key operation areas

3. Similarities Between ISPO and RSPO
Several studies [19, 20] compared the RSPO and ISPO and concluded that the common objectives of the two were comparable, such as:

- The company has vision and mission as well as commitment to produce palm oil in a sustainable way
- Have a clear organizational structure and job descriptions for each implementing unit
- Maintain a list of employees who are members of labor unions and cooperatives, as well as a minimum number of workers who are covered by insurance.
- Availability of statute and bylaws for the establishment of the cooperatives
- Availability of welfare programs for indigenous and cultural communities.
In an effort to reduce the emissions of GHG at the national level, the Government of Indonesian created a National Action Plan to reduce GHG emissions and launch the Reduction Emission from Deforestation and Forest Degradation (REDD+) program. To support this program, palm oil plantations in Indonesia must implement greenhouse gas emission mitigation efforts. ISPO and RSPO require palm oil plantations in Indonesia to identify sources that emit greenhouse gas emissions in oil palm plantations and palm oil processing plants, including the mitigation efforts. These efforts include:

- Land clearing in areas with high carbon content, such as primary forests and peatlands, should be reduced.
- When opening new land or expanding existing land, use best practices by paying attention to soil and water conservation.
- Utilizing fertilizers accordingly and promoting the use of empty fruit bunch for fertilization.
- Controlled use of pesticides.
- Installing facilities for capturing methane in palm oil mill effluents.
- Management of water level in peat areas.
- The utilization of biomass produced in the palm oil industry, such as shells and fiber for boiler fuel as a renewable energy.
- Efficient use of fossil fuels and electricity.

4. Difference Between ISPO and RSPO

The ISPO certificate is an obligation for palm oil plantations and crude palm oil (CPO) producers in Indonesia. At the same time, the RSPO is an essential requirement for CPO derivative products to penetrate the European Union market through the EU Labelling Policy. Table 1 explains the differences between ISPO and RSPO [20-23].

Considering the condition of palm oil plantation in Indonesian and aspects of export of CPO and its derivatives that power the Indonesian economy, it is highly suggested that Indonesia's palm oil industry apply for RSPO certification. Such certification would be crucial due to numerous advantages for the sustainable palm oil industry business in Indonesia, among others; employing 16.2 million people (4.2 million direct and 12 million indirect workers), accelerating regional development in 22 provinces as a potential oil-producing region, alleviating poverty around 30 million local people and encouraging equality of development between provinces, building energy security through the Mandatory Biodiesel B-20 Program as well as preparations for upgrading to B-30 [24].

| Table 1. Difference between ISPO and RSPO |
|------------------------------------------|
| **ISPO** | **RSPO** |
| ISPO certification unit is a plantation company that conducts an integrated cultivation business with a processing business, a plantation company that conducts a cultivation business, a plantation company that engages in the processing of plantation products, a plasma plantation business, an independent plantation business, and palm oil for renewable energy. | The RSPO certification is palm oil mill and its plantations as well as other empty fruit bunch supplier farms such as smallholders, independent smallholders, and plantations without factories. |
| Each certification unit is a separate legal entity. | Criterion 3 concerning Protection |
| Criterion 3 concerning Protection | Criterion 5.6 requires plans for pollution and emissions reduction, including greenhouse gases; |
| | Criterion 7.8 regarding the development |
towards Primary Natural Forests and Peatlands

- Criterion 4.10 concerning GHG emission mitigation requires palm plantation business to identify and mitigate GHG emission sources and calculate Greenhouse Gases for CPO as a raw material for renewable energy.
- ISPO only applies one formulation for calculating of GHG emissions adopted from the provisions of the EU RED Annex V.

**5. Conclusions**

Certification is an effort to ensure sustainable products and global trading. ISPO is one of the certificates issued by the Government of Indonesia to ensure sustainable palm oil production. However, ISPO not yet has globally acceptable. Indonesian palm oil competitiveness and its accessibility to global markets are determined by the production efficiency in the use of resource and production costs and depend on product certification. Interest in ISPO certification tends to be lower than that of the RSPO due to the lengthy certification process and concern about ISPO's position which tends to be strong in the domestic market but less acceptable in the international world market.

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