Palm Oil and the Supply Chain: Orangutans Pay the Price

Mae Shaeffer[1]

In the wild, orangutans only live on the islands of Borneo and Sumatra. Both Bornean orangutans and Sumatran orangutans are classified as critically endangered by the IUCN's Red List of Threatened Species, meaning they are nearly extinct. Each population has faced a steady decline, due in large part to the islands' respective palm oil industries consuming orangutan habitat. Once living within extensive forests, orangutan populations struggle as the tree cover which they rely upon for food and shelter is continually eliminated. Though the two are similar species, Bornean and Sumatran orangutans reside in distinct regions and are separated by a few distinct characteristics in behavior and appearance.[2] Bornean orangutans are currently more protected from palm oil expansion than Sumatran orangutans, and new measures need to be implemented within the palm oil industry to ensure the survival of Sumatran and Bornean orangutans. The measures in place on the island of Borneo, including forest corridors and sustainability initiatives, can be used as a basis for Sumatra to develop a more extensive defense of its orangutans.

II. Habitat Loss and Population Decline

The installation and maintenance of oil palm plantations destroy orangutans' natural habitat. Deforestation leaves orangutans with only fragments of forest, inhibiting movement between populations, and thereby increasing their mortality rates.[3] Forest habitat for the Sumatran orangutan decreased by 60% from 1995 to 2007.[4] In Borneo, models showed 61.5% of the orangutan's habitat gone by 2025, while "annual deforestation was projected to occur at a rate of 1.54%, which is similar to that experienced in Sumatra since 2001."[5] Both areas are facing a steady deterioration of land resources. These high deforestation rates directly correlate

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[1] Author can be contacted at: maeshaeffer3@gmail.com.
[2] I. Singleton, et al. "Pongo abelii, Sumatran orangutan." IUCN Red List (2017), pp. 1-16, dx.doi.org/10.2305/IUCN.UK.2017- 3.RLTS.T121097935A115575085.en.
[3] Dave Seaman, et al. "Orangutan movement and population dynamics across human-modified landscapes: implications of policy and management." Landscape Ecology, 2021, 2957–2975, link.springer.com/article/10.1007/s10980-021-01286-8.
[4] Singleton, note 2.
[5] Marc Ancrenaz, et al. "Pongo pygmaeus, Bornean orangutan." The IUCN Red List of Threatened Species (2016): 1-17, www.iucnredlist.org/species/17975/123809220.
Maria Voight, et al. "Deforestation projections imply range-wide population decline for critically endangered Bornean orangutan." Perspectives in Ecology and Conservation, 2022, p. 244, www.sciencedirect.com/science/article/pii/S2530064422000372.

to the palm oil industry due to the overlap between orangutan habitat and the land used for oil palm plantations. In Sabah, one of the more orangutan-dense areas in Borneo, "around 25% of the land…is planted with oil palm, with only a small proportion of the previous forest cover remaining in these plantations."[6] In Sumatra, "it was conservatively estimated that [over] 40% of the deforested area was converted to large-scale plantations, mainly of oil palm."[7] These plantations split the forest apart, prohibiting orangutans from executing their natural patterns of movement and barring them from access to resources.[8] Though oil palm plantations only make up a portion of deforested area, their impact on orangutans surpasses that of other contributors. In a study using data on deforestation and orangutan population densities from 2001 to 2017, "orangutans within protected areas and logging concessions were found to be less vulnerable to deforestation than orangutans in industrial plantations and in areas without management."[9] Oil palm plantations are classified as industrial, and thereby pose a greater threat to decreasing orangutan survival rates than other methods of deforestation. Living within forests fragmented by oil palm plantations, orangutans are at a natural disadvantage.

The repercussions of fragmentation are demonstrated by the diminishing size of orangutan populations. The population of "Bornean orangutans decreased by more than 60% between 1950 and 2010, and a further 22% decline is projected to occur between 2010 and 2025."[10] For Sumatran orangutans, "if the rate of decline observed since 1985 and predicted continues unabated, the population decline will exceed 80% over a three-generation period."[11] This is the data used to justify the endangerment of each species.

Not all involved in this matter are in consensus over the numbers. On one side of the narrative, "the Indonesian government has…published monitoring data showing orangutan populations dramatically increasing, even in some cases more than doubling over a few years."[12] The statistics which this publication provides, however, portray growth at "a rate which is not

[6] Seaman, note 3, at 2959.
[7] David L A Gaveau, et al. "The future of forests and orangutans (Pongo abelii) in Sumatra: predicting impacts of oil palm plantations, road construction, and mechanisms for reducing carbon emissions from deforestation." *Environmental Research Letters*, 2009, p. 6, 10.1088/1748-9326/4/3/034013.
[8] Seaman, note 3, at 2957-2958.
[9] Voight, note 5.
[10] Ancrenaz "Pongo pygmaeus," note 5, at 2.
[11] Singleton, note 2, at 2.
[12] Julie Sherman, et al. "Envisioning a future for Bornean orangutans: Conservation impacts of action plan implementation and recommendations for improved population outcomes." Biodiversitas, 2020, pp. 465-477, researchonline.ljmu.ac.uk/id/eprint/12003/.

biologically possible for orangutans."[13] Additionally, these increases are unlikely given both the proliferation of forest fragments and low survivability within them. Explaining potential bias from this data, "palm oil expansion is at the core of Indonesia's short-term and long-term economic development plan."[14] Palm oil production in Indonesia makes up a staggering 4.5% of the GDP, making it vital to both the nation's economy and livelihood of its people.[15] The Indonesian government is therefore incentivized to release these positive statistics to preserve its image and the thriving industries culpable for orangutan mortality rates.

The connection between forest fragmentation and orangutan survival is not coincidental. In environmental affairs, "when a population that is supposed to be widespread but is split into two or more sub-populations, it is easier to enter into a vortex of extinction."[16] For reference, the Sumatran orangutan is fragmented into 10 populations and "several orangutan [Population and Habitat Viability Assessment]s have shown that Bornean orangutan populations of fewer than 50 individuals are not viable in the long term."[17] Forest fragmentation exposes orangutans to population loss. This makes perpetrators of deforestation at fault for the orangutan deaths in these areas.

The implementation of pathways between forest fragments is the most workable solution which scholars have devised. The main alternatives are relocation or an increased focus on the orangutans residing in fully intact forests. With current levels of forest degradation, only monitoring the forests left undamaged by humans is no longer a viable option.[18] Leaving small patches of land among deforested areas as stepping-stones so that species can travel between segments in addition to "planting non-palm trees throughout an agro-industrial oil palm landscape" to allow for enough food and nesting sites has elicited success in the individual areas

[13] Ibid, 471.
[14] Denis Ruysschaert and Denis Salles. "Towards Global Voluntary Standards: Questioning the Effectiveness in Attaining Conservation Goals." Ecological Economics, vol. 107, Nov. 2014, pp. 438–446, https://doi.org/10.1016/j.ecolecon.2014.09.016.
[15] Toby Gardner and Ylva Rylander. "Indonesia makes progress towards zero palm oil deforestation – but gains in forest protection are fragile." Stockholm Environment Institute, 2022, https://www.sei.org/features/zero-palm-oil-deforestation/.
[16] N. Auliah et al. "Habitat Fragmentation Effect on the Characteristics of orangutan Nest Tree Selection." IOP Conference Series: Earth and Environmental Science, vol. 782, no. 3, June 2021, p. 032016, https://doi.org/10.1088/1755-1315/782/3/032016.
[17] Ancrenaz "Pongo pygmaeus," note 5, at 7.
Auliah, note 16, at 4.
[18] Seaman, note 3, at 2970.

which it has been implemented, yielding positive trends within future projections of Bornean orangutan populations.[19] Though Borneo has been observed creating these corridors between forest fragments, the rate has not yet been high enough to see present improvements among its orangutan populations.[20] Even so, the potential that these pathways hold for the future cannot be invalidated. Orangutans should not be removed from forest patches as it is harmful to other species in the patch and causes disruption among the population. The fragments of forest that remain already contain reduced biodiversity and ecological function.[21] Conservationists use removal as an alternative solution because it is more cost effective. It is better in the long run, however, to invest resources into remaining fragments so that all species can be preserved.[22] Integrating resources into fragments and plantations includes convenience in other ways. For example, "every 25–30 years palms need to be removed and replanted, providing an opportunity to incorporate and restore additional forest fragments within existing farmland."[23] The very time and manner in which the problem is intensifying could be used to combat its harmful effects. The development of long-term solutions to fragmentation will provide a sustainable basis for the continuation of the palm oil industry and orangutan populations.

III. Economic Analysis

The most significant obstacle to progress toward sustainability in the palm oil-dependent economies of Borneo and Sumatra is corruption among palm oil producers. The industry often displays a disregard for permits, preserved lands, and local farmers, at times endorsed by the government. Environmental regulations may work when holding legally established practices accountable but fall flat when combatting already noncompliant corporations. The economies of both regions rely heavily on palm oil exports. Indonesia, owning Sumatra and some land in Borneo, is the top producer of palm oil in the world, responsible for 59% of global production.[24] Malaysia, the primary contributor to sustainability initiatives in Borneo, is the second highest,

[19] Marc Ancrenaz, et al. "Of Pongo, palms and perceptions: a multidisciplinary assessment of Bornean orangutans Pongo pygmaeus in an oil palm context." Oryx, vol. 49, no. 3, 2015, pp. 465-472. ProQuest, http://access.library.miami.edu/login?url=https://www.proquest.com/scholarly-journals/pongo-palms-perceptions-multidisciplinary/docview/1692566298/se-2, doi: https://doi.org/10.1017/S0030605313001270.
Seaman, note 3, at 2971.
[20] Sherman, note 12.
[21] Auliah, note 16, at 2.
[22] Sherman, note 12, at 475.
[23] Seaman, note 3, at 2959.
[24] "Palm Oil 2023 World Production." International Productions Assessment Division. U.S. Department of Agriculture, September 2023, ipad.fas.usda.gov/cropexplorer/cropview/commodityView.aspx?cropid=4243000.

ranking at 24%, producing 19 million tons in 2023.[25] Though there is some variation in palm oil output, Borneo is a few steps ahead of Sumatra in its process for economic reformations, giving its orangutans a better chance at future survival. The palm oil industry is not subsiding, as "estimates suggest the compounded annual growth rate of the palm oil industry lies between 3 [to] 4.5%" and is "projected to increase at a staggering 5.6% per-year through 2030."[26] With an established connection between orangutan species decline in the East Indies and allocation of land for oil palm plantations, managing the approaches of individual firms is critical to managing the endangerment of the species.

The economy of Indonesia, containing Sumatra and its orangutans, depends on the palm oil industry, making the region vulnerable to abuse. According to a *Friends of the Earth* report, one of Indonesia's most influential palm oil corporations, Astra Agro Lestari (AAL) has been seizing land for its oil palm plantations illegally, voiding the effectiveness of environmental protections. As a result, Kellogg's, Procter & Gamble, Hershey's, Nestlé, PepsiCo, Oreo, and Unilever all suspended their contracts with AAL to promote accountability within the industry.[27] AAL owns 297,000 hectares of palm oil plantations and 41 subsidiaries, making it the second largest supplier in Indonesia.[28] Many of these subsidiaries were found to neither possess permits to cultivate land nor Plantation Business Permits, limiting both government monitoring and taxation of the firms.[29] AAL subsidiaries are essentially controlling farmland with no intervention from the Indonesian government past baseline policies, which are not enforced. This demonstrates the priority for the Indonesian government and these firms is profit, not the land or its species. Currently, PT Mamuang, one segment of AAL, "illegally occupies 255 hectares of Indonesia's protected Forest Zone."[30] This occupation renders the descriptor, "protected," meaningless. The smallholders within AAL are defying multiple forms of statutory

[25] Ibid.
[26] Gabriel Snashall and Helen Poulos. "Oreos Versus orangutans: The Need for Sustainability Transformations and Nonhierarchical Polycentric Governance in the Global Palm Oil Industry." Forests, 2021, pp. 1-17, www.mdpi.com/1999-4907/12/2/252.
[27] Hans Nicholas Jong. "Kellogg's latest to freeze Indonesian supplier over palm oil violations." Mongabay, 14 September 2023, news.mongabay.com/2023/09/kelloggs-latest-to-freeze-indonesian-supplier-over-palm-oil-violations/.
[28] Jeff Conant and Gaurav Madan. "No Consent Astra Agro Lestari's land grab in Central and West Sulawesi, Indonesia." Friends of the Earth United States (2022), pp. 1-20.
[29] Ibid, 10-11.
[30] Ibid, 13.

accountability, meaning current Indonesian legislation is not sufficiently encouraging sustainability.

Despite its claimed commitment to sustainability, AAL's violations have not stopped at deforestation. There are reports of subsidiaries polluting and flooding nearby water sources and harming local farms and communities.[31] Increasing evidence of mass distribution of illegally sourced palm oil led to calls from the Consumer Goods Forum (CGF) for a response.[32] Like AAL, these corporations also fabricated insincere sustainability policies. Firms join the CGF to bolster each other's public images, and so many "pledged to end deforestation in their supply chains by 2020."[33] A sustainability policy cannot produce results unless there are corresponding actions. Hershey's, Nestle, and PepsiCo all did not enact any boycott until 2022, with Kellogg's not acting until 2023.[34] False sustainability permeates the oil palm industry in Indonesia at every level, from the government to overseas buyers.

IV. Comparing Reparations

Though the economy of Borneo is also significantly connected to palm oil, more aggressive reforms for sustainability are in place. The oil palm industry is considerably expansive, with plantations covering 20% of Malaysia as a whole.[35] As progress, the Rhino Forest Fund (RFF), with the Sabah Forestry Department as its trustee, used donations to repurchase 124 acres of old palm oil plantation in Borneo from its legal owners to be remodeled with forest corridors.[36] In a simulation of survival rates of the Bornean orangutan, their best chances lay in areas that included these corridors between land segments, like the ones currently being developed by the RFF.[37] The transition was made possible by the plot's lawful documentation, whereas past efforts have worked around retaking illegally held lands.[38] This event emphasizes the importance that these lands used for plantations be recorded. Characterized

[31] Ibid, 10-11, 15.
[32] Hans Nicholas Jong. "Deforestation for palm oil continues in Indonesia's 'orangutan capital'." Mongabay, 22 September 2023, news.mongabay.com/2023/09/deforestation-for-palm-oil-continues-in-indonesias-orangutan-capital/.
[33] Ibid.
[34] Jong "Kellogg's latest to freeze Indonesian supplier," note 27.
[35] Jeremy Hance. "Conservationists replant legal palm oil plantation with forest in Borneo." Mongabay, 9 November 2020, news.mongabay.com/2020/11/conservationists-replant-legal-palm-oil-plantation-with-forest-in-borneo/.
[36] Ibid.
[37] Seaman, note 3.
[38] Hance, note 35.

by legality, this transaction should create a positive impact on the orangutan population in Borneo.

The area has also made progress by targeting the opposite side of the industry: operating smallholders. The Round Table on Sustainable Palm Oil (RSPO) is working to incentivize its certification for sustainability in palm oil cultivation.[39] Between four different growers' cooperatives, 885 out of 30,000 independent smallholders in Sabah are RSPO-certified so far.[40] These firms are allowed to start selling "RSPO credits," or units of sustainable palm oil, before they even complete the entire certification process.[41] This decreases inequities within the industry, as these smallholders usually cannot prove the legality nor the sustainability of their product, and due to their size, hold no control over market prices.[42] Across the board, small firms struggle to defend their legal standing, while large firms refuse to and face none of the repercussions. This is what financial cooperation between the groups addresses: "members contribute 1 ringgit ($0.21) per metric ton of production to the cooperative, meaning that larger landholders effectively subsidize smaller growers."[43] Unilever, one of the corporations boycotting AAL, has begun trading with the Malaysian growers' cooperative.[44] This is a distinct marker of the program's success and its differentiation from Sumatran efforts. Though Borneo continues to excavate land for oil palm plantations, improvements are steady based on clear correlations between the legality of areas of land and their capacity for sustainability. The RSPO's program is a demonstration that the orangutan populations and oil palm industry can thrive simultaneously.

Sumatra has also employed the assistance of the RSPO, but with less success. A 2013 study determined that the RSPO was ineffective at protecting Sumatran orangutans.[45] In addition to a reliance on voluntary agreements, the program failed because "the premium paid by downstream firms to the palm oil grower for RSPO Certified Sustainable Palm Oil [was] much lower than the grower's economic loss to implement the guidance document," which "explains

[39] Louise Hunt. "Group certification helps Malaysia's Sabah aim for palm oil sustainability." Mongabay, 19 September 2023, news.mongabay.com/2023/09/group-certification-helps-malaysias-sabah-aim-for-palm-oil-sustainability/.
[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] Ibid.
[44] Ibid.
[45] Ruysshaert and Salles, note 14.

why all smallholders are excluded and why less than 2% of the Indonesian growers are RSPO members and gain certification."[46] These failures were observed around ten years ago. In 2023, in Borneo, the RSPO found a solution to Sumatra's shortcoming by subsidizing the certification for smallholders. Because "Indonesia, following the Malaysian model, is developing its palm oil sector under a State policy promoting large-scale estates," the two nations are already collaborating in this industry.[47] Malaysia's sustainability models should thereby also be compatible, allowing Sumatra to adhere to the RSPO's economic model in Malaysia.

The same study in Sumatra was also used to criticize the RSPO's total effectiveness. It found that "since [the] RSPO came to existence, overall net deforestation loss in and around orangutan habitat in Sumatra was around 500,000 [hectares] with a significant part due to oil palm expansion."[48] A crucial distinction is that this study was conducted purely in Sumatra. Another conservation program, Reducing Emissions from Deforestation and forest degradation in Developing countries, known as REDD+, had already failed there due to low commitment levels, just as the RSPO's did.[49] On a larger scale, the RSPO "has led to the protection of over 19% of forest land used in the global production of palm oil," which cannot be negated.[50] Although there needs to be more action taken across all areas, progress is occurring because of the RSPO's efforts.

Sumatra is just beginning to call for sustainability reform while Borneo is already implementing functioning programs. Although palm oil patrons are putting pressure on Indonesian firms to improve their cultivation methods, in Sumatra, "there is no current program designed to end deforestation for palm oil expansion in Rawa Singkil Wildlife Reserve."[51] The current policies in place, between environmental claims from companies and laws from the government, have proven to be too indirect as no tangible changes have been made.

To the acknowledgment of Indonesian efforts, Asosiasi Petani Kelapa Sawit Mandiri (APKSM), an independent smallholder from Central Kalimantan, a province of Borneo, is

[46] Ruysshaert and Salles, note 14, at 441-444.
[47] Ruysshaert and Salles, note 14, at 438.
[48] Ruysshaert and Salles, note 14, at 444.
[49] Snashall and Poulos, note 26, at 9-10.
[50] Snashall and Poulos, note 26, at 8.
[51] Jong, "Deforestation for palm oil continues," note 32.

employing the RSPO's support just as the Malaysian growers' cooperatives have.[52] The group is working alongside PT Sawit Sumbermas Sarana, the sustainability coalition Fortasbi, and the Borneo orangutan Survival Foundation.[53] The cooperation between smallholders and conservation groups is a vital determinant of a program's success; initiatives which failed did not include this connection. Applying the sustainability certification to orangutan conservation efforts, the RSPO reintroduced more orangutans into their natural habitat: "funds from RSPO Credits were used by the APKSM smallholders to provide vital support for the orangutans' survival, including the primates' food provisions for one year."[54] Where population regrowth takes time, reintroduction holds the potential to bolster orangutan populations at an expedited rate, especially in a monitored division of land. Notably, Kalimantan is the only Indonesian province of Borneo. The most lucrative initiative in Indonesia not only paralleled Malaysia's successful programs but was also set in Borneo rather than Sumatra. By subsidizing palm oil smallholders, the RSPO is not only incentivizing better cultivation practices, but allowing room for those closest with the orangutans and their habitat destruction to be a part of the solution. Rather than simply taking on a performative boycott, the other corporations purchasing Indonesian palm oil could secure a better outcome by following the lead of Unilever and supporting the RSPO's initiative.

In Malaysia, the firms that are making progress are being aided by larger firms. In Indonesia, independent firms are being downtrodden by more powerful ones. Local farmers' land is degraded by the pollution of larger farms or stolen altogether. One supplement of AAL, PT Agro Nusa Abadi (PT ANA), has been recently exposed for such practices.[55] Despite local farmers holding legal ownership, "PT ANA has forcibly taken over community lands in East Petasia subdistrict, covering between 5,000 and 7,000 hectares in the villages of Bunta, Molino, Bungintimbe, Tompira, and Bunta."[56] While the RSPO certification process in Malaysia is focused on helping smaller farmers solidify their legal standing, local farms in Indonesia almost always lose out in land disputes to larger firms.[57] Another subsidiary, PT Lestari Tana Teladan

[52] "Orangutans Released in Salat Island Through RSPO Smallholder Credits Support." Rountable on Sustainable Palm Oil, 29 June 2023, rspo.org/orangutans-released-in-salat-island-through-rspo-smallholder-credits-support/.
[53] Ibid.
[54] Ibid.
[55] Conant and Madan, note 28, at 10.
[56] Ibid.
[57] Conant and Madan, note 28, at 14.

(PT LTT), has unfairly seized 182 plots of land, with, in 55 of these cases, farmers receiving no compensation at all.[58] The government is not blameless in these scenarios. Legal investigations of these cases skewed in the large firms' favor: "in 2004, PT LTT, assisted by the Mobile Brigade Corps, a paramilitary unit of the Indonesian National Police, seized community land in the villages of Towiora, Minti Makmur, Tinauka, and Rio Mukti" with alleged "violence, intimidation, indiscriminate shooting, and kidnapping."[59] Between the release of skewed data on orangutan survival rates, and now the use of government aid in land occupation, the Indonesian government is playing an active and antagonistic role in palm oil sustainability.

Legal investigations of land disputes over oil palm plantations face criticisms from activists. The investigations are generally centered "on the communities' legal rights rather than the AAL subsidiaries' legal standing and social license to operate." This means local owners must "prove all their claims with legal evidence, regardless of their customary claims and rights to the land, which in Indonesia is a complex issue."[60] These activists' protestations hold validity, especially considering local smallholders have continually demonstrated a higher willingness to preserve local land while government instigated corruption correlates with high deforestation rates. Although "poverty-stricken farmers in poor rural communities" also rely on the cultivation of oil palm, "auxiliary data on contracted farmers with strong ties to public bureaucracies and industrial plantations show that farmers with elite political and corporate relationships are significantly more inclined to convert marginal land and engage in high-risk land clearing than all other farmer groups combined."[61] Lower levels of corruption in addition to increased levels of cooperation between firms hold a direct correlation to greater sustainability progress.[62] The government business dynamics vary greatly between the oil palm aggregates in Malaysia and Indonesia, accounting for the variance in their respective sustainability measures.

While the process for business reformation started with the participation of individual firms in Borneo, international pressures spurred the attention in Sumatra, with increasing calls for boycotts of unsustainable producers from overseas corporations. Close connections between

[58] Conant and Madan, note 28, at 11.
[59] Ibid.
[60] Jong, "Kellogg's latest to freeze Indonesian supplier," note 27.
[61] Snashall and Poulos, note 26, at 2-3.
[62] Julio Bacio Terracino. "Anti-Corruption: The Enabling CSR Principle." *Business and Human Rights Resource Centre*, Apr. 2007, p. 3, media.business-humanrights.org/media/documents/a985e4f32284c4fe692a623c7bca078fe7bfb7c0.pdf.

efforts of environmental groups and firms harvesting oil palm have demonstrated better results than disjointed ones, observed within the limitations of Indonesian efforts which focused primarily on the corporations buying the palm oil. This phenomenon is not unusual. It has been established that high levels of connectedness among firms, government, and activist groups promote stronger results: "polycentric governance achieves collective action."[63] This is a crucial component that the RSPO's original initiatives in Sumatra lacked and with which Borneo has only started to engage.[64]

Exemplified by neglect in Sumatra, environmental policies established by the government only push rehabilitation so far. Firms must also participate. The most important observation which can be gleaned from this data is that increased orangutan protections will not necessarily hurt the palm oil industry. Expanded legality and sustainability have the potential to increase the lifespan of plantations by preventing prolonged land degradation. The actual landowners, however, must spearhead any change for it to truly take effect. This was seen in Borneo, as it housed the best cases from both nations using the RSPO sustainability certification program. The two areas have employed a stark difference in approach, with cases of primarily positive reinforcement in Borneo versus primarily negative reinforcement in Sumatra. The takeaway from this comparison is that processes of incentivization will preserve land for existing wildlife more effectively than penalization.

Neither Borneo nor Sumatra has a comprehensive sustainability plan, but Borneo remains ahead of Sumatra in its reformation across the palm oil industry. Within both areas, there is significant deforestation from the continual maintenance and expansion of their palm oil industries. Indonesia has space to implement more programs of incentivization for legal plantations, as they grapple with government endorsed corruption. On the other hand, Malaysia must expand the reach of its current programs for them to demonstrate any impact. The historical closeness of the two countries' palm oil industries makes collaborations between them a feasible path forward. Although Borneo holds more promise than Sumatra as the two currently stand, the continued decline of both populations indicates that neither region has programs that are effective enough. Sumatran and Bornean orangutans will both have the best chances if their

[63] Snashall and Poulos, note 26, at 7.
[64] Ruysshaert and Salles, note 14.
Snashall and Poulos, note 26.

fragmented habitats are revitalized with more forest corridors. Sustainability in palm oil production is a necessary solution to address every aspect of the issue at hand: orangutan survival, land preservation, and equity for local farmers.

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