

## Sustainable Palm Oil Industry: Literature Study with Bibliometric Analysis

Saleh Husin<sup>1</sup>, Hanief Saha Gafur<sup>2</sup>, Mia Siscawati<sup>3</sup>, Yusuf Kristiadi<sup>4</sup>,  
Auderey G. Tangkudung<sup>5</sup>

<sup>1,2,3,4,5</sup>Universitas Indonesia, Indonesia.

[salehhusin1963@gmail.com](mailto:salehhusin1963@gmail.com), [haniefsaha@yahoo.com](mailto:haniefsaha@yahoo.com), [miasisca@gmail.com](mailto:miasisca@gmail.com), [Yusuf.kristiadi@ui.ac.id](mailto:Yusuf.kristiadi@ui.ac.id),  
[audreygdt2018@gmail.com](mailto:audreygdt2018@gmail.com)

### Abstract

*This article aims to discuss the latest trends and seek new research on a sustainable palm oil industry. This research is a literature review using Publish or Perish software to search for article data on Google Scholar and using VOSviewer to analyze and visualize the data obtained. The research findings show 3 main group themes of research on the sustainable palm oil industry and based on the research findings, the researcher concludes that the research gap on the sustainable palm oil industry is still very wide open to the themes of institutional industry, producers, and the European Union as well as about the coconut certification system especially in Indonesia.*

### Keywords

sustainable palm oil  
industry;literature  
review;bibliometric



## I. Introduction

Palm oil is one of the agricultural products that have a strategic role in Indonesia's economic development. Indonesia as the largest palm oil producer and industry in the world has contributed to the employment of 16 million people, both directly and indirectly (Haryanti et al., 2021).

Oil palm plantations also provide opportunities for farmers and local residents to obtain greater fixed income. The development of an oil seed processing industry that is integrated with the plantation area creates employment opportunities for local communities (Chomitz in Hasibuan, A. et al. 2020)

Palm oil production in 2018 was recorded at 51.453 million tons, of which 42.883 million tons of crude palm oil (CPO = Crude Palm Oil) and 8.576 million tons of palm kernel (PKO = Palm Kernel Oil). The total production of smallholder plantations is 15,296 million tons (35%), state large estates 2,147 million tons (5%) and large private plantations 25,439 million tons (60%)(BPS-Statistics Indonesia, 2020).

Plantation commodities are the mainstay of national income and foreign exchange, with total plantation exports in 2018 reaching \$28.1 billion or equivalent to Rp. 393 trillion. The contribution of the plantation sub-sector to the national economy is expected to increase and support the development of the horticulture sector as a whole(Krismadayanti, 2020).

The palm oil industry in Indonesia is built with a sustainable approach that emphasizes a balance between social, economic and environmental aspects. This is in line with the Indonesian government's commitment to sustainable development as set out in the 2020-2024 National Medium-Term Development Plan (RPJMN).

In the RPJMN 2020-2024, sustainable development is identified as a mainstreaming aspect, which aims to provide equitable and inclusive development access, as well as protect the environment, in order to support the improvement of sustainable development. Through

this approach, the Indonesian government believes that sustainable palm oil development will make a significant contribution to the achievement of the Sustainable Development Goals (SDGs) (Jonathan et al., 2020).

The government has also made efforts to accelerate the development of sustainable palm oil by issuing Presidential Regulation (Perpres) No. 44 of 2020 is related to Indonesia's certification system for sustainable palm oil plantations, commonly known as Indonesian Sustainable Palm Oil or ISPO. This regulation requires that all types of oil palm plantations, namely large state plantations, large private plantations and Indonesian people's plantations, must be ISPO certified, ensuring that production activities are carried out in accordance with the principles of sustainability.(Apriyanto et al., 2020).

Palm oil is not only a major contributor to the country's foreign exchange due to its increasing export value, but also a driver of the regional economy, absorbing labor and alleviating hunger, reducing labor poverty in rural areas. Oil palm grew from 300,000 hectares in 1980 to 16.1 million hectares today (according to GAPKI data), with a CPO production of 43 million tonnes. It should be noted that the percentage of smallholder plantations continues to increase and now represents 52% of the total cultivated area. The total area of people's plantations will reach 9 million hectares, while the area of state-owned oil palm plantations is relatively small, only 515 hectares(D. Patone et al., 2020).

The entire oil palm plantation can employ 4.2 million workers for smallholder palm oil producers, but a total of 8.2 million people. Oil palm is also a source of income for 1.5 million smallholders. Economically, oil palm has played an important role in the regional economy, in at least 31 districts and cities in Indonesia. Many areas and cities are developing thanks to oil palm, especially in Riau province, as well as several islands of Kalimantan and Sulawesi(Ngadi & Noveria, 2018).

The achievement of palm oil's performance is very encouraging, in the midst of various negative campaigns that always loom. The palm oil industry faces many challenges in the form of an international black campaign against palm oil. This issue needs to be understood more broadly, because in fact this is a competitive global vegetable oil economy. Other problems that often arise are related to nutrition and health, social and rural development, as well as environmental and sustainability aspects.

Sustainable plantation management is very important. Therefore, Indonesia has long had plans to develop sustainable palm oil, especially in the form of mandatory ISPO (Indonesian Sustainable Palm Oil). This Indonesian sustainable palm oil program has deep concern in various aspects, such as licensing system and plantation management, application of cultivation techniques, environmental monitoring, and accountability in managing employees, empowerment, economic development, social responsibility, and sustainable business improvement. Efforts have been made to date to establish a sustainable palm oil cultivation program and its implementation has resulted in a country with the largest percentage of certified sustainable palm oil in the world. Of all certified palm oil production in the world, Indonesia accounts for 59%, while Malaysia only 27%(Yudistira & Susiatiningsih, 2018).

Oil palm products currently face many challenges, the most prominent of which is the tenure of plantation land. It is estimated that around 1.7 million hectares of oil palm land currently do not have a clear and specific status, both in terms of legal ownership and land use. Around 13.5% (1.5 million ha) of oil palm trees are currently in peat swamps. Deforestation due to oil palm expansion cannot be ignored either(Kospa, 2016). To answer these challenges, various political supports are needed. Researchers note that there are nine policies needed, namely: (1) increasing the productivity of small-scale oil palm plantations through the replanting program, and (2) providing certified palm kernel, (3) increasing access

to finance for small farmers through community land certification programs, (4 ) increasing downstream value added, (5) stabilizing prices through increasing national and regional markets, (6) investment and trade cooperation and diplomacy, (7) improving infrastructure and trade facilitation, (8) data and information, and (9) organizational strengthening farmers and entrepreneurs.

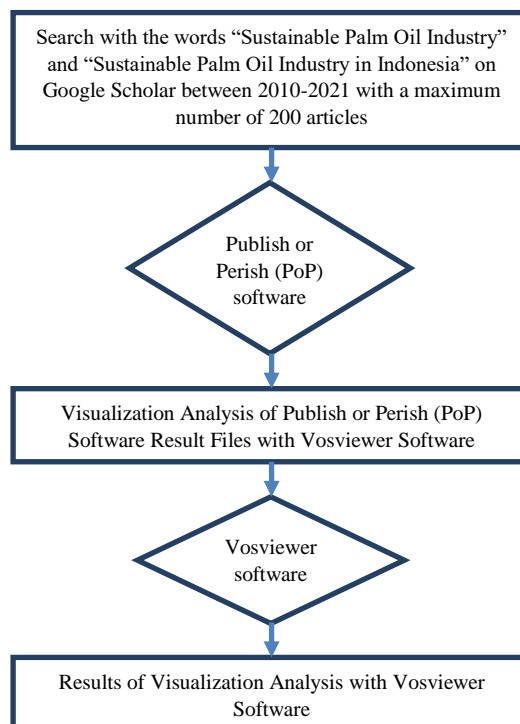
By 2050, the world will need an additional 60-170 million tonnes of vegetable oil to meet the needs of a growing population and changing consumption patterns. Faced with this enormous demand, the world has an opportunity to supply it with soybean oil or palm oil. If the world chooses to expand soybean cultivation, it will have to convert 120-340 million hectares of forest. However, if we choose to expand the area of oil palm, the world will only need to convert a tenth, or 12-34 million hectares. This means that Indonesian oil palm has a great opportunity to grow further, so it is becoming increasingly important to expand the implementation of business plans and sustainable plantation management. The implication is that political support from the government is needed.

This study will discuss the latest trends and look for novelties and themes that are still open for further research related to the Sustainable Palm Oil Industry, especially in Indonesia.

## II. Research Method

This study uses a Literature Study using Harzing's Publish or Perish (PoP) software with searches with "Title words" and "Keywords" are "Sustainable Palm Oil Industry in Indonesia" and "Sustainable Palm Oil Industry" from 2010 to 2021 in Google Scholar and limited to the maximum number of "papers" or articles of 200 (two hundred) articles, so that 4 (four) combined files of the search results are obtained and each file is stored in RIS (Research Information Systems) format.

The 4 (four) files in the RIS format were continued to be analyzed visually with the Vosviewer – Visualizing Scientific Landscape software version 1.6.17 so that the Network, Overlay and Density Visualization were obtained. Figure 1 illustrates the steps mentioned above.



**Figure 1**





For searches conducted by researchers using PoP software on Google Scholar with the title words: "Sustainable Palm Oil Industry" with a publication range between 2010 and 2021, the number of papers obtained is 13 and the number of citations = 14, citations per year = 1, 27, the citation per paper = 1.08 and the h-index = 3, can be seen in Figure 4.

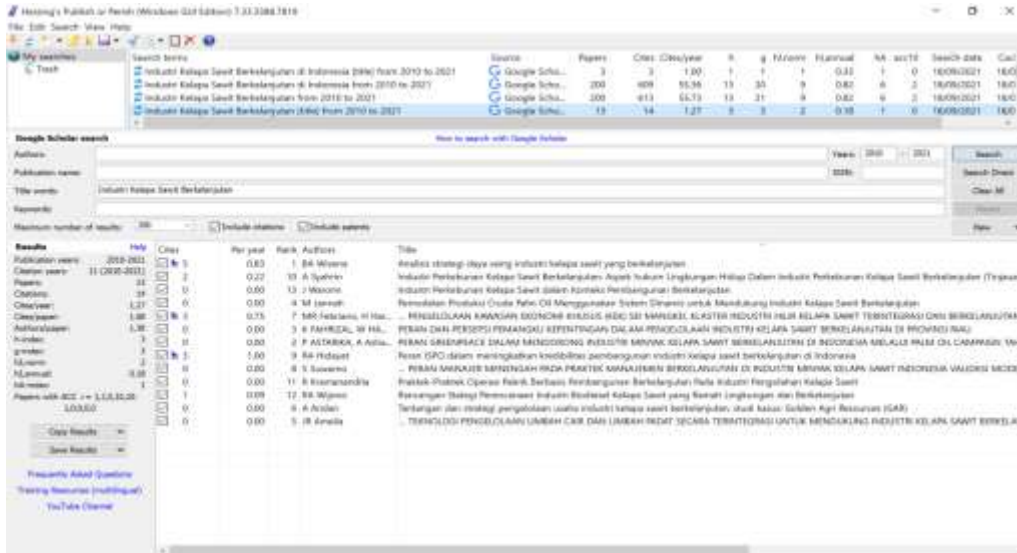


Figure 4.

While the search conducted by researchers using PoP software on Google Scholar with Keywords: "Sustainable Palm Oil Industry in Indonesia" with a publication range between 2010 and 2021, the number of papers obtained is 200 and the number of citations = 613, citations per year = 55.73, the citation per paper = 3.07 and the h-index = 13, can be seen in Figure 5.

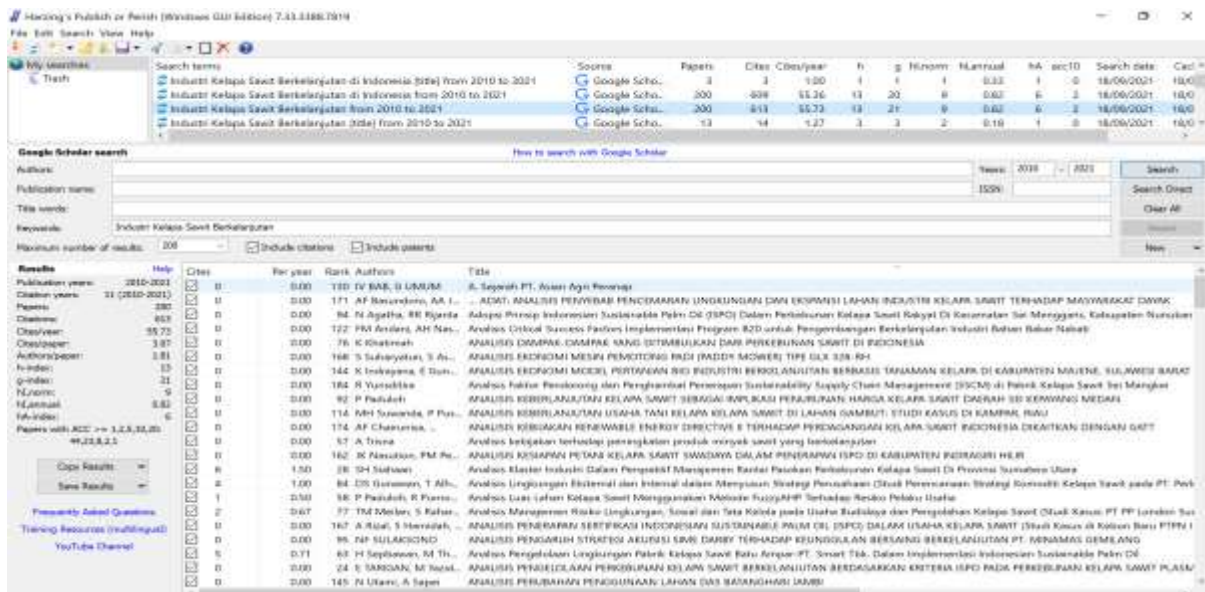
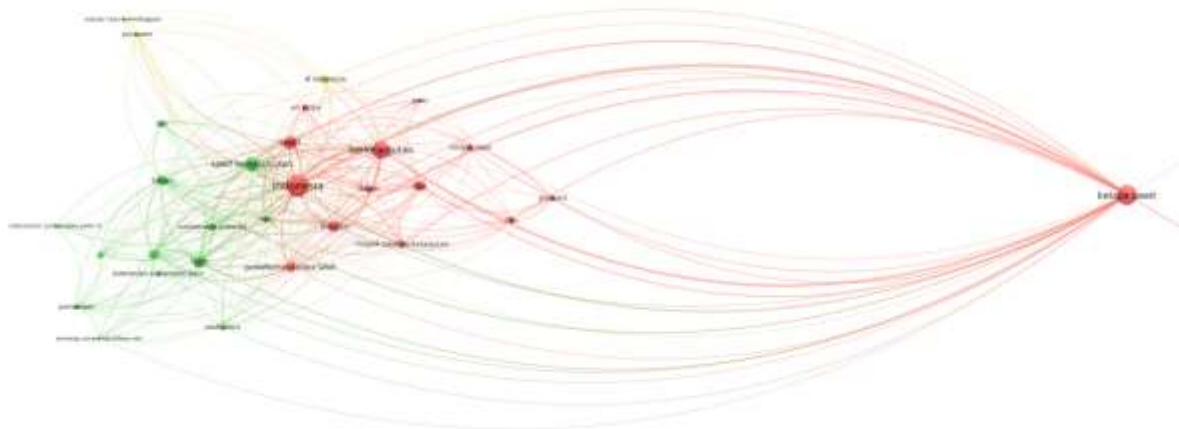


Figure 5.

Based on the results obtained from the PoP software, it is known that as many as 203 and 213 scientific articles/publications on the development of research on the use of institutional repositories were queried on Google Scholar in 2010-2021 with the sentences "Sustainable Palm Oil Industry in Indonesia" and "Sustainable Palm Oil Industry" . This data is then analyzed descriptively based on the year of publication, the publishing institution, the country that publishes it, the name of the journal/publication, the type of document, and the research topic. To get the research map, the data is exported in RIS (Research Information Systems) file format. The exported data are then processed and analyzed using the VOSViewer application program to find out the bibliometric map of research developments in the 2010 to 2021 timeframe.

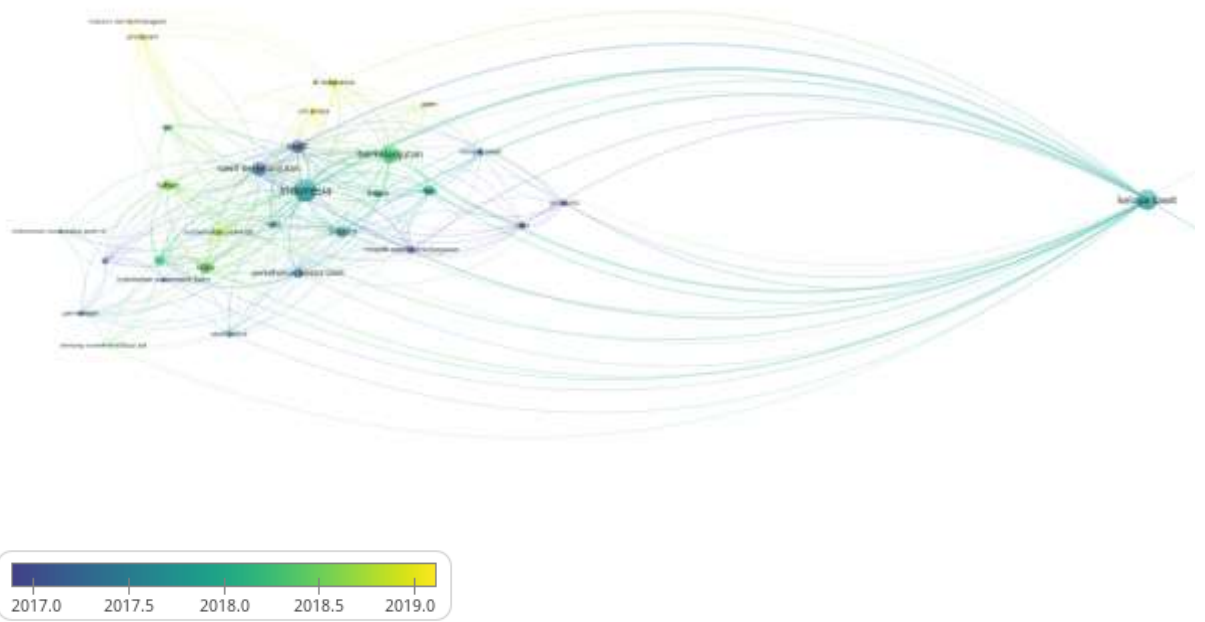
From the results of 4 combinations of data from searches with Google Scholar as much as 2x200 article titles in the query from keywords and added 3+14 article titles from the query results from title words stored in RIS format and analyzed with VosViewer which produces the following images:

Figure 6 shows the Network Visualization obtained from 4 RIS format files as a result of a query from Google Scholar, which produces 4 groups with 3 main groups, links= 229 connecting 33 items.



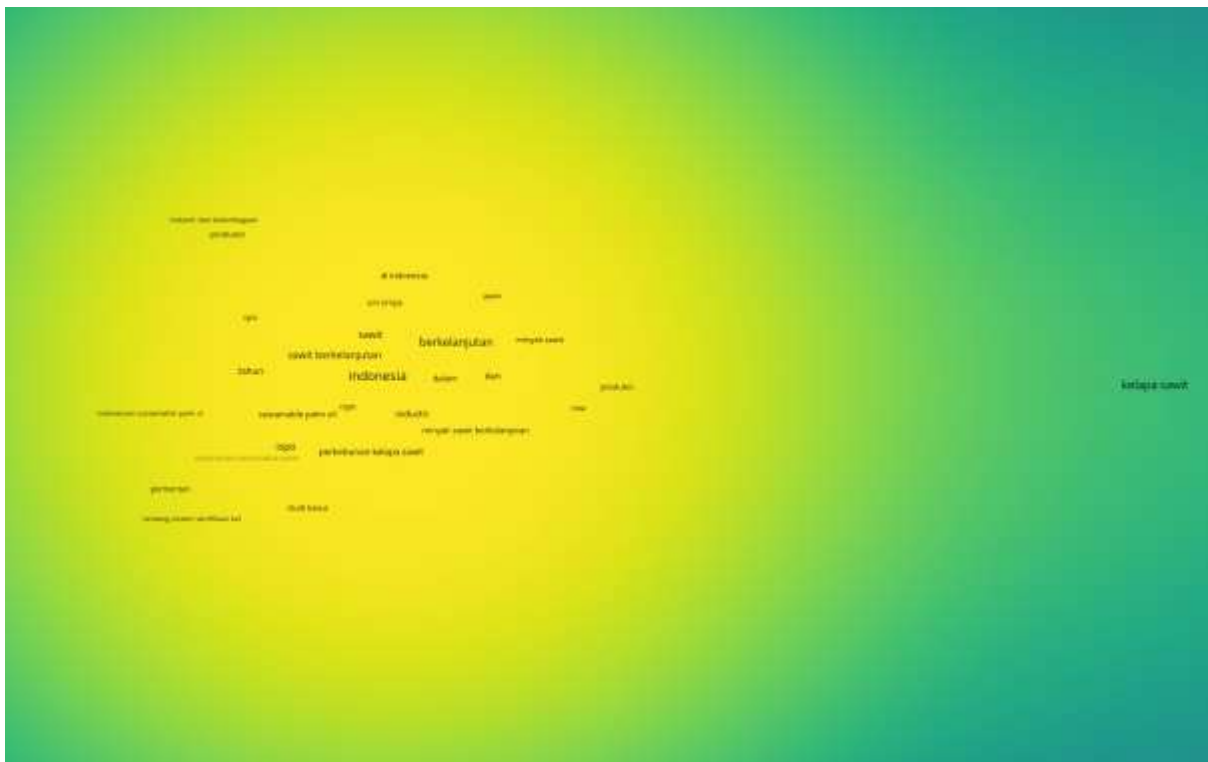
**Figure 6**

While Figure 7 is an Overlay Visualization which shows that the more recent the research, the lighter the color (yellow) and the larger the circles, the more people researching and the smaller the circles the less people being studied.



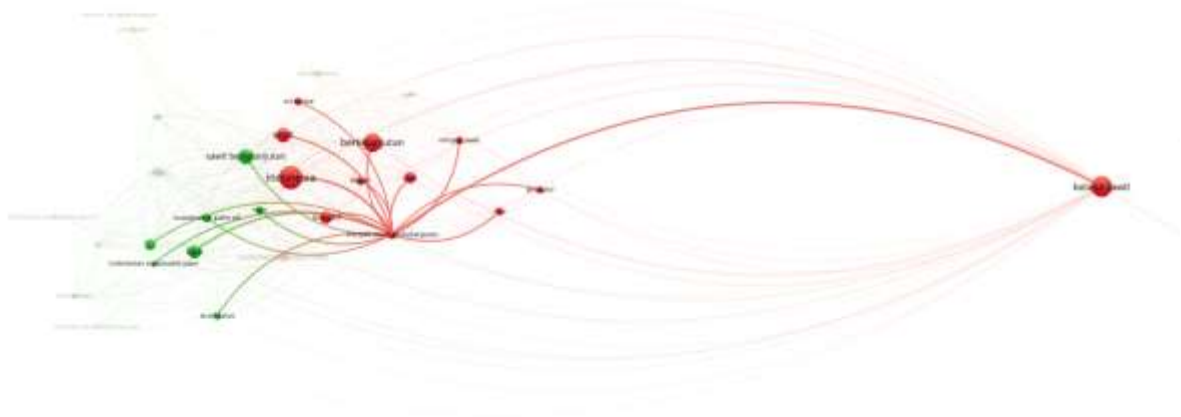
**Figure 7**

Figure 8 is a Density Visualization which shows that the bigger the letters and the lighter (yellow) the background color, the more people are researching.



**Figure 8**

Researchers will elaborate on Network Visualization, Figure 9 and Figure 10 below to see that research with the theme "Sustainable Palm Oil" has 2 interrelated groups and research on Palm Oil related to the theme of Sustainable Palm Oil is still very relevant to be raised. Visible from a distance network. Also the theme of the European Union, Indonesian Sustainable Palm Oil and their Producers is still very rarely studied, this can be seen from the small circle and the distance of the network of links with sustainable palm oil or sustainable palm oil.



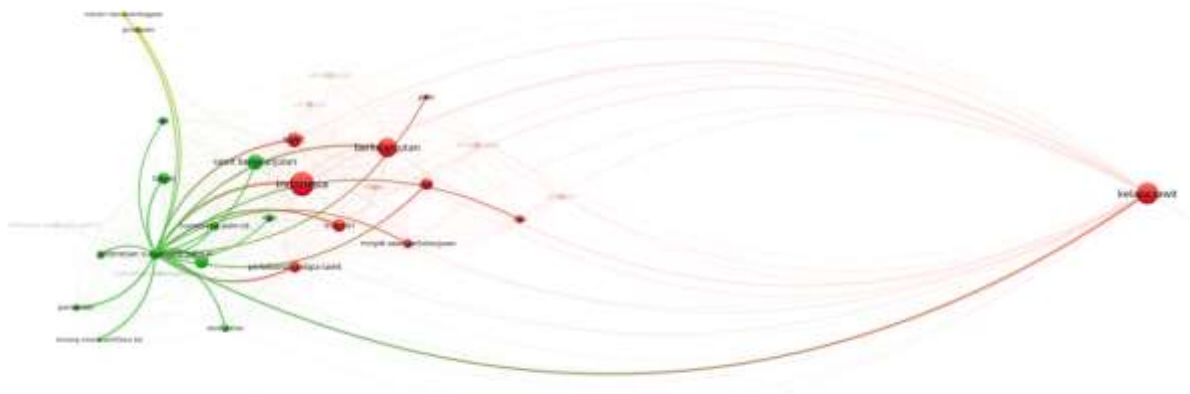
*Figure 9*



*Figure 10*

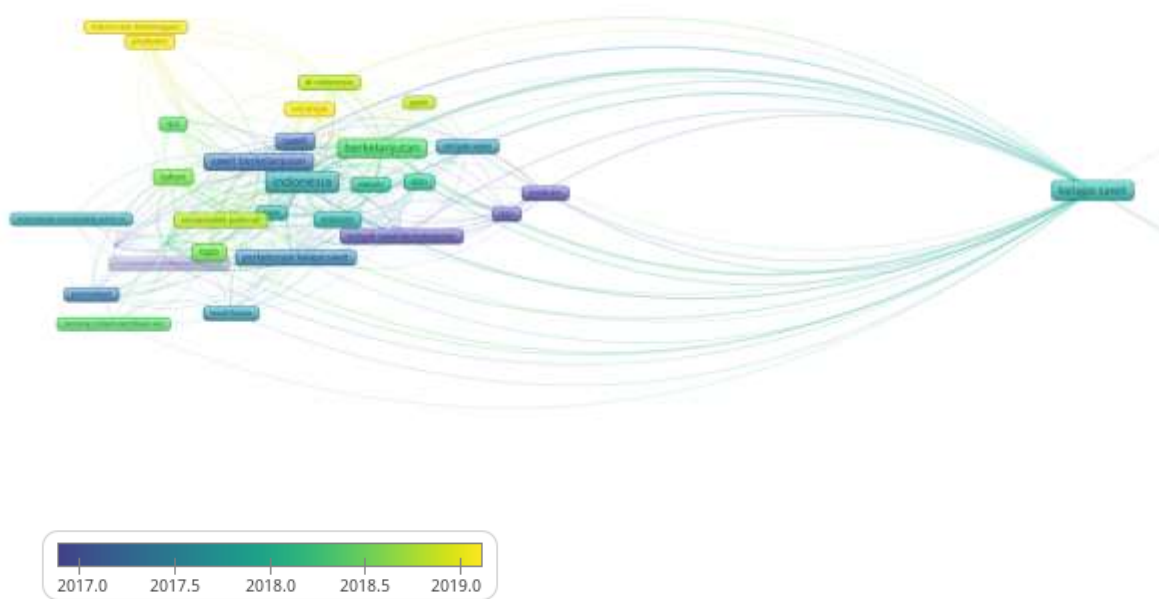
While Figure 11 shows that the “Indonesian Sustainable Palm Oil” theme group has themes that we can still elaborate and research, especially in the industrial and institutional sectors, producers and on the certification system that supports “Indonesian Sustainable Palm Oil”.



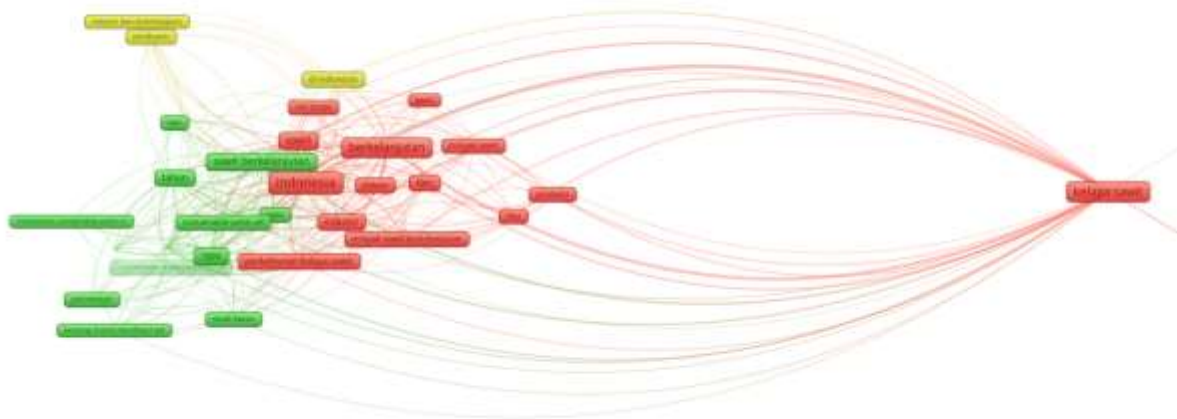


**Figure 11**

Figure 12 and Figure 13 once again emphasize that the theme of institutional industry, producers, and the European Union is still and “about the oil palm certification system” is very recently researched and is still very open and it is still possible to find a “novelty” or novelty to raise these themes in framework of the Sustainable Palm Oil Industry, especially in Indonesia.



**Figure 12**



**Figure 12**

#### **IV. Conclusion**

With a literature study on the theme of the Sustainable Palm Oil Industry assisted by PoP and Vosviewer software, the results obtained are the institutional, producer, and European Union industry themes and "about the palm oil certification system" is very recently researched and is still very open and it is still possible to find "novelty". " or novelty to raise these themes in the context of the Sustainable Palm Oil Industry, especially in Indonesia.

These themes are very relevant, especially regarding the certification of oil palm plantations, ISPO certification, which will provide assurance that the production practices carried out have followed the principles and principles of sustainability. This is inseparable from the good cooperation between the industry, institutions in this case the relevant ministries and the palm oil producers themselves.

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