

# Palm Oil Production and Deforestation in Indonesia

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## Background

Palm oil, due to its extreme versatility, its low costs and high yields, is the most commonly used vegetable oil in the world. As a consequence, it is highly demanded and world-wide production is increasing ("Palm Oil | Industries | WWF", 2020).

Approximately 90% of all palm oil is grown either in Indonesia and Malaysia with Indonesia being the world's leading producer in 2018. The country had an output of around 40.6 million tons, leading to exports of around 29.3 million tons.

Because this palm oil production is extremely land-intensive, Indonesian rainforests have been razed to construct plantations (Hirschmann, 2020). The Indonesian government and President Joko (Jokowi) Widodo increased production in hopes of strengthening the economy. Due to its stature as an economic booster, Jokowi has neglected corporate responsibility - at the expense of one of the world's most biodiverse tropical forests and many indigenous populations (Wedel, 2018).

In response to this crisis, many organizations have taken the issue into their own hands. A non-profit organization, The RoundTable on Sustainable Palm Oil created a set of environmental and social criteria for sustainable palm oil production. Companies must comply with these standards to receive certification and produce Certified Sustainable Palm Oil (CSPO). For developing and implementing these standards, they bring together stakeholders from all seven sectors of the palm oil industry: producers, processors, manufacturers, retailers, investors, and environmental and social non-governmental organizations ("RSPO Certification", 2020).

In 2013, the Indonesian National Interpretation Task Force prepared a national interpretation to become a part of the generic documentation of RSPO Principles and Criteria for Sustainable Palm Oil Production in 2013. This document is used as guidance for implementing these certifications in Indonesia. This interpretation was endorsed by the RSPO Board of Governors in 2016 ("Supporting Bodies", 2020).

Therefore, this GIS research aims to take a graphical look at these certified mills and associated deforestation fires.

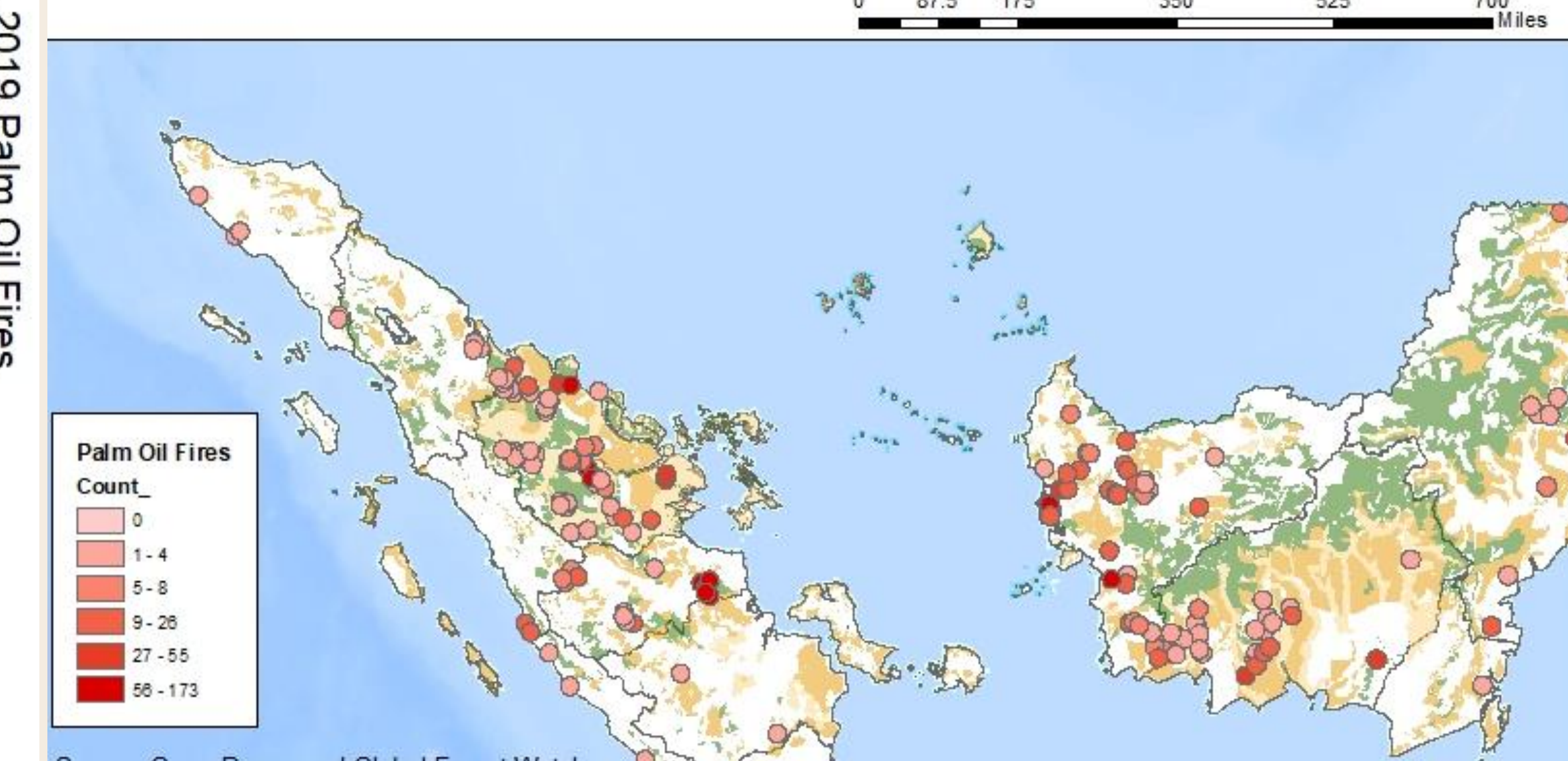
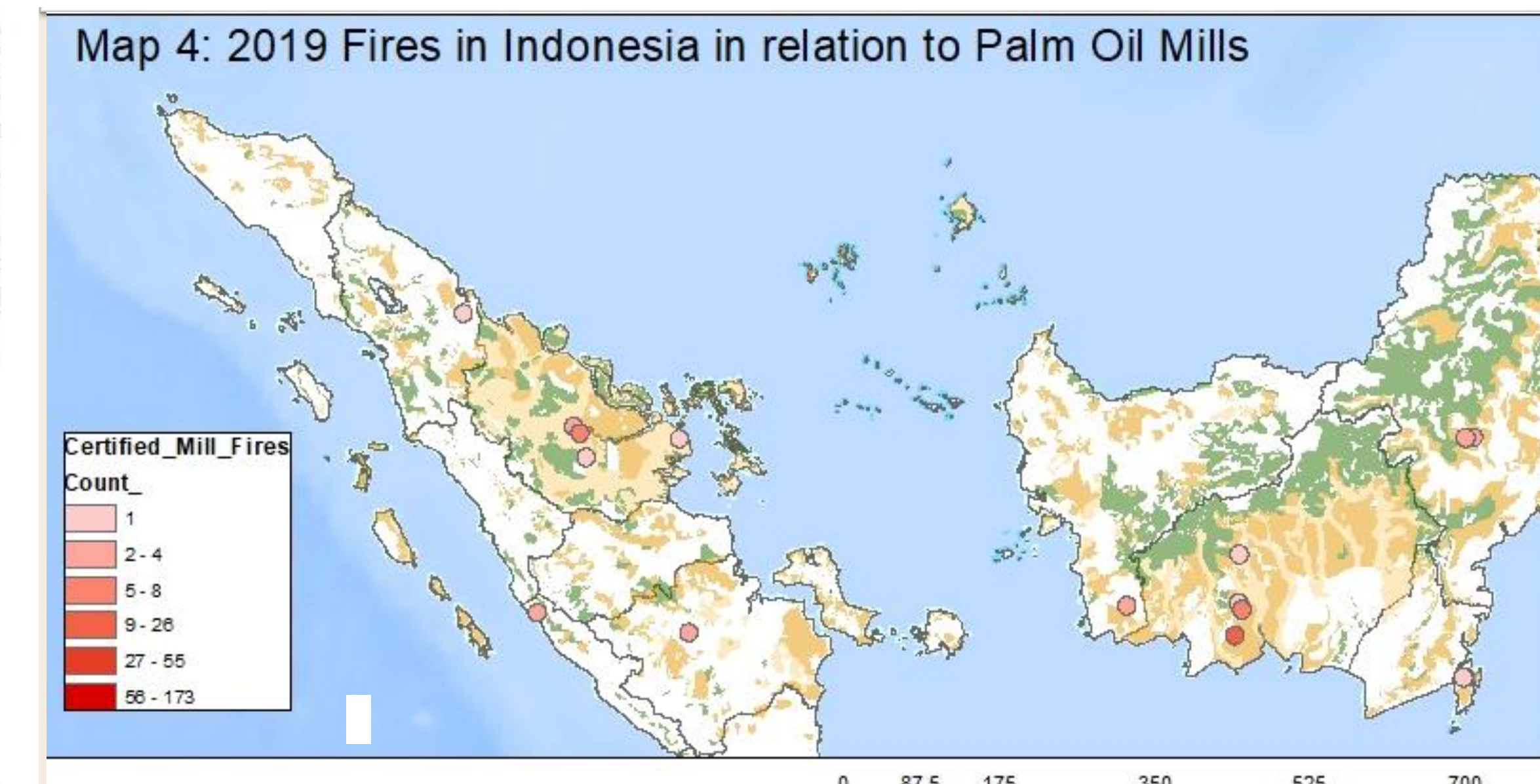
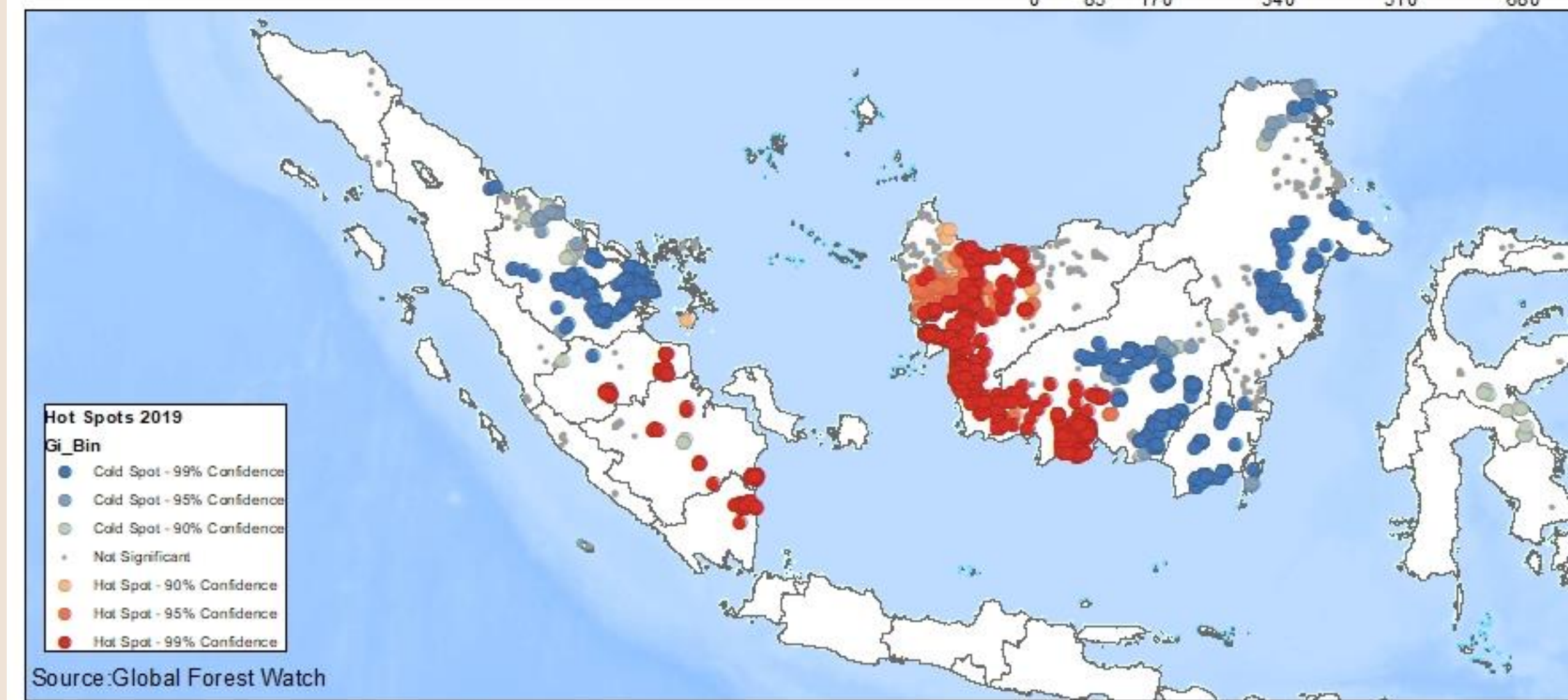
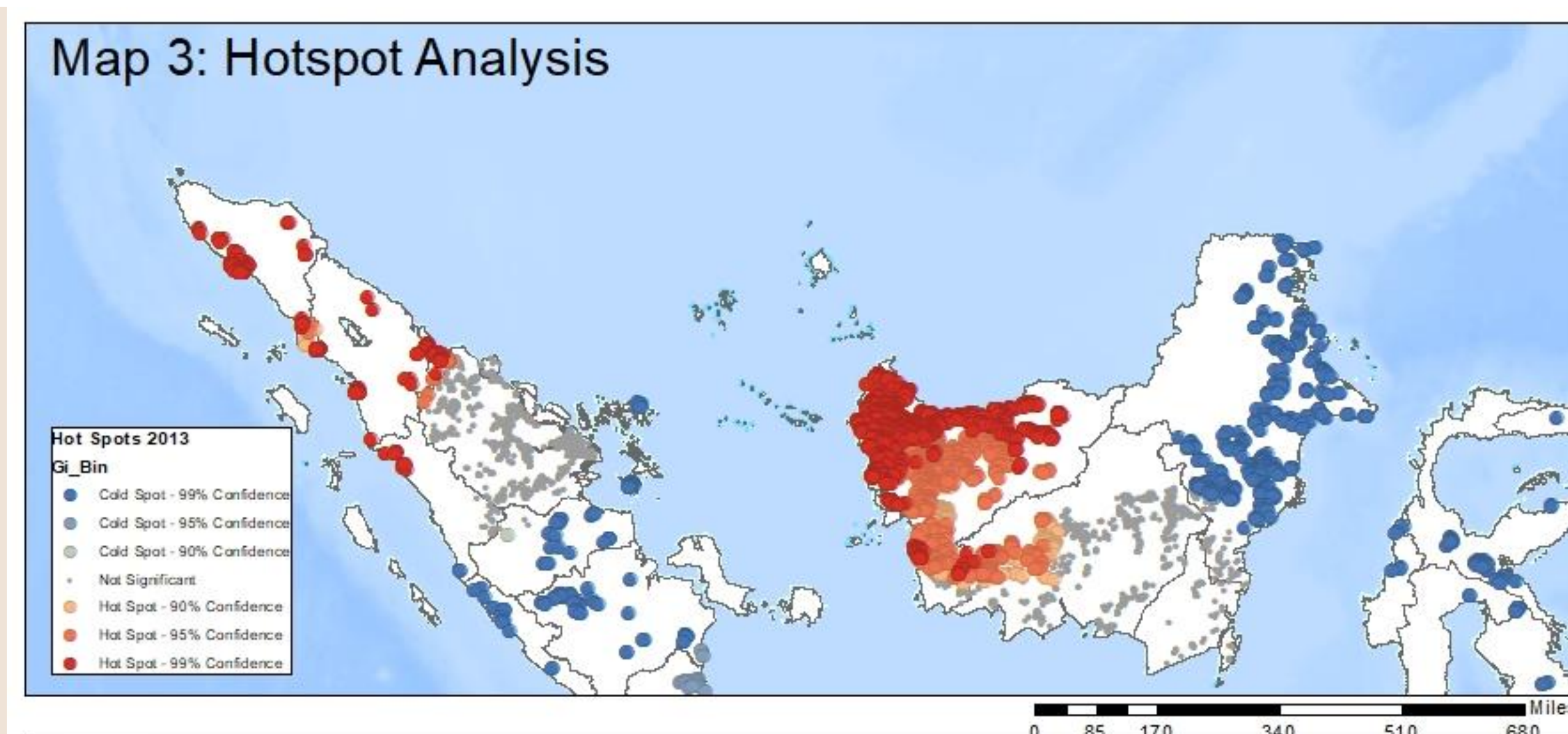
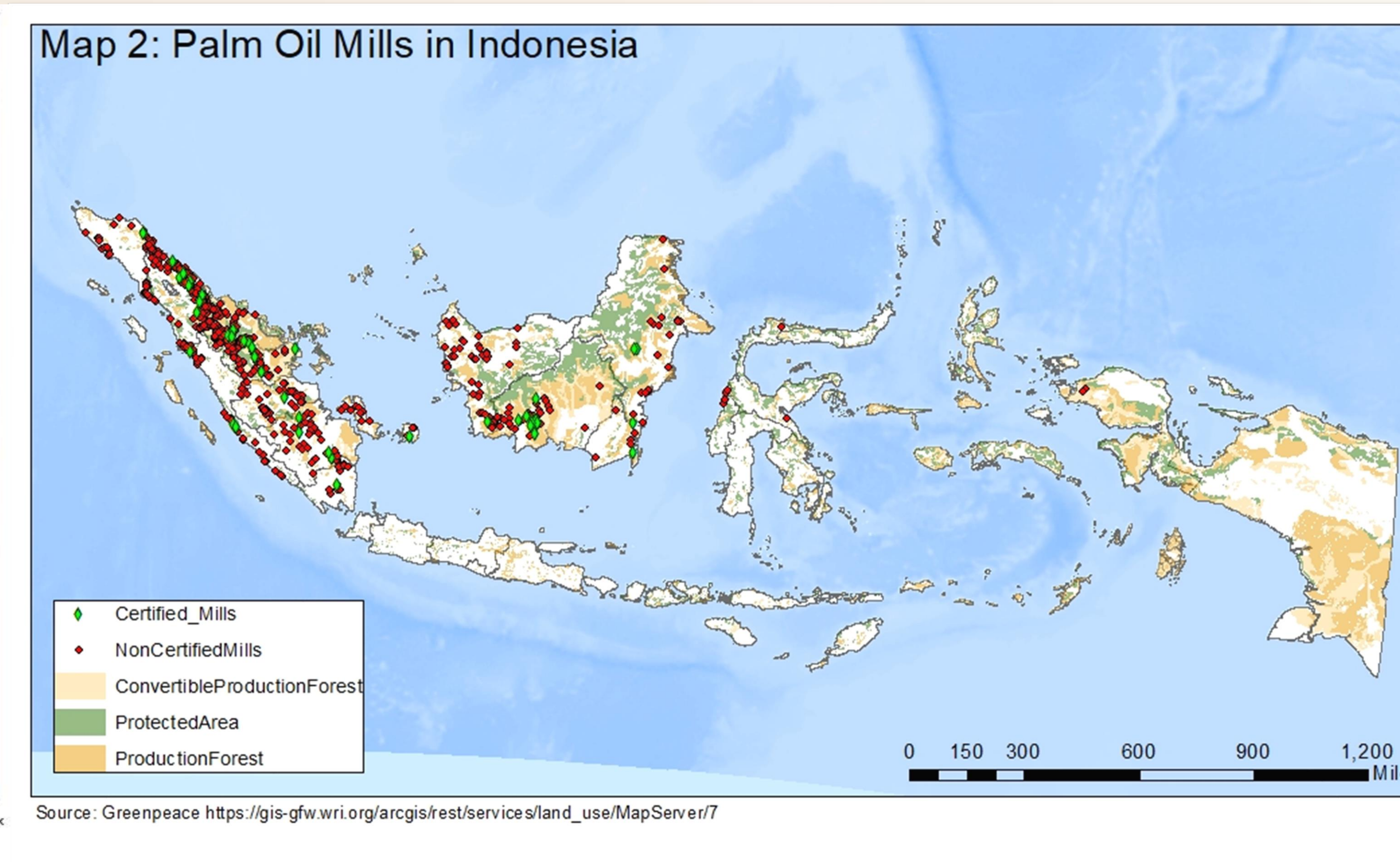
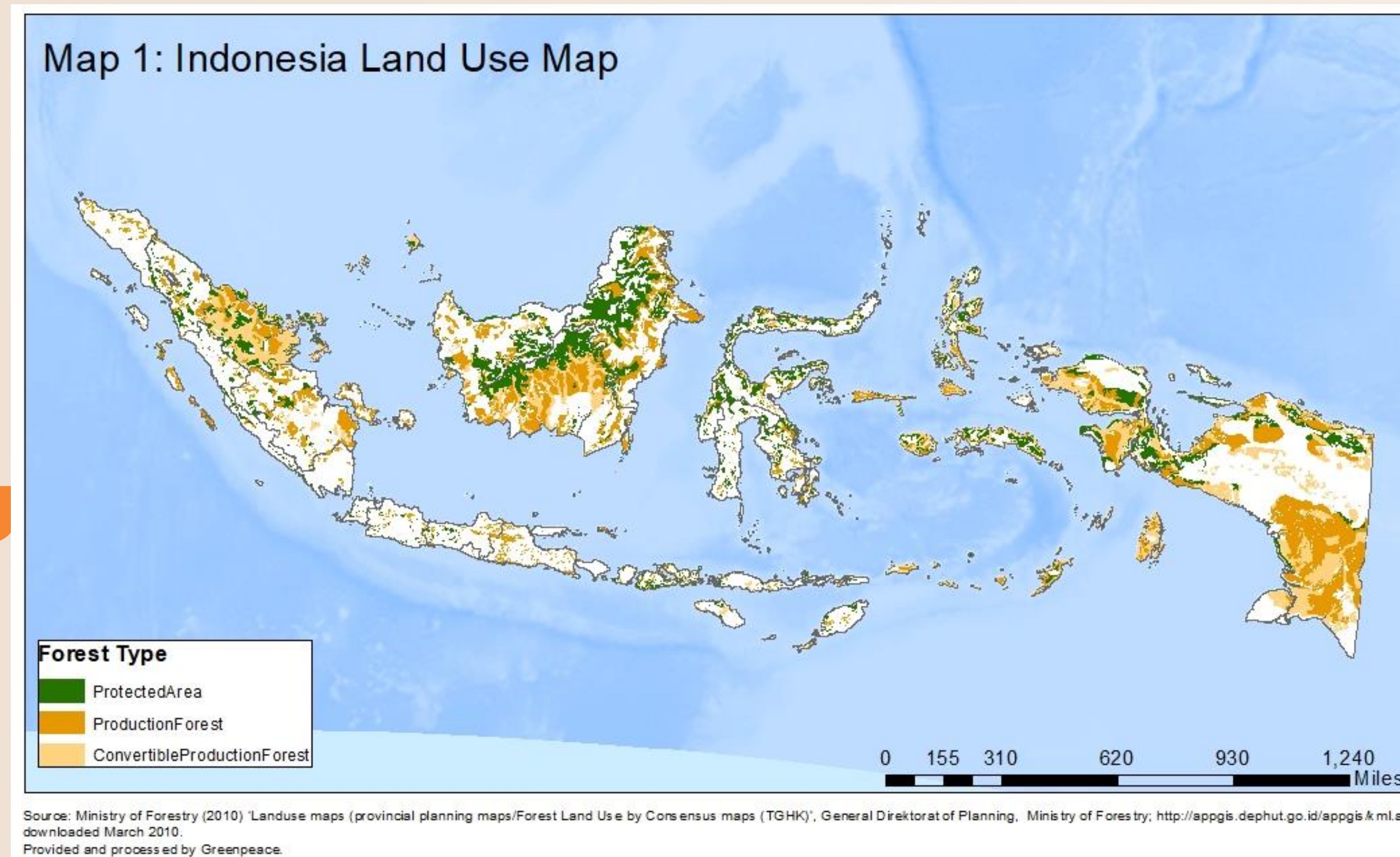
## Maps

### Research Question

Have the Roundtable on Sustainable Palm Oil certifications (CSPOs) been effective at reducing the magnitude of deforestation?

### Methods

The data collected is from Global Forest Watch, the Ministry of Forestry, and Greenpeace. The selected data is mainly from the 2013 and 2019 to show the changes in deforestation fires before and after the Indonesian National Interpretation Task. **Map 1** was created by dissolving polygon data by forest certification type (protected, production, or convertible production). **Map 2** displays simple point data of all certified and non-certified palm oil mills. **Map 3** uses a hot spot analysis to show the magnitude of the fires in 2013 compared to those in 2019. The data was filtered to only show those fires directly related to palm oil production. To show the association of these fires with the certification of the mills, **Map 4** joined the fire point layer with a polygon layer created by displaying a 10 mile-buffer around each mill type.



### Discussion

The hotspot analysis between the years 2013 and 2019 do show a potential decrease in the far west of Sumatra island and the north of Kalimantan. However, to test to see the relation to this decrease in the fires, there needs to be shown association. For this, using the buffer layer and the spatial join demonstrates that there are less fires associated with those mills than are not certified.

There are several limitations to this study. For a more complete analysis, each year should be represented and then regressed such as in a pooled cross sections analysis. The research should control for other confounding variables in the case that these certified mills are not necessarily causing the decrease in magnitude of the forest fires.

### Conclusion

Understanding the impact these certified mills have on palm oil-driven forest fires can lead to country-wide policy implications. Further studies will need to be done to strengthen the association between the certification and the forest fires. If there is a strong association there needs to be an analysis on what allows these mills to utilize less fires and therefore less deforestation and how this can be replicated on a larger scale.

### Resources

- Hirschmann, R. (2020). Topic: Palm oil industry in Indonesia. Retrieved 10 November 2020, from [https://www.gfw.org/arcgis/rest/services/land\\_use/MapServer/7](https://www.gfw.org/arcgis/rest/services/land_use/MapServer/7)
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- Supporting Bodies. (2020). Retrieved 10 November 2020, from <https://www.rspo.org/about/supporting-bodies>
- Wedel, P. (2018). "When We Lost the Forest, We Lost Everything". Retrieved 10 November 2020, from <https://www.wwf.org/report/2019/09/23/when-we-lost-forest-we-lost-everything/>