

Corruption, Organised Crime and Species Extinction in South East Asia

Dr Simon Sneddon, University of Northampton.

Abstract:

This paper focuses on orangutans as an example of species which are being driven to extinction by a combination of corruption, greed, and organised criminality. It explores the opportunities for criminal networks that are created by this environment. Orangutans are as a “keystone” or “indicator species” or “barometers of the well-being of the forest. Declining orangutan populations are a sign that the forest and all that live in it are in trouble”¹ and it is likely that at current rates all three orangutan species will be extinct within 20 years.

The paper is divided into four sections. The first discusses the habitat requirements and threats to orangutans. One of the factors exacerbating the decline of orangutans is habitat decline, specifically the removal of rainforest to clear the land for agricultures, industrial and residential purposes. One of the agricultural products which is regarded as being responsible for this habitat loss is palm oil. The second section therefore discusses the growth in palm oil production in Indonesia and Malaysia. Palm oil is an edible oil derived from the fruit of several species of palm trees. It has many uses, from cosmetics to food to biofuels. It is cheap to produce, the most efficient source of vegetable oil, and is “in about half of all packaged products sold in the supermarket”². The land which is suitable for plantations is the same as land suitable for rainforests, prompting the wholesale clearance of rainforest habitat so that palms can be planted. The third section covers the threats posed to habitat and species protection by political, corporate and criminal corruption. It proposes a model demonstrating the potential for corruption in the life cycle of a palm oil plantation between public officials, criminal groups and corporations. Finally, a series of recommendations is made for ways to avoid the over-exploitation of habits crucial to the survival of orangutans and other endangered species.

The paper concludes that unless the measures in place to control corruption are improved, and a moratorium is imposed on all new palm oil plantations, the inevitable consequence is widespread species extinction.

¹ Thiessen, T., 2014, Borneo, 3rd ed., Guilford, Connecticut, Bradt Travel Guides, p46

² WWF, 2020a, 8 things to know about palm oil, WWF, <https://www.wwf.org.uk/updates/8-things-know-about-palm-oil>

Part 1: Orangutan

Orangutans are great apes of the genus *Pongo*, which exclusively live in Borneo and Sumatra. Originally, it was thought that all extant orangutans were the same species (*Pongo pygmaeus*) with several different sub-species. However, in 1996 the Sumatran orangutan (*Pongo abelii*) was identified as a separate species, and in 2017 the Tapanuli orangutan was also classified as a separate species (*Pongo tapanuliensis*). All three species are listed as Critically Endangered on the IUCN's Red List.³ For a species to be listed as Critically Endangered it must meet at least one of the five criteria for Critically Endangered status set out by the IUCN. The criteria can be summarised as:

- A. Reduction in population - $\geq 90\%$ or $\geq 80\%$ drop in 10 years depending on the understanding of the reason, or a projected $\geq 80\%$ drop in next 10 years; or
- B. Geographic Range – either under 100km² of occurrence of habitat and fragmented, declining or fluctuating, or under 10km² of occupation of habitat and fragmented, declining or fluctuating, or
- C. Population of under 250 mature individuals, and declining or fluctuating, or
- D. Population of under 50 mature individuals, or
- E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years)⁴

Historically, orangutan species were found across the region. By 1631, when Dutch physician Jacob Bontius⁵ became the first European to record seeing orangutans the animals were limited to Borneo and Sumatra. Bontius introduced "*Orang Hutan*" as the first anglicized version of the original Malay and Bahasa name, and appears to have seen large reddish primates from a distance. Sastrawan, however, argues that the name may have applied to humans, rather than orangutan.⁶ The name translates as "person of the forest" or "old man of the forest" and, Sastrawan says the "extension of the word 'orangutan', from forest-dwelling humans to tree-dwelling apes, occurred long before the arrival of Europeans."⁷ This is further complicated by the fact that Bontius reported being told by local Malay that Orangutans chose not to talk, as a way of avoiding work.⁸ Cribb *et al.* suggest that small populations of humans in the region at the time were likely to have been affected by endemic

³ IUCN, 2020, Orangutan, at <https://www.iucnredlist.org/search?query=Orangutan&searchType=species>

⁴ The full criteria are set out in Part IV of IUCN, 2012, IUCN Red List Categories and Criteria, Version 3.1 2nd Edition, Gland: International Union for the Conservancy of Nature, also at <https://portals.iucn.org/library/sites/library/files/documents/RL-2001-001-2nd.pdf>

⁵ Also referred to as Jakob de Bondt

⁶ Sastrawan, Wayne Jarrah, 2020, The word "orangutan", *Bijdragen tot de taal-, land- en volkenkunde / Journal of the Humanities and Social Sciences of Southeast Asia*, Vol 176, Issue 4 pp532-541

⁷ *Ibid*, p534

⁸ Dellios, Paulette, 2008, A Lexical Odyssey from the Malay World, *Studia Universitatis Petru Maior. Philologia*, Issue 4, pp 141-144

cretinism, caused by a multigenerational lack of iodine, as a result of soil erosion and mineral leaching caused by rainfall.⁹In fact, Cribb *et al.* went on to conclude that:

“Bontius’ account does not give us enough evidence to be sure that what he saw in Batavia were cretinous human beings, but we can be close to certain that the first *orang hutan* he encountered in the streets of Batavia were true humans, people of the forest, whose peculiar appearance was a consequence of some specific affliction, not a bewildered group of apes on their way to an uncertain fate.”¹⁰

However, the similarities between humans and orangutans are closer than just historical nomenclature, and possible mis-identification, and both species share over 96% of their DNA. This does not make Orangutans our closest living relative genetically,¹¹ Grehan and Schwartz argued in 2009 that “Humans and orangutans share a common ancestor that excludes the extant African apes.”¹² This closeness of relationship may go some way to explain the plethora of orangutan conservation groups¹³ when contrasted to the number of specific groups dedicated to the protection of the Chinese Giant Salamander, or other Critically Endangered species less-closely-related to humans.

All three orangutan species are arboreal, and spend almost their entire lives above the ground in lowland forests. They share this habitat with other Critically Endangered mammal species, including the Sunda or Sumatran Tiger (*Panthera tigris sondaica*), Sumatran Rhinoceros (*Dicerorhinus sumatrensis*) and Sumatran Elephant (*Elephas maximus sumatrensis*) as well as several species of flora. This means that any efforts to protect the orangutan habitat will also protect these species. Figure 1 shows the range areas for all three species of orangutan in Indonesia and Malaysia.

⁹ Cribb, R., Gilbert, H., and Tiffin, H., 2017, *Wild Man from Borneo: A Cultural History of the Orangutan*, Honolulu: University of Hawai’i Press, p17

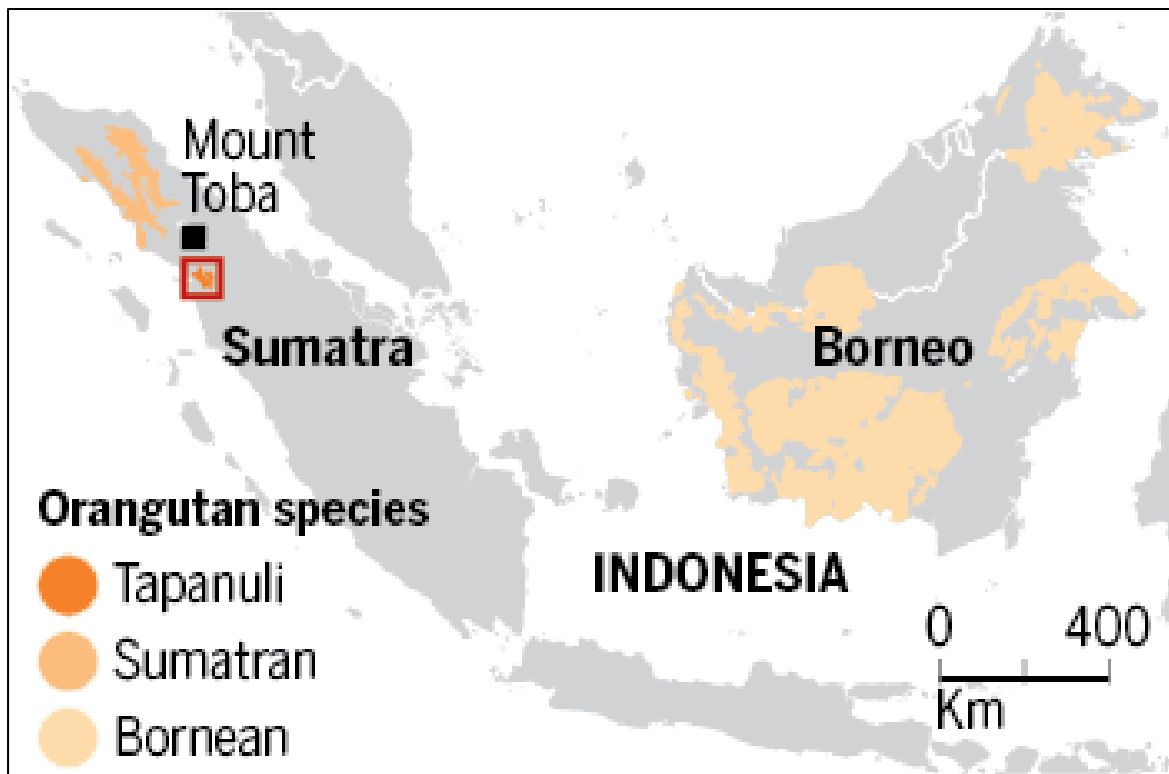
¹⁰ *Ibid*, p18

¹¹ That dubious honour goes to the Chimpanzee (*Pan troglodytes*) and Bonobo (*Pan paniscus*) which share around 99% of their DNA with humans.

¹² Grehan, J.R., and Schwartz, J.H., 2009, Evolution of the second orangutan: phylogeny and biogeography of hominid origins, *Journal of Biogeography*, Vol 36, Issue 10, pp1823-1844, DOI: <https://doi.org/10.1111/j.1365-2699.2009.02141.x>

¹³ See, *inter alia*, The Orangutan Project (<https://www.theorangutanproject.org.uk/>), Orangutan Foundation (<https://www.orangutan.org.uk/>), Orangutan Conservancy (<https://www.orangutan.com/>), and Orangutan SSP (<https://www.orangutanssp.org/conservation.html>) are a few of the Orangutan-specialist charities, whereas Save the Salamanders (<https://www.savethesalamanders.com/>) focuses on all species of salamander.

Figure 1: Orangutan ranges on Borneo and Sumatra¹⁴



Adult orangutans live alone, and the ranges of adults varies depending on gender and social status, with non-dominant males having the largest range, and females the smallest.¹⁵

The Borneo orangutan, and its three subspecies, live in several different areas on the island of Borneo. It is by far the most numerous of the three species, and the 2016 IUCN survey¹⁶ identifies that there are extant populations in both the Indonesian and Malaysian parts of the island, but not in Brunei Darussalam. The total population is estimated at around 100,000 “and is projected to decline further to 47,000 individuals by 2025.”¹⁷ This compares to a population of close to 290,000 in 1973 and demonstrates close to an 85% drop in population over four decades. In addition, the habitat on the island which is suitable for orangutans has declined from around 250,000km² in 1973, to a projected 98,000km² by 2025, which is a decline of over 60%. Of the remaining habitat, “Approximately a third of the entire Bornean orangutan range was in commercial forest reserves exploited for timber, and about 45% was in

¹⁴ Stocksad, E., 2017, New great ape species found, sparking fears for its survival, Science, <https://doi.org/10.1126/science.aar3900>

¹⁵ Singleton, I., & van Schaik, C.P., 2002, The Social Organisation of a Population of Sumatran Orang-Utans, Folia Primatol, Vol 73, No 1, pp 1-20, <https://doi.org/10.1159/000060415>

¹⁶ Ancrenaz, M., Gumal, M., Marshall, A.J., Meijaard, E., Wich, S.A. & Husson, S. 2016. Pongo pygmaeus (errata version published in 2018). The IUCN Red List of Threatened Species 2016: e.T17975A123809220. <https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T17975A17966347.en>

¹⁷ Ibid.

forest areas earmarked for conversion to agriculture or other land uses.”¹⁸ It is not just the area lost to habitat which is a problem for orangutans. In common with all species, fragmentation of habitat has an amplificatory effect which is not seen by just looking at the total area. Marshall *et al.* demonstrated that if an isolated population falls to below 50 adults, then it is not genetically viable in the long term, and will become extinct.¹⁹ Adults live for up to 30 years, and female Bornean orangutans generally only produce one infant every six to eight years once they reach sexual maturity at approximately 10-12,²⁰ so this means each female may produce up to three infants over a lifetime, meaning that any expansion of the species is going to be slow.

Habitat loss alone however, whether it is caused by illegal logging, fire, climate change or licenced removal, is not the only threat to orangutan populations. The illegal pet trade is flourishing, with baby orangutans being sold as pets or to private zoos and breeding centres.²¹ Mother orangutans are shot, often as part of legal or illegal land clearance, and their new-born infants are sold into the pet trade. Once they reach adolescence, however, orangutans become extremely strong – an adult male is roughly as strong as nine adult humans – and they are abandoned or sold on to private zoos.

The second of the orangutan species to be identified was the Sumatran orangutan (*P. abelii*), which is considerably less numerous than its Bornean cousin, with the most recent estimate being just under 14,000 individuals.²² Wich *et al.* estimated that in the wild, Sumatran orangutans live up to “53 years for females and 58 years for males”²³ which makes them the longest-lived orangutan species.

The population is all located in the northern part of Sumatra, primarily in areas within the 26,000km² Leuser Ecosystem UNESCO World Heritage Site²⁴ although Wich *et al.* estimate the orangutans occupy only around

¹⁸ Ibid.

¹⁹ Marshall, A.J., Lacy, R., Ancrenaz, M., Byers, O., Husson, S.J., Leighton, M., Meijaard, E., Rosen, N., Singleton, I., Stephens, S., Traylor-Holzer, K., Utami Atmoko, S., van Schaik, C.P., and Wich, S.A., 2009, Orangutan population biology, life history and conservation, in Wich, S.A., Utami Atmoko, S., Tatang, M., van Schaik, C.P., eds, 2009, *Orangutans: Geographic Variation in Behavioural Ecology and Conservation*, Oxford: OUP, pp311-326

²⁰ Kingsley, S. 1981. *The reproductive physiology and behaviour of captive orangutans (Pongo pygmaeus)*. University of London.

²¹ Stiles, D., Redmond, I., Cress, D., Nellemann, C., Formo, R.K. (eds). 2013. *Stolen Apes – The Illicit Trade in Chimpanzees, Gorillas, Bonobos and Orangutans. A Rapid Response Assessment*. United Nations Environment Programme, GRID-Arendal. www.grida.no

²² Singleton, I., Wich, S.A., Nowak, M., Usher, G. & Utami-Atmoko, S.S. 2017. *Pongo abelii* (errata version published in 2018). The IUCN Red List of Threatened Species 2017: e.T121097935A123797627. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T121097935A115575085.en>.

²³ Wich, S.A., Utami-Atmoko, S.S., Setia, T.M., Rijksen, H.D., Schurmann, C., van Hooft, J.A.R.A.M. and van Schaik, C.P. 2004. Life history of wild Sumatran orangutans (*Pongo abelii*). *Journal of Human Evolution* 47: 385–398.

²⁴ UNESCO, 2020, World Heritage List, at <https://whc.unesco.org/en/list/>

16,000km² of that region.²⁵ The end of the Aceh Disturbance in 2005, which had seen 15,000 deaths over a 40-year period,²⁶ was generally regarded as a success. Ironically, the ensuing peace and stability in the region have made it attractive to commercial exploitation for the first time in decades. The Global Conservation NGO estimates that Sumatra lost “one-fifth of its lowland forests to illegal commercial activities”²⁷ between 2004 and 2009. Although the clearance rate has slowed to a loss of 5,395 hectares [53km²] in 2019²⁸ Global Conservation add that “Post-war stability is bringing rapid invasion of commercial interests in palm oil, rubber, and logging, with companies legally and illegally deforesting the Leuser Ecosystem at astounding rates.”²⁹

UNESCO placed the Leuser Ecosystem on the list of World Heritage Sites in Danger³⁰ in 2011, and it has remained on the list ever since. UNESCO confirmed in 2019 that the provincial government of Aceh “has committed to prioritize the prevention of further deforestation in the Aceh part of the Leuser Ecosystem.”³¹ This positive news was tempered by a note of caution that the “report does not provide clear information on progress towards achieving these specific, targeted activities nor on 2018 forest cover data, which forms the baseline for measuring progress towards achieving the Desired state of conservation for the removal of the property from the List.”³²

The third, newest, and rarest species of orangutan is the Tapanuli orangutan (*P. tapanuliensis*) which was only shown to be a separate species to in 2017, and numbers only 800 individuals.³³ They also live on Sumatra, but further south than *P. abelii*, and all live in the “uplands of the Batang Toru Ecosystem, an area of roughly 1,500 km² consisting of three forest blocks, of which 1,022 km² is suitable orangutan habitat.”³⁴

²⁵ Wich, S.A., Singleton, I., Nowak, M.G., Utami Atmoko, S.S., Nisam, G., Arif, S.M., Putra, R.H., Ardi, R., Fredriksson, G., Usher, G., Gaveau, D.L.A and Kühl, H.S. 2016. Land-cover changes predict steep declines for the Sumatran orangutan (*Pongo abelii*). *Science Advances* 2(3): e1500789.

²⁶ See, for example, Davies, Matt, 2006, *Indonesia's War over Aceh: Last Stand on Mecca's Porch*, London: Routledge, and Martinkus, John, 2004, *Indonesia's Secret War in Aceh*, Sydney: Random House Australia

²⁷ Global Conservation, 2010, *Leuser Ecosystem, Sumatra, Indonesia*, Global Conservation, at <https://globalconservation.org/projects/leuser-national-park-indonesia/>.

²⁸ Putra, Rudi, 2020, *Leuser Ecosystem, Sumatra 2019-2020 Progress Report*, Global Conservation, at <https://globalconservation.org/news/leuser-ecosystem-sumatra-2019-2020-progress-report/>

²⁹ Global Conservation, 2010, op cit.

³⁰ It is listed as “Tropical Rainforest Heritage of Sumatra (Indonesia) (N 1167)”

³¹ UNESCO, 2019, *Convention Concerning The Protection Of The World Cultural And Natural Heritage*, World Heritage Committee, Forty-third session: State of conservation of the properties, inscribed on the List of World Heritage in Danger WHC/19/43.COM/7A, at <https://whc.unesco.org/archive/2019/whc19-43com-7A-en.pdf>, p4

³² Ibid, p5

³³ Nowak, M.G., Rianti, P., Wich, S.A., Meijaard, E. & Fredriksson, G. 2017. *Pongo tapanuliensis*. The IUCN Red List of Threatened Species 2017: e.T120588639A120588662. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T120588639A120588662.en>.

³⁴ Wich, S.A., et al, 2016, op cit.

The Sumatran Orangutan Conservation Program says of the Tapanuli orangutan that:

“Significant areas of the ...range are seriously threatened by habitat conversion for small-scale agriculture, mining exploration and exploitation, a large-scale hydroelectric scheme, geothermal development, and agricultural plantations.”³⁵

The IUCN report backs this assertion and lists “illegal clearing of protected forests, hunting and killing during crop conflict, and trade in young orangutans”³⁶ as the pre-existing threats, with licenced forestry operation, gold and silver mining and a proposed hydroelectric development as being more recent threats.³⁷

For all three species then, the reproductive rate is below the rate at which the species numbers are declining and, if this disparity continues, the only possible outcome is extinction. The primary threats to the species can be broadly grouped together as habitat loss and hunting, although both of these can be broken down into separate threats.

Habitat Loss occurs for a variety of reasons, as has been demonstrated above. Some deforestation is carried out for the sole purpose of selling the lumber, whereas some is carried out with the view of using the land for agriculture, mining, or other development. Logging, whether illegal or licenced, requires access roads to be constructed into the forest, and thus not only clears areas of forest, but also fractures the remaining areas, making it harder and more dangerous for orangutans to move between them.

Hunting of orangutans can similarly be separated into different categories, although the outcome is the same. Some hunting takes place specifically to capture infant orangutans for the highly profitable illegal pet or zoo trade. Some, on the other hand which takes place specifically to acquire illegal meat to be sold in markets. There is also a hybrid category, where mother orangutans are killed for the meat trade, and their infants sold to the illegal pet and zoo trade. There is also an overlap with deforestation, as orangutans are regularly shot in order to remove them from the area of forest which is set to be cleared.

What is clear, and will be explored below, is that there is an overlap between licit and illicit activities, involving criminal groups, legitimate, semi-legitimate and illegitimate activity by companies, local people, and politicians. This allows for money to be made in the short and medium term, while the longer-term consequences of the unsustainable activities

³⁵ Cited in: Dunham, W. 2017, Going ape: new orangutan species identified in Sumatra, Reuters, at <https://fr.reuters.com/article/us-science-orangutans/going-ape-new-orangutan-species-identified-in-sumatra-idUSKBN1D227U>

³⁶ Wich, S.A., et al, 2016, op cit.

³⁷ Nowak, M.G., Rianti, P., Wich, S.A., Meijaard, E. & Fredriksson, G. 2017. Pongo tapanuliensis. The IUCN Red List of Threatened Species 2017: e.T120588639A120588662. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T120588639A120588662.en>.

are overlooked. One of the industries which has played a significant role in deforestation and the decline of orangutans is the palm oil industry. The main focus of the rest of this paper is therefore on the different aspects of the production of palm oil.

Part 2: Palm Oil

Palm oil is produced from the fruit of a variety of different species of palm tree, primarily *Elaeis guineensis*,³⁸ but also *E. oleifera* and *Attalea maripa*. *E. guineensis* is native to West Africa, but has been cultivated in Indonesia and Malaysia for many decades, after being introduced in the late 1870s³⁹. The plant is useful and profitable as a crop because “the tree is an oil-producing machine with some 20 fruit bunches, found at the top of its trunk, each containing up to 3,000 palm fruits.”⁴⁰ Since each tree lives for around 30 years, the yield from a single tree makes palm oil “an incredibly efficient crop, producing more oil per land area than any other equivalent vegetable oil crop.”⁴¹ Palm oil is “the most widely used vegetable oil for cooking, food processing, cosmetics, oleo chemicals and fuel.”⁴² Globally, palm oil supplies “35% of the world’s vegetable oil demand on just 10% of the land.”⁴³ There is a regional difference in how palm oil is used, however. Globally, “5% is used for biofuels, 24% for cosmetics, and 71% by the food industry”⁴⁴ whereas within the European Union, “87% of imports went to the manufacture of biodiesel.”

Despite the species not being a native to the region, the growing conditions in Malaysia and Indonesia have proven to be ideal for the oil palm, and those two countries produce around 90 per cent of the world’s palm oil⁴⁵ (see Figure 2, below). It is an important income generator for both countries, with Indonesia raising its combined export levy and export duty on crude palm oil (CPO) to US\$213 per metric ton in December

³⁸ Barker, T.W. and Worgan, J. T. (1981). The utilization of palm oil processing effluents as substrates for microbial protein production by the fungus *Aspergillus oryzae*. *European Journal of Applied Microbiology & Biotechnology*. 11(4):234-240

³⁹ MPIC, 2020, Industri Sawit: Sejarah, Malaysian Ministry of Plantation Industries and Commodities, <https://www.mpic.gov.my/mpi/agrikomoditi/industri/industri-sawit> (in Malay)

⁴⁰ Rosner, H., 2018, Palm oil is unavoidable. Can it be sustainable? *National Geographic Magazine*, December 2018,

⁴¹ WWF, 2020a, op cit.

⁴² Oosterveer, P., 2015, Promoting sustainable palm oil: viewed from a global networks and flows perspective, *Journal of Cleaner Production*, Volume 107, 16 November 2015, Pages 146-153, <https://doi.org/10.1016/j.jclepro.2014.01.019>

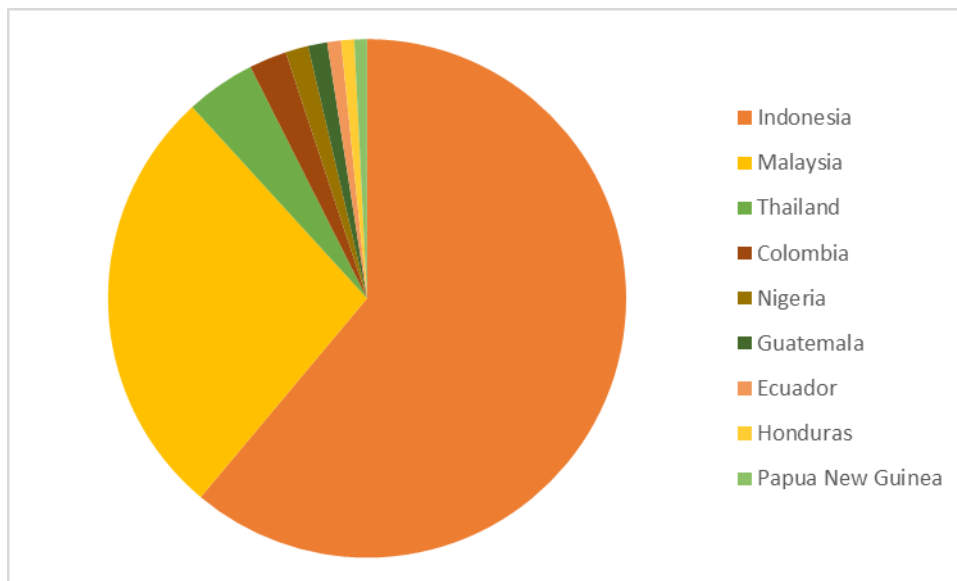
⁴³ WWF, 2020a, op cit.

⁴⁴ Gesteiro, E., Guijarro, L., Sánchez-Muniz, F.J., Vidal-Carou, M.d.C, Troncoso, A., Venanci, L., Jimeno, V., Quilez, J., Anadón, A., & González-Gross, M., 2019, Palm Oil on the Edge, *Nutrients*, Vol. 11, Iss. 9, (Sep 2019): 2008. <https://doi.org/10.3390/nu11092008>

⁴⁵ IndexMundi, 2020, Palm Oil production by country, 1000MT, IndexMundi at <https://www.indexmundi.com/agriculture/?commodity=palm-oil>

2020⁴⁶ (which will generate around US\$6.5bn in duties alone), with total exports of “palm oil and its fractions” worth around US\$14bn in 2019.⁴⁷ Despite historically having broadly the same approach as Indonesia in terms of export duties,⁴⁸ the Malaysian government decided in the summer of 2020 to reduce export duty for CPO to zero. Despite this drop, the Malaysian Ministry of Plantation Industries and Commodities calculates that palm oil exports for 2020 would generate around US\$16bn.⁴⁹

Figure 2: Top Ten Palm Oil producing countries in 2020.⁵⁰



In addition to the direct foreign currency benefits of the palm oil export industry, across both countries, it is estimated that the industry employs 3 million smallholder farmers and 2.9 million downstream jobs⁵¹ so the impact on the wider economy must not be underestimated. Williams notes that “forests and land have provided both important state revenues and a means for politicians to control the resources and populations of the outer islands of the archipelago, binding them into the Indonesian state-building

⁴⁶ S&P Global, 2020, Indonesia raises export levy on crude palm oil to \$180/mt effective Dec 10, S&P Global, <https://www.spglobal.com/platts/en/market-insights/latest-news/agriculture/120320-indonesia-raises-export-levy-on-crude-palm-oil-to-180mt-effective-dec-10>

⁴⁷ WTO, 2020, Indonesia, World Trade Organisation, https://www.wto.org/english/res_e/statis_e/daily_update_e/trade_profiles/ID_e.pdf

⁴⁸ Ibragimov, A., Arshad, F.M., Bala, B.K., Noh, K.N., & Tasrif, M., 2014, Impact of CPO export duties on Malaysian palm oil industry, American Journal of Applied Sciences 11(8):1301-1309, <https://doi.org/10.3844/ajassp.2014.1301.1309>

⁴⁹ Reuters, 2020, Malaysia estimates 2020 palm oil exports will reach \$15.2 billion-\$16.4 billion, Reuters, <https://in.reuters.com/article/malaysia-palmoil-idINKCN24H0JP>

⁵⁰ IndexMundi, 2020, Palm Oil production by country, 1000MT, IndexMundi at <https://www.indexmundi.com/agriculture/?commodity=palm-oil>

⁵¹ Voora, V., Larrea, C., Bermudez, S., & Baliño, S., 2020, Global Market Report: Palm Oil, Winnipeg, International Institute for Sustainable Development

project”⁵² and the impact of this level of control will be discussed in the next section of this paper. The following discussion of the different uses of palm oil makes no distinction between designation or not as sustainable, country or region of origin, or legality or scale of plantations, since these have minimal impact on the properties of palm oil.

The primary uses for palm oil in all parts of the world outside the EU are in cooking, cosmetics and cleaning products. One aspect which assisted the growth in palm oil use in foodstuffs was the concern at the end of the twentieth century of the health risks of partially hydrogenated fat which contained harmful trans fatty acids. The hydrogenation process mixes water with liquid oils, and this lengthens the life and usability of those oils. The World Health Organisation links trans fats to heart attack and heart disease in humans, and in 2018 released the “REPLACE action package to eliminate trans fatty acids from the food chain.”⁵³ Palm oil, along with many other oils sources from nuts and seeds, has the distinct advantage of containing “very little amounts of trans fats (<1 per cent).”⁵⁴ Ironically, trans fats had only become widely used in the 1980s after “concerns that consuming tropical oils might jeopardize heart health”⁵⁵ led to a rapid drop in the use of, among others, palm oil.

As a cooking ingredient, palm oil remains stable at higher temperatures than many other oils as it has a relatively high “smoke point” (see Table 1). This has additional health implications, since Katragadda *et al.* discovered that “the temperature of any oil used for deep-frying operations should be established below its smoke point, because otherwise the emission of potentially toxic compounds will increase significantly.”⁵⁶ Not only, therefore is palm oil better for deep frying than other oils in terms of its performance, but it is also less problematic in terms of potentially toxic emissions.

⁵² Williams, A., 2020, U4 Brief 2020:13, Reducing emissions from deforestation and forest degradation in a context of nationalist oligarchy: Lessons from Indonesia, Bergen, Chr. Michelsen Institute (CMI) / U4

⁵³ WHO, 2018, Press release: WHO plan eliminate industrially-produced trans-fatty acids from global food supply, World Health Organisation Press, <https://www.who.int/news/item/14-05-2018-who-plan-to-eliminate-industrially-produced-trans-fatty-acids-from-global-food-supply>

⁵⁴ EPOA, 2020, Replacing Trans Fat, European Palm Oil Alliance, <https://palmoilalliance.eu/replacing-trans-fat/>

⁵⁵ Spritzle, F., 2017, Palm Oil: Good or Bad? Healthline, https://www.healthline.com/nutrition/palm-oil#TOC_TITLE_HDR_8

⁵⁶ Katragadda, H.R., Fullana, A., Sidhu, S., Carbonell-Barrachina, Á.A., 2010, Emissions of volatile aldehydes from heated cooking oils, Food Chemistry 120 (2010) 59–65, p59-60

Table 1: Smoke Points of different cooking oils (°C)⁵⁷

Type of Oil	Smoke Point
Butter•	150
Coconut†	175
Extra virgin Olive†	195
Rice Bran / groundnut blend‡	204
Safflower†	212
Palm Oil*	219
Peanut•	225
Canola (Rapeseed)†	238

Palm oil undeniably has many benefits over other vegetable oils in terms of its culinary uses. Recently, however, concerns have again arisen about the links between “consumption of palm oil to increased ischaemic heart disease mortality, raised low-density lipoprotein cholesterol, increased risk of cardiovascular disease and other adverse effects.”⁵⁸ These links are not conclusively proven, however,⁵⁹ and it therefore seems unlikely that there will be a marked reduction in palm oil consumption as a result of health concerns. It is also worth noting that it is not always feasible for the consumer to tell if palm oil (whether sustainable or not) is used in particular products. The Manchester-based Ethical Consumer NGO points out there are many hundred different names for palm oil derivatives which can be used,⁶⁰ while complying entirely with the EU Regulation 1169/2011 on the provision of food information to consumers (FIC Regulations). The FIC Regulations do not specifically mention palm oil, but do set out (in Article 3) the general objective that “The provision of food information shall pursue a high level of protection of consumers’ health and interests by providing a basis for final consumers to make informed choices and to make safe use of food, with particular regard to health, economic, environmental, social and ethical considerations.”⁶¹

⁵⁷ Sources: † Katragadda et al, op cit, p60; ‡, Choudhary, M., Grover, K., and Kaur, G., 2014, Development of rice bran oil blends for quality improvement, *Food Chemistry* 173 (2015) 770–777; •DRINC, What is the smoke point of butter? Dairy Research and Information Center, University of California, Davis <https://drinc.ucdavis.edu/dairy-food-sciences/what-smoke-point-butter>;

* Tarmizi, A.H.A., and Ismail, R., 2008, Comparison of the Frying Stability of Standard Palm Olein and Special Quality Palm Olein, *Journal of the American Oil Chemists' Society*; Champaign Vol. 85, Iss. 3, (Mar 2008): 245-251

⁵⁸ Kadandale, S., Marten., R & Smith., R, 2019, The palm oil industry and noncommunicable diseases, *Bulletin of the World Health Organization* 2019; 97:118-128. <http://dx.doi.org/10.2471/BLT.18.220434>

⁵⁹ See for example, Mukherjee, S., Mitra, A.. 2009, Health effects of palm oil. *Journal of Human Ecology* 2009 Jun; 26(3): 197–203. <http://dx.doi.org/10.1080/09709274.2009.11906182>

⁶⁰ Hunt, T., 2019, Palm Oil Labelling, Ethical Consumer, <https://www.ethicalconsumer.org/palm-oil/palm-oil-labelling>

⁶¹ Regulation 1169/2011 on the provision of food information to consumers, Article 3(1)

The use of palm oil and its derivatives in cosmetics is widespread, because “palm derived oleochemicals are used as surfactants (used in lotions), emollients (used in moisturizers), and humectants (also used in moisturizers), as well as a viscosity modifier, conditioning agent and antioxidant”⁶² The French cosmetics giant L’Oréal, for example, uses “palm oil and its derivatives thanks to their multiple benefits such as skin hydration, foaming, softening and texturising actions in products”⁶³ and makes it clear that because the company is aware of the environmental concerns of palm oil, “100% of the palm oil sourced by L’Oréal has complied with Roundtable on Sustainable Palm Oil (RSPO) standards since 2010, following the rigorous Segregated (SG) model, one of the most demanding.”⁶⁴ Many of the same properties which make palm oil useful in cosmetics also make it a key ingredient for a lot of cleaning products, since “fatty alcohols and fatty acids from palm oil are used to make surfactants, which are the basis of almost all products used for personal cleansing, laundering, dishwashing and household cleaning.”⁶⁵

The WWF says that palm oil is “in close to 50% of the packaged products we find in supermarkets, everything from pizza, doughnuts and chocolate, to deodorant, shampoo, toothpaste and lipstick”⁶⁶ but in addition to these uses, palm oil is also used as a biofuel. In 2012 the United States Environmental Protection Agency (US EPA) published a Notice of Data Availability (NODA) which showed that palm oil did “not meet the minimum 20 percent lifecycle GHG [greenhouse gas] reduction threshold to qualify as renewable fuel under the RFS [renewable fuel standards] program.”⁶⁷ The 20 percent threshold applies to all conventional renewable fuels in the United States, and is the lowest of the three standards applied.⁶⁸ In January 2018, the European Parliament went a stage further, and votes to ban the use of palm oil in biofuels from the start of 2021.⁶⁹ The European Commission reports that the average annual value of palm oil imports into the EU from Indonesia and Malaysia between 2014 and 2017 was around €3.5bn,⁷⁰ and biofuels accounted for around a third of this. In 2011, Achten and Verchot assessed the carbon repayment time (i.e. the time which it would take for the crop to become

⁶² CPET, 2015, Sustainable Palm Derivatives in Cleaning and Personal Care Products, Central Point of Expertise on Timber, London: Department of Food and Rural Affairs

⁶³ L’Oréal, 2020, Inside our products: Palm Oil, Paris: L’Oréal.

⁶⁴ Ibid.

⁶⁵ CPET, 2015, op cit.

⁶⁶ WWF, 2020a, op cit.

⁶⁷ US EPA, 2012, The U.S. Renewable Fuels Standards Program and Palm Oil , archived by US Department of State Embassies and Consulates in Indonesia, at <https://id.usembassy.gov/our-relationship/policy-history/embassy-fact-sheets/the-u-s-renewable-fuels-standards-program-and-palm-oil/>

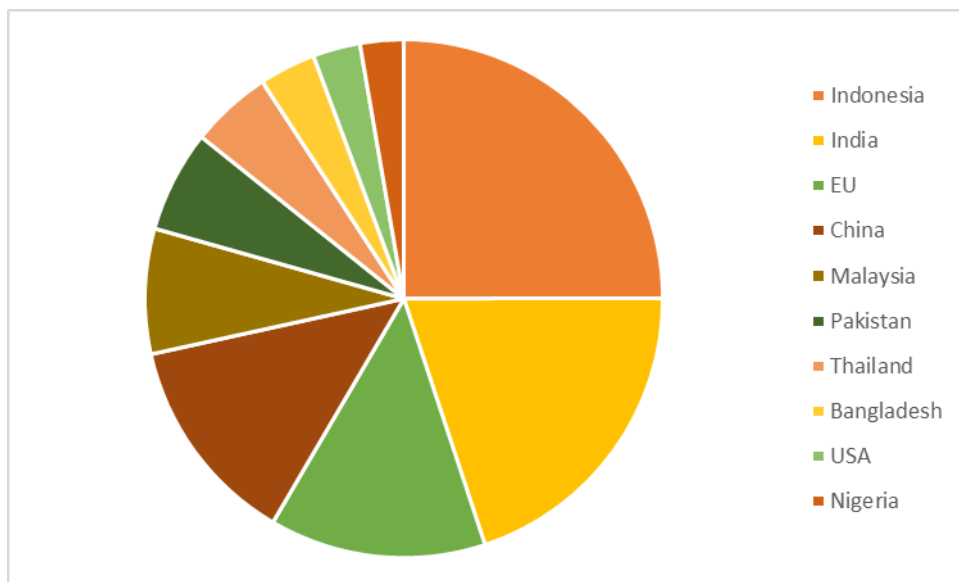
⁶⁸ The equivalent standards for classification as a Biomass-based diesel and advanced biofuels is 50 percent less GHG emissions, and for classification as a Cellulosic biofuels it is 60 percent less. Source: ibid.

⁶⁹ EP, 2018, Press Release: MEPs set ambitious targets for cleaner, more efficient energy use, European Parliament Press Release, <https://www.europarl.europa.eu/news/en/press-room/20180112IPR91629/meps-set-ambitious-targets-for-cleaner-more-efficient-energy-use>

⁷⁰ EC, 2018, Imports of Palm Oil to the EU, European Commission, <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeetingDoc&docid=28518>

truly carbon neutral) of oil palm, jatropha (also called physic nut) and soy beans when used for biofuels.⁷¹ They concluded that palm oil planted on peatland was the poorest-performing of the three crops, and would take up to 220 years to repay its carbon debt.⁷²

Figure 3: Top Ten Palm Oil consuming states



Whatever its final use, and however it is produced, palm oil production has undergone a dramatic rate of growth in the past quarter century. Figure 3 shows the top ten palm oil consuming states and regions, and it is clear that, as well as producing the most palm oil, Indonesia is the largest consumer. The European Palm Oil Alliance reports 1994/5 global production as 15.2 million tons (mt)⁷³ and the Market and consumer data company Statista says that the 2019/20 production had risen to 72.2mt.⁷⁴ The Roundtable on Sustainable Palm Oil (RSPO) forecasts that in the next thirty years, "demand for palm oil is expected to increase... to between 120 and 156 million tons."⁷⁵ This increase in yield of close to 800% over half a century can be partly explained by greater efficiency in processing techniques and higher yields per unit (which has been sought for at least

⁷¹ Achten, W. M. J., and L. V. Verchot. 2011. Implications of biodiesel-induced land-use changes for CO₂ emissions: case studies in tropical America, Africa, and Southeast Asia. *Ecology and Society* 16(4): 14. <http://dx.doi.org/10.5751/ES-04403-160414>

⁷² *ibid*, p23

⁷³ European Palm Oil Alliance, 2019, The Palm Oil Story, <https://palmoilalliance.eu/wp-content/uploads/2019/10/Brochure-Palm-Oil-Story-2019-FINAL.pdf> p5

⁷⁴ Statista, 2020, Production volume of palm oil worldwide from 2012/13 to 2019/20 (in million metric tons) <https://www.statista.com/statistics/613471/palm-oil-production-volume-worldwide/>

⁷⁵ RSPO, 2015, A Shared Vision. 100% Sustainable Palm Oil in Europe: A Snapshot of National Initiatives, Geneva: Roundtable on Sustainable Palm Oil, p2

50 years⁷⁶). The bulk of the increase, however, has been down to a corresponding increase in the area of land which is given over to oil palm plantations. Since neither Indonesia or Malaysia has seen a corresponding growth in their physical landmasses, the increase in land used for palm oil plantations must have seen a corresponding decrease in land being used for other purposes. Yale University School of the Environment's Global Forest Atlas says that between "1990 to 2005, over 50% of new oil palm plantations in Malaysia and Indonesia were established through conversion of lowland forests"⁷⁷ and Carlson *et al.*⁷⁸ found that around half of oil palm plantation in Kalimantan between 1990 and 2010 had replaced forest – the very habitat identified above as being home to all three species of orangutan. Cramb and McCarthy say that the area cultivated for palm oil in Indonesia and Malaysia increased almost six-fold from 26,000km² in 1990 to 150,000km² in 2014,⁷⁹ but on a slightly positive note, Austin *et al.* suggest that in Indonesia at least, "the proportion of plantations replacing forests decreased from 54% during 1995–2000, to 18% during 2010–2015."⁸⁰

Koh and Wilcove⁸¹ divided land use into four categories. Primary forest (defined by Margono *et al.* as natural forest >5 ha that have not been cleared and re-planted, including 'intact primary forest' which have no evidence of human disturbance⁸²), secondary forest, which is primary forest that has been logged, pre-existing crop land (land which had been cultivated for other uses, for example rubber plantations) and oil palm plantations. What they discovered was that the number of bird and butterfly species was lower by 77 per cent and 83 per cent respectively in oil palm plantations compared to primary forest.⁸³

Once planted, palm oil plantations have an ongoing impact on the land on which they are located. In addition to changing the water and chemical uptake, Hewitt *et al.* modelled low-level ozone levels on palm oil plantations and concluded that "if concentrations of oxides of nitrogen in Borneo are allowed to reach those currently seen over rural North

⁷⁶ See, for example, van der Vossen, H., 1974, towards more efficient selection for oil yield in the oil palm (*Elaeis guineensis* Jacquin), Wageningen, Centre for Agricultural Publishing and Documentation

⁷⁷ GFA, 2020, Palm Oil, Yale School of the Environment Global Forest Atlas, <https://globalforestatlas.yale.edu/land-use/industrial-agriculture/palm-oil>

⁷⁸ Carlson, K.M., Curran, L.M., Asner G.P., Pittman A.M., Trigg S.N., and Adeney J.M., 2013, Carbon emissions from forest conversion by Kalimantan oil palm plantations, *Nature Climate Change*, 3, 283–287, <https://doi.org/10.1038/NCLIMATE1702>

⁷⁹ Cramb, R., and McCarthy, J.F., 2016, Characterising Oil Palm Production in Indonesia and Malaysia, in Cramb, R., and McCarthy, J.F., eds., 2016, *The Oil Palm Complex*. Singapore, NUS press, pp.27-77.

⁸⁰ Austin, K.G., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., and Kasibhatia, P.S., 2017, Shifting patterns of oil palm driven deforestation in Indonesia and implications for zero-deforestation commitments, *Land Use Policy*, <https://doi.org/10.1016/j.landusepol.2017.08.036>

⁸¹ Koh, L.P., & Wilcove, D., 2008, Is oil palm agriculture really destroying tropical biodiversity? *Conservation Letters* 1 (2008) 60–64 <https://doi.org/10.1111/j.1755-263X.2008.00011.x>

⁸² Margono, B., Potapov, P., Turubanova, S., Stolle, F., and Hansen, M.C., 2014, Primary forest cover loss in Indonesia over 2000–2012, *Nature Climate Change*, 4 (2014), pp. 730-735 <http://dx.doi.org/10.1038/nclimate2277>

⁸³ Koh, L.P., and Wilcove, D., 2008, *op cit*, p62

America and Europe, ground-level O₃ concentrations will reach 100 parts per billion (109) volume (ppbv) and exceed levels known to be harmful to human health.”⁸⁴ Hewitt also demonstrated that palm oil plantations emit oxides of nitrogen at a higher rate than primary forest, and are thus contributing to an increase in background levels of these harmful substances.⁸⁵

In addition to air pollution, palm oil plantations are also known to cause water pollution. Carlson *et al.* demonstrated that in Kalimantan, areas “dominated by oil palm plantation agriculture had warmer stream temperatures, increased suspended sediment concentration and yield, and reduced oxygen saturation”⁸⁶ and this in turn impacted on the stream ecosystems. The processing of palm oil also produces water pollution, as well as increasing demand for water, which will have a detrimental impact on other uses for water. Whilst there has been considerable research undertaken in recent years on improving the quality of this waste (known as Palm Oil Mill Effluent, or POME),⁸⁷ those new measures are considerably more expensive, and “more than 85% of palm oil mills in Malaysia ... continue to use not biogas facilities but rather the ponding system owing to the low cost associated with the latter for the treatment of POME.”⁸⁸ Despite improvements, every ton of crude palm oil which is processed produces just over three tons of POME,⁸⁹ which calculates out at approximately 220 million tons of POME produced globally.⁹⁰

As a result of rising global concerns about the long-term viability and sustainability of palm oil as a crop, the Roundtable on Sustainable Palm

⁸⁴ Hewitt, C.N., MacKenzie, A.R., Di Carlo, P., Di Marco, C.F., Dorsey, J. R., Evans, M., Fowler, D., Gallagher, M.W., Hopkins, J.R., Jones, C.E., Langford, B., Lee, J.D., Lewis, A.C., Lim, S.F., McQuaid, J., Misztal, P., Moller, S.J., Monks, P.S., Nemitz, E., D. Oram, E., Owen, S.M., Phillips, G.J., Pugh, T.A.M., Pyle, J.A., Reeves, C.E., Ryder, J., Siong, J., Skiba, U., and Stewart, D.J., 2009, Nitrogen management is essential to prevent tropical oil palm plantations from causing ground-level ozone pollution, PNAS November 3, 2009 106 (44) 18447-18451; <https://doi.org/10.1073/pnas.0907541106>

⁸⁵ Ibid.

⁸⁶ Carlson, K.M., Curran, L.M., Ponette-González, A.G., Ratnasari, D., Ruspita, Lisnawati, N., Purwanto, Y., Brauman, K.A., Raymond, P.A., 2014, Influence of watershed-climate interactions on stream temperature, sediment yield, and metabolism along a land use intensity gradient in Indonesian Borneo, Journal of Geophysical Research: Biogeosciences, 119, 1110–1128, <https://doi.org/10.1002/2013JG002516>

⁸⁷ Seem for example Bello, M.M., Raman, A., and Aziz, A., 2017, Trend and current practices of palm oil mill effluent polishing: Application of advanced oxidation processes and their future perspectives Journal of environmental management, 01 August 2017, Vol.198, pp.170-182; Bashir, M.J.K.; Tham, M.T., Lim, J.W., Ng, C.A., and Salem S.A.A., 2016, Polishing of treated palm oil mill effluent (POME) from ponding system by electrocoagulation process, Water science and technology, Vol.73(11), pp.270; Chai, H., Mohammed, B., Chii-Dong, H., and Humaira, N., 2017, Investigation on the performance of hybrid anaerobic membrane bioreactors for fouling control and biogas production in palm oil mill effluent treatment, Water Science and Technology, Sep 2017, Vol.76(6), pp.1389-1398.

⁸⁸ Sabeeha N.B.A. Khadaroo, P.G., Darwin, G., and Phaik, E.P., 2019, Is the dewatering of Palm Oil Mill Effluent (POME) feasible? Effect of temperature on POME’s rheological properties and compressive behavior, Chemical Engineering Science, Volume 202, Pages 519-528, <https://doi.org/10.1016/j.ces.2019.03.051>.

⁸⁹ Hassan, M.A., Yacob, S., Shirai, Y., and Hung, Y. 2005, Treatment of palm oil wastewaters, Waste Treat. Food Process. Ind. (2005), pp. 101-117, <https://doi.org/10.1201/9781420037128.ch4>

⁹⁰ Figures based on calculations of POME per ton of CPO (Hassan et al, 2005, op cit) multiplied by global CPO production (EPOA, 2019 op cit.)

Oil (RSPO) was set up in Geneva in 2004. While this is a welcome move, and anything to increase the levels of sustainability in such a widely used commodity should be encouraged, as can be seen from the map produced by Carlson *et al.* in 2018,⁹¹ and reproduced in Figure 4 below, very little of Indonesia's oil palm plantations are currently certified as being sustainable. In 2014, the RSPO put the figure of RSPO-certified palm oil at "19 per cent of global palm oil"⁹² which means that four fifths of palm oil used is not recognised as sustainable.

The RSPO itself has come in for some criticism since its inception, for issues relating to forest clearance⁹³ and child labour.⁹⁴ The organisation has revised its approach with a new set of "Principles and Criteria"⁹⁵ and in 2018 the WWF said that it endorsed the revised P&C and that they were "an essential tool that can help companies achieve their commitments to palm oil that is free of deforestation, expansion on peat, exploitation and the use of fire."⁹⁶

⁹¹ Carlson, K.M., Heilmayr, R., Gibbs, H.K., Noojipady, P., Burns, D.N., Morton, D.C., Walker, N.F., Paoli, G.D., and Kremen, C., 2018, Effect of oil palm sustainability certification on deforestation and fire in Indonesia, PNAS January 2, 2018 115 (1) 121-126; <https://doi.org/10.1073/pnas.1704728114>

⁹² RSPO, 2014, Benefits of certification, Roundtable on Sustainable Palm Oil, <https://rspo.org/certification>

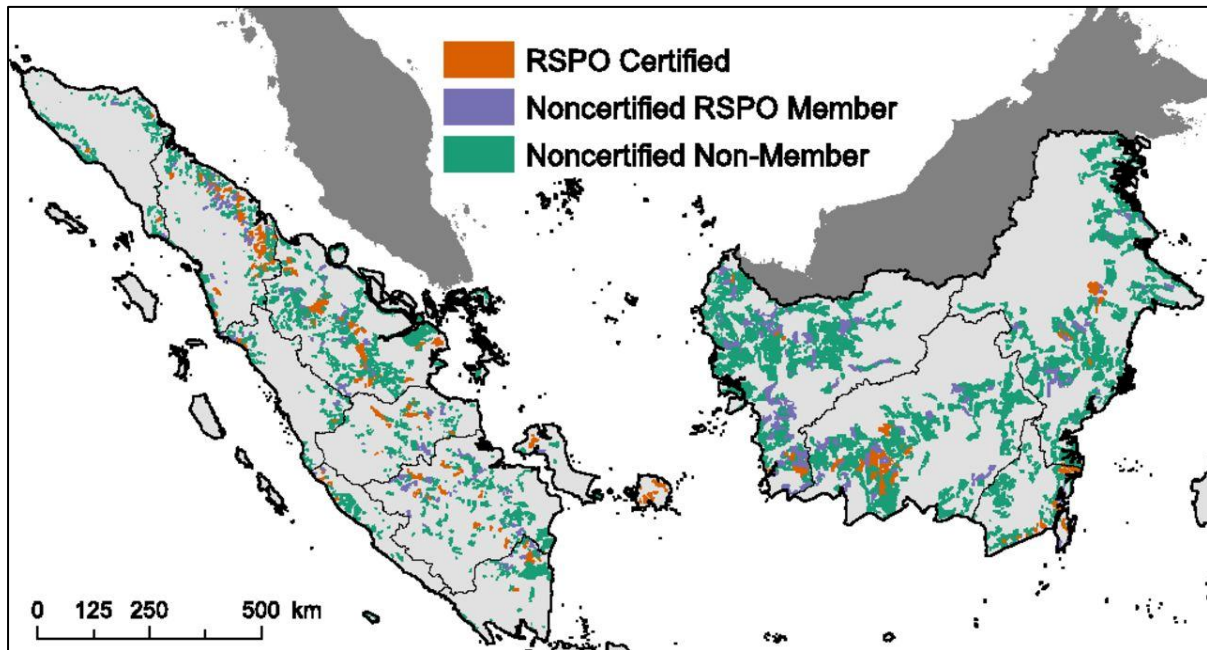
⁹³ Greenpeace, 2009, Illegal Forest Clearance and RSPO Greenwash: Case Studies of Sinar Mas, London: Greenpeace

⁹⁴ ILRF, 2013, Empty Assurances: The human cost of palm oil, International Labour Rights Forum, <https://laborrights.org/stop-child-forced-labor/resources/empty-assurances>

⁹⁵ RSPO, 2020, Principles and Criteria review, Roundtable on Sustainable Palm Oil, <https://rspo.org/principles-and-criteria-review>

⁹⁶ WWF, 2018, WWF's position on the adopted 2018 RSPO Principles and Criteria, WWF, <https://wwf.panda.org/?337932>

Figure 4: Map of RSPO Certified Palm Oil plantations on Sumatra and the Kalimantan area of Borneo⁹⁷



This section has outlined many of the key uses of palm oil and its derivatives, and the impact this demand has had on the growth of production of palm oil plantations. It is clear that there are benefits and disadvantages of palm oil in all of its uses, and that it does not provide a silver bullet to the world's problems. A balance needs to be found between the length of carbon repayment with the renewable nature of palm oil used as biofuel, or the potential health problems and benefits, and the short-term profitability at the expense of long-term quality of life. There are also issues around ongoing use of chemicals during the life cycle of a plantation, and the resulting pollution, as well as accusations of human rights abuses. Most importantly, there appears to be no research demonstrating that the use of primary forest in Indonesia and Malaysia for palm oil production is good for sustainability, biodiversity or pollution levels.

The following section will explore the links between the growth in palm oil plantations and corruption, both on the part of politicians and corporations. It will also consider the impact that organised criminal activity may be having in this relationship.

⁹⁷ Carlson, et al, 2018, op cit.

Part 3: Corruption and (Organised) Criminality

Globally, there is one legally binding instrument which focuses on corruption, and this is the UN Convention Against Corruption (UNCAC), which was adopted by the UN General Assembly in 2003, and came into force in 2005. Article 1 sets out the general purpose of the convention as:

- (a) *To promote and strengthen measures to prevent and combat corruption more efficiently and effectively;*
- (b) *To promote, facilitate and support international cooperation and technical assistance in the prevention of and fight against corruption, including in asset recovery;*
- (c) *To promote integrity, accountability and proper management of public affairs and public property.”*

Indonesia and Malaysia both signed the Convention in December 2003. Indonesia ratified it in September 2006, and Malaysia in September 2008, and so both are bound by the terms of the Convention.

Article 5 of the Convention requires State Parties to “develop and implement or maintain effective, coordinated anti-corruption policies that promote the participation of society and reflect the principles of the rule of law, proper management of public affairs and public property, integrity, transparency and accountability.”

The World Economic Forum’s annual Global Competitiveness Report for 2019 scores Malaysia at only 47% against the “incidence of corruption” standard (100% is the best score).⁹⁸ Transparency International, which grades countries using a Corruption Perceptions Index (CPI) by “their perceived levels of public sector corruption” from 100 (very clean) to 0 (highly corrupt).⁹⁹ Malaysia’s score on the CPI is 53, making it the 51st least corrupt place (of 198).¹⁰⁰ Indonesia, by contrast, is scored at 38% on corruption by the World Economic Forum,¹⁰¹ and a CPI score of 40 (85th least corrupt country).¹⁰² It is clear from the above that both countries have notable problems with controlling corruption, and may need to develop further their anti-corruption measures to fully satisfy their UNCAC obligations.

Corruption is not only the preserve of public officials however. Criminals, whether acting alone or as part of a wider organised criminal group (OCG) or network of groups use corruption, bribery, blackmail and “graft” to generate income, embed power and evade prosecution. In some contexts, involvement in political corruption by OCGs is seen as a sign of their

⁹⁸ WEF, 2020, Global Competitiveness Report 2019, World Economic Forum, p367

⁹⁹ TI, 2020a, Corruption Perceptions Index 2019, Transparency International, <https://www.transparency.org/en/cpi/2019#>

¹⁰⁰ TI, 2020b, Corruption Perceptions Index 2019 Results: Malaysia Transparency International, <https://www.transparency.org/en/cpi/2019/results/mys>

¹⁰¹ WEF, 2020, op cit, p283

¹⁰² TI, 2020c, Corruption Perceptions Index 2019 Results: Indonesia Transparency International <https://www.transparency.org/en/cpi/2019/results/idn>

evolution from violent forms of criminal activity.¹⁰³ The UNCAC makes specific reference in its preamble to the earlier UN Convention on Transnational Organised Crime (UNTOC), thus recognising the role played by organised criminal groups in facilitating and enabling graft and corruption. Article 8 of UNTOC required State Parties to criminalise bribery and attempted bribery of public officials, and the seeking by an official of “an undue advantage, for the official himself or herself or another person or entity, in order that the official act or refrain from acting in the exercise of his or her official duties.” Article 9 requires State Parties to “adopt legislative, administrative or other effective measures to promote integrity and to prevent, detect and punish the corruption of public officials.”

Indonesia signed UNTOC in December 2000, but it took until April 2009 before it was ratified. Malaysia signed later, in September 2002, but ratified earlier, in September 2004. The WEF Global Competitiveness Report, mentioned above, also includes a measure relating to organised crime. On a scale of 1-7, where 7 is the best performance, Malaysia scores 5.1¹⁰⁴ and Indonesia scores 4.3¹⁰⁵ which suggests that both countries have a significant problem with organised crime.

Blackburn *et al.* point out that “There is a strong presumption that organized crime typically involves implicit collusion with, or direct participation of, the public sector”¹⁰⁶ and since in both Malaysia and Indonesia the public-sector controls access to land, the power to issue licences and to enforce the terms of those licences, the opportunities for collusion are numerous. Kupatadze suggests that while there is little to suggest that political competition reduces the likelihood of corruption, centralisation of power and lack of competition may enhance it.¹⁰⁷ Keeping this in mind, it is worth noting here that the United Malays National Organisation (UMNO) held power in Malaysia from 1957 through to 2018, and of the six Prime Ministers in that time three (Abdul Razak Hussein, Hussein Onn, and Najib Razak) were from the same family.¹⁰⁸ In Indonesia, the office of Prime Minister was abolished in 1967, and President Suharto ruled the country from 1968 to 1998. In 2004, Transparency International gave Suharto the unenviable title of “One of

¹⁰³ Cherciu, E., 2004, Corruption, Features and Particularities in Romania. Bucharest: Lumina Lex.

¹⁰⁴ WEF, 2020, op cit, p367

¹⁰⁵ WEF, 2020, op cit, p283

¹⁰⁶ Blackburn, K., Neanidis, K.C., and Rana, M.P., 2017, A theory of organized crime, corruption and economic growth, *Economic Theory Bulletin* volume 5, pages227–245(2017) <https://doi.org/10.1007/s40505-017-0116-5>

¹⁰⁷ Kupatadze, A., 2015, Political corruption in Eurasia: Understanding collusion between states, organized crime and business, *Theoretical Criminology*, 2015, Vol. 19(2) 198–215, <https://doi.org/10.1177/1362480615574404>

¹⁰⁸ It is important to note that while Najib Razak’s links to the 1MDB scandal are well publicised (and will be discussed below), neither Abdul Razak Hussein or Hussein Onn have ever been implicated in corruption accusations.

the world's most corrupt leaders"¹⁰⁹ having allegedly embezzled between US\$15bn and US\$35bn.¹¹⁰

Both Indonesia and Malaysia have set up specialist bodies to tackle corruption. Indonesia set up the KPK¹¹¹ (*Komisi Pemberantasan Korupsi / Anti-Corruption Commission*) in 2003, at around the same time as it signed UNCAC. The KPK has not been free from criticism, however. Some criticise it for not being tough enough on corruption, and others (notably some senior members of the Indonesian Police) have accused senior KPK members of corruption and other criminal activity. In 2009, the then Chair of the KPK Antasari Azhar was arrested for murder. Despite some senior police officers saying they had been asked to frame him,¹¹² he was convicted in 2010 and sentenced to 18 years in prison.¹¹³ Azhar, who was granted clemency in 2017,¹¹⁴ still claims that the conviction was a political move by then President Susilo Bambang Yudhoyono to stop another corruption investigation.¹¹⁵ In 2015 the Chair and Deputy Chair of KPK, Abraham Samad and Bambang Widjojanto, were arrested in apparent retaliation for declaring the approved candidate for Chief of Police to be a suspect in a corruption case.¹¹⁶ The KPK subsequently dropped the case, and the police dropped both of their cases.

In Malaysia, the equivalent body to the KPK is the MACC (Malaysian Anti-Corruption Commission), which was established in its current form in 1967.¹¹⁷ MACC has a relatively clean record when compared to the KPK, and has brought some very high-profile cases, notably the investigation into the Sabah State Waster Department in 2015/16 and the still-to-be-completed 1MDB (1 Malaysia Development Berhad) investigation, which included the arrest and charging of former Prime Minister Najib Razak. Razak was convicted of seven counts of corruption in July 2020 and sentenced to 12 years imprisonment and a fine of RM210m (US\$50m).¹¹⁸

¹⁰⁹ Transparency International, 2004, *Global Corruption Report 2004*, London: Pluto Press, p1

¹¹⁰ Hodess, R., 2004, Introduction, in Transparency International, 2004, *op cit*, p13

¹¹¹ KPK, 2020, About the KPK, Komisi Pemberantasan Korupsi / Anti-Corruption Commission
<https://www.kpk.go.id/en/>

¹¹² Widhiarto, H., 2009, Antasari 'framed', Jakarta Post, 11 Nov 2009

<http://www.thejakartapost.com/news/2009/11/11/antasari-%E2%80%98framed%E2%80%99.html>

¹¹³ Gelling, P., 2010, Ex-corruption chief in Indonesia sentenced in murder plot, New York Times, 12 Feb 2010,
<http://www.nytimes.com>

¹¹⁴ Diprose, R., McRae, D., and Hadiz, V.R., 2019, Two Decades of *Reformasi* in Indonesia: Its Illiberal Turn, *Journal of Contemporary Asia*, Vol 49, Issue 5, pp691-712, <https://doi.org/10.1080/00472336.2019.1637922>

¹¹⁵ NE, 2017, Disclosed, Here is Chronology of Criminalization against Antasari, Netral English, 14 Feb 2017,
<https://www.en.netralnews.com/news/currentnews/read/1504/disclosed..here.is.chronology.of.criminalization.against.antasari>

¹¹⁶ Cassin, R.L., 2015, Indonesia: In showdown with police, the KPK blinks, FCPA Blog, 2 Mar 2015,
<https://fcgablog.com/2015/03/02/indonesia-in-showdown-with-police-the-kpk-blinks/>

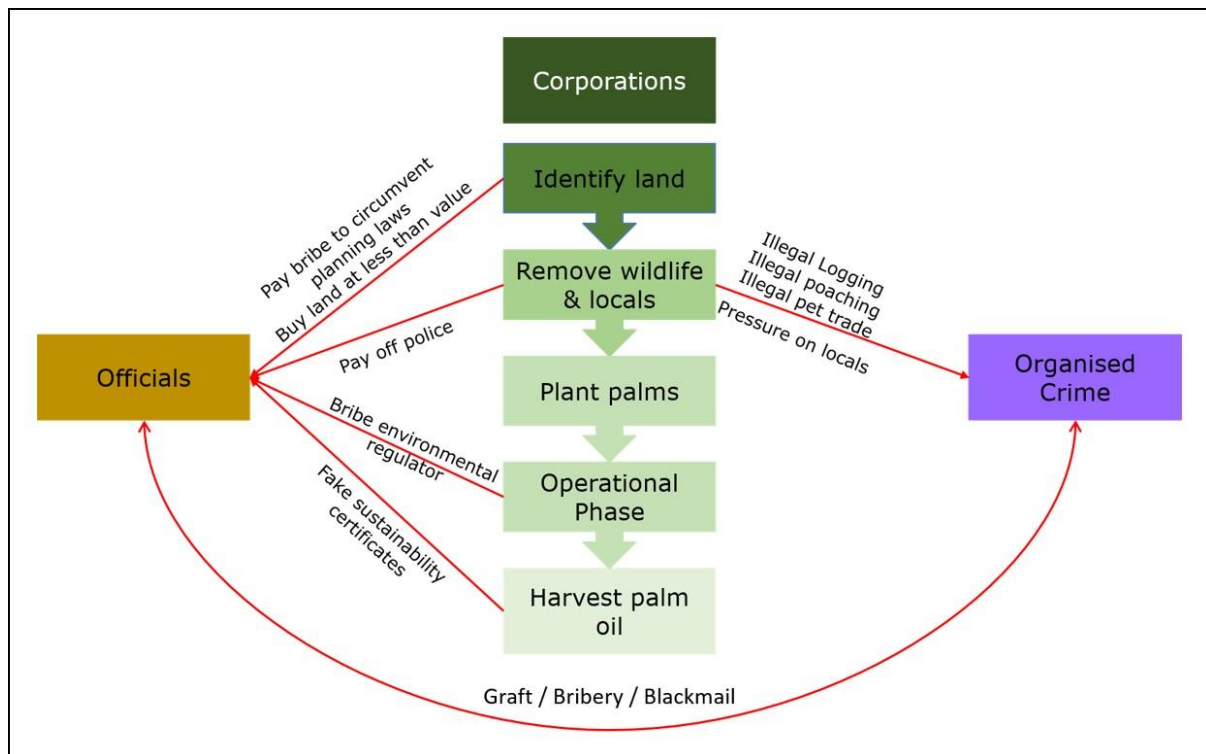
¹¹⁷ MACC/SPRM, 2016, Corporate: Divisions – Finance, Accounting and Development, Malaysian Anti-Corruption Commission, <https://www.sprm.gov.my/en/profil-sprm/divisions/finance-accounting-and-development-division>

¹¹⁸ Singh, S., Karim, K.N., and Khairulrijal, R., 2020, Najib sentenced to 12 years' jail, RM210 million fine, New Straits Times, 28 July 2020, <https://www.nst.com.my/news/crime-courts/2020/07/612343/najib-sentenced-12-years-jail-rm210-million-fine>

At the time of writing, Razak’s appeal is still outstanding, and there are 35 other charges against him which have yet to be ruled on.

Having established that both Malaysia and Indonesia suffer from long lasting and significant issues with corruption and sustained organised criminal activity in the general sense, we will now turn to consider these issues as they relate to forestry clearance and palm oil production. Figure 5, below, sets out a framework for identifying the opportunities for OCG and political misfeasance in relation to a hypothetical planned oil palm plantation. Examples will be given of publicly reported instances which link to each of the stages, demonstrating that this is not merely a hypothetical model.

Figure 5: Modelling the opportunities for OCG and political corruption in the planning and operation of a palm oil plantation.



The five stages of a palm oil plantation can easily be subdivided into smaller sections, and there is a clear time-delay between planting the oil palms and harvesting the fruit.

In Malaysia, the Federal Land Development Authority (FELDA) combines the role of a government agency established to resettle poorer farmers and engage smallholders with farming cash crops, with a role as the parent company of private corporations, including FGV which manages “a total land bank of 439,725 hectares in Malaysia and Indonesia, producing

approximately 3 million metric tons (MT) of CPO annually.”¹¹⁹ In 2017, Transparency International Malaysia issued a press statement in which it said it was “concerned with the ongoing and seemingly endless saga on malpractice, corruption and breach of trust and duty cases latest affecting FELDA.”¹²⁰ It is worth noting that the former FELDA Chairman (Shahrir Abdul Samad) is part of the ongoing 1MDB investigation, and his application to have the charges struck out was rejected in February 2020. In Indonesia, Eldeeb *et al.* 2015 conclude “that deforestation in Indonesia is caused by corruption and that it is supported by crude palm oil production that has spread over the deforested area”¹²¹ and since “areas devoted to palm oil belong currently to the most significant contributors of rain forest destruction in Indonesia”,¹²² the opportunities for corruption are legion.

In 2011, Dermawan *et al.* gave the example of the former governor of East Kalimantan, the Indonesian part of the island of Borneo, who was jailed and fined after being found guilty of illegally issuing permission for palm oil plantations on 10,000km² of forest land in 2003-8.¹²³ A second example involved the regent of the Riau province of Sumatra, who was convicted of accepting US\$100,000 for issuing timber licences illegally.¹²⁴ These two examples clearly demonstrate the first part of the model, and that unscrupulous corporations are willing to pay officials to issue licences which are contrary to all the forestry protection requirements.

The second stage of the model involves the removal of any local people from the site as well as the removal of the primary forest and any associated flora or fauna. Hoare notes that “Forest policy-making in Malaysia involves both the federal and state governments, but the states have prerogative rights to develop their own policies on land and forests.”¹²⁵ This lack of centralised policy and oversight increases the opportunities for corruption and criminality. One example of this is the 2017 sentencing of a Pahang Forestry Department official jailed for three months and fined RM15,000 (US\$3,600) for accepting bribes worth RM340,000 (US\$84,000) in a little over a year to allow a logging company to cut down protected areas of forest.¹²⁶ An ongoing investigation by

¹¹⁹ FGV, 2020, Plantation, FGV Holdings, <https://www.fgvholdings.com/our-businesses/plantation/>

¹²⁰ TI-M, 2017, PRESS STATEMENT : 2017 – “FELDA Year”, Transparency International Malaysia, <https://transparency.org.my/pages/news-and-events/press-releases/press-statement-2017-felda-year>

¹²¹ Eldeeb, O., Prochazka, P, and Maitah, M., 2015, Causes for Deforestation in Indonesia: Corruption and Palm Tree Plantation, Asian Social Science Vol. 11, No. 27; 2015 <http://doi.org/10.5539/ass.v11n27p120> p123/4

¹²² Ibid, p121

¹²³ Dermawan, A., Petkova, E., Sinaga, A., Mumu Muhajir, M. and Indriatmoko, Y. 2011 Preventing the risk of corruption in REDD+ in Indonesia. United Nations Office on Drugs and Crime and Center for International Forestry Research, Jakarta and Bogor, Indonesia. p10

¹²⁴ Ibid.

¹²⁵ Hoare, A., 2015, Illegal Logging and Related Trade: The Response in Malaysia, Chatham House Research Paper, London: Chatham House.

¹²⁶ MM, 2017, Jerantut forest officer gets jail, RM15,000 fine for graft, Malay Mail, 20 Sept 2017, <https://www.malaymail.com/news/malaysia/2017/09/20/jerantut-forest-officer-gets-jail-rm15000-fine-for-graft/>

MACC is based on the allegation that FELDA transferred US\$70m of land to a private company for no payment. Mohamad Isa Abdul Samad's case has been repeatedly delayed by the COVID-19 outbreak, and is currently due to be heard on 24th December 2020.

A similar system exists in Indonesia and the two-year investigation by Mongabay and the Gecko Project concluded in 2019 that, using shell companies, some district chiefs (bupatis) "have systematically exploited their control over land amid a near-complete lack of oversight, to make millions of dollars by selling permits to major plantation firms. They were doing so both to profit themselves, and to finance election campaigns that would return them to office, creating a negative cycle of corruption."¹²⁷

Wildlife which lived in the areas of forest cleared by the logging activities will vary from location to location. Typical species which are frequently traded by criminal groups include *inter alia* the orangutan species, as discussed above, as well as the Critically Endangered Sunda Pangolin (*Manis javanica*)¹²⁸ the Malaysian Sun Bear (*Helarctos malayanus*)¹²⁹ and Sunda Clouded Leopard (*Neofelis diardi*),¹³⁰ all of which are listed on CITES Appendix 1 of the 1973 Convention on the International Trade of Endangered Species of Flora and Fauna (CITES)¹³¹ and are found in forested land across Indonesia and Malaysia.

The third and fourth stage of the model can be dealt with together, since the planting of oil palms is immediately followed by the operational phase of a palm oil plantation. In 2018, the KPK arrested three palm oil company executives after they had attempted to bribe Central Kalimantan legislators not to investigate the pollution of Lake Sembuluh by pesticides and processing waste.¹³² This is not a one-off. In 2016, an audit by the KPK revealed that management systems within the palm oil industry were insufficiently robust to prevent corruption,¹³³ and in 2019 the Indonesian Audit Board (*Badan Pemeriksa Keuangan*, or BPK) revealed that its own investigations had revealed that over three quarters of Indonesia's oil

¹²⁷ Earthsight, 2019, What we learned from two years investigating corrupt land deals in Indonesia, Earthsight /Mongabay / Gecko Project, <https://www.earthsight.org.uk/news/investigation/conclusion-what-learned-from-investigating-corrupt-land-deals-indonesia-for-sale>

¹²⁸ Challender, D., Willcox, D.H.A., Panjang, E., Lim, N., Nash, H., Heinrich, S. & Chong, J. 2019. *Manis javanica*. The IUCN Red List of Threatened Species 2019: e.T12763A123584856. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12763A123584856.en>.

¹²⁹ Scotson, L., Fredriksson, G., Augeri, D., Cheah, C., Ngoprasert, D. & Wai-Ming, W. 2017. *Helarctos malayanus* (errata version published in 2018). The IUCN Red List of Threatened Species 2017: e.T9760A123798233. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T9760A45033547.en>.

¹³⁰ Hearn, A., Ross, J., Brodie, J., Cheyne, S., Haidir, I.A., Loken, B., Mathai, J., Wilting, A. & McCarthy, J. 2015. *Neofelis diardi* (errata version published in 2016). The IUCN Red List of Threatened Species 2015: e.T136603A97212874. <https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T136603A50664601.en>.

¹³¹ CITES lists species which are endangered onto three Appendices – I, II, and III. Appendix I gives the strongest protection and the strongest limitations on international trade. See: www.cites.org

¹³² Jong, H.N., and Nugraha, I., 2018, Palm oil executives arrested in bribery scandal in Indonesia, Mongabay, 30 October 2018.

¹³³ KPK, 2016, *Kajian Sistem Pengelolaan Komoditas Kelapa Sawit* (tr: The Study of Oil Palm Commodity Management System), Jakarta: Komisi Pemberantasan Korupsi (in Indonesian)

palm plantations were ignoring legally binding regulations, but prosecutions were not being made.¹³⁴

The final stage of palm oil production is the selling of the oil itself. The RSPO, as has been discussed, certifies a proportion of palm oil as being sustainable. In a piece written in the Independent in 2009, Justin King, the then-CEO of the supermarket chain Sainsbury wrote "Sustainable palm oil is expensive as it requires separate storage, infrastructure and growing practices."¹³⁵ A decade later, with around a fifth of palm oil being labelled as sustainable, the additional cost is putting off consumers, meaning that only half of the sustainable palm oil produced is being sold as "sustainable" and the rest is sold as "ordinary" palm oil.¹³⁶ For criminal networks, a certification scheme which attracts a premium price is one which is worth exploiting. This has been shown in relation to fake certificates for blood diamonds¹³⁷ antiques,¹³⁸ and many other commodities, and once the market develops, palm oil will be no different.

This section has demonstrated the existence of a persistent historical level of corruption in both Indonesia and Malaysia. The creation and operation of the MACC and KPK, as well as both countries' commitment to the UNCAC and UNTOC Conventions demonstrate a level of political willingness to change this which has not been widely present in the past. The model demonstrated in Figure 5 has shown the opportunities for criminal groups, corrupt public officials, and corporate entities to engage in corrupt patterns of behaviour in relation to palm oil plantations. Most of these stages are well-established and there is a need to improve regulation and enforcement. The issue of fake certification has not yet become problematic, as the market does not seem to be willing to bear the additional cost. Once it does, the criminal side will flourish without further action by RSPO, KPK and MACC.

Discussion/Recommendations

There are three overarching but linked issues that will be discussed here. Firstly, the approaches which need to be taken in relation to preserving

¹³⁴ BPK, 2019, Pemeriksaan Pengelolaan Perkebunan Kelapa Sawit (tr: Audit of the management of oil palm plantations), Jakarta, Badan Pemeriksa Keuangan (in Indonesian)

¹³⁵ King, J., 2009 Sustainable palm oil is expensive - but worth it, The Independent, 28 Oct 2009.

¹³⁶ Raghu, A., 2019, The World Has Loads of Sustainable Palm Oil... But No One Wants It, Bloomberg, 14 Jan 2019, at <https://www.bloomberg.com/news/articles/2019-01-13/world-has-loads-of-sustainable-palm-oil-just-no-one-wants-it>

¹³⁷ See, for example, Gupta, G., 2015, Not Just Out of Africa: South America's "Blood Diamonds" Network, Time, Aug. 20, 2012 <http://world.time.com/2012/08/20/not-just-out-of-africa-south-americas-blood-diamonds-network/> and KPCS, 2020, Enforcement: Warnings, Kimberley Process Certification Scheme, <https://www.kimberleyprocess.com/en/enforcement>

¹³⁸ See, for example, Heering, S.H., 2018, Ivory and Antiquities: A Tale of Two Trades, Art Antiquity & Law, Vol 23, Issue 2,

the biodiversity of the region, and halt the destruction of globally important habitat. Secondly, how to move forward with the management of palm oil plantations, and associated industries, and, finally, ways in which the problems of corruption might be controlled.

Orangutans are described as the “gardeners of the forest” by the WWF,¹³⁹ as their mainly fruit-based diet sees them distributing seeds across their territories in their droppings, and helping to maintain the health of the ecosystem. Preservation of these species is thus vital to the long-term health of the forests, including the other species which live in it. Some of these species (for example the Sunda Tiger, Sumatran Rhinoceros, Sumatran Elephant, Borneo Pygmy Elephant, Sunda Pangolin, Malaysian Sun Bear and Sunda Clouded Leopard) live in the same sort of habitat as orangutans, and will be directly impacted. Others (for example the Mahakan or Irawaddy Dolphin, Javan Blue-Banded Kingfisher and Nordmann's Greenshank) do not share the same territory, but will be indirectly impacted by changes to water quality and flow. The total rainforest area in the Malaysian and Indonesian parts of Borneo has declined by 14 per cent since 2000,¹⁴⁰ and by “75 per cent since the mid-1980s.”¹⁴¹ The figures for Sumatra vary but are broadly similar.¹⁴²

Palm oil is not the only cause of this deforestation, and so a solution to the problem must be aimed more widely, rather than aimed at a particular industry. We have seen a rise in protected forest areas in both countries, but also that on occasion the protected status has been no barrier to granting permits for exploitation – be it for oil palm, mining, or other development. There are three incremental approaches to ensure that viable habitat continues to exist for these endangered species. Each option builds on the previous one, and thus the financial burden increases.

- Firstly, maintain the status quo by doing nothing different. There are areas of protected forests and there are laws in place to protect them. Laws will always be broken, but in the balance between long term environmental protection and short term economic prosperity, the latter will take priority. Nearly 30 years ago El-Ashry notes that farmers in poorer areas are often “unable to invest in long term environmental protection and resource conservation. Rather, they face incentives to maintain or increase short-term benefits at the

¹³⁹ WWF, 2020b, Why Orang-utans matter, WWF,

https://wwf.panda.org/discover/knowledge_hub/endangered_species/great_apes/orangutans/

¹⁴⁰ Gaveau, D.L.A., Locatelli, B., Salim, M.A., Yaen, H., Pacheco, P., and Sheil, D., 2019, Rise and fall of forest loss and industrial plantations in Borneo (2000–2017), Conservation Letters. 2019;1 Vol 12 Issue 3,

<https://doi.org/10.1111/conl.12622>

¹⁴¹ WWF, 2020c, Borneo Deforestation, WWF,

https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_fronts2/deforestation_in_borneo_and_sumatra/

¹⁴² Gavreau, D.L.A., Wandono, H., and Setiabudi, F., Three decades of deforestation in southwest Sumatra: Have protected areas halted forest loss and logging, and promoted re-growth?, Biological Conservation, Volume 134, Issue 4, February 2007, Pages 495-504 <https://doi.org/10.1016/j.biocon.2006.08.035>

expense of long-term productivity.”¹⁴³ Whilst doing nothing new is clearly the easiest of the three options to achieve, it has the least benefit to habitat protection and biodiversity.

- Secondly, strengthen restrictions on developing in protected areas. Since both Indonesia and Malaysia have identified the need to protect certain areas of their land, there is an opportunity for this protection to be extended and enhanced. In the UK, the National Planning Policy Framework has, at its core, a “presumption in favour of sustainable development” which effectively allows for a development to take place if the developer can demonstrate it is sustainable.¹⁴⁴ A stronger approach which could be adopted in Indonesia and Malaysia would be a ban on non-sustainable development, whereby a developer would have to put a case to an independent panel which would objectively assess the sustainability of the proposed project. The criteria could be set at different levels depending upon the type of area in question, and the scale of the proposal – higher for protected areas and larger projects, and lower for smaller projects on land which is not protected. This system would involve additional administrative cost, but given the profit levels enjoyed by industries, it could be offset by charging for applications. Such a system should accelerate the downward trend in plantations using primary forest that was identified in Indonesia by Austin *et al.*,¹⁴⁵ and for palm oil would increase the proportion which was able to be certified by RSPO (or an equivalent body), as sustainable.
- Thirdly, expand the reforestation programmes. Reforestation of rainforest is possible, but it is currently mostly undertaken by charities, companies or individuals on a relatively small scale. Catterall *et al.* assessed the biodiversity impact of doing this in Australia, and concluded that such action needed ongoing monitoring, and that it was vital to ensure that replanting was coherent and did not occur only in small patches.¹⁴⁶ In Brazil, Bechara *et al.* concluded that “Neotropical forests have a notoriously variable rate of recovery: some stands recover structure rapidly and without human intervention within a couple of decades, but in other cases may take even centuries”¹⁴⁷ so this would require an extremely long-term vision from both governments.

¹⁴³ El-Ashry, M.T., 1993, Balancing Economic Development with Environmental Protection in Developing and Lesser Developed Countries, *Air & Waste*, 43:1, 18-24, <https://doi.org/10.1080/1073161X.1993.10467115>, p19

¹⁴⁴ MHCLG, 2019, National Planning Policy Framework, London: HMSO/Ministry for Housing Communities & Local Government

¹⁴⁵ Austin, K.G., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., and Kasibhatia, P.S., 2017, *op cit.*

¹⁴⁶ Catterall, C.P., Freeman, A.N.D., Kanowski, J., and Freebody, K., 2012, Can active restoration of tropical rainforest rescue biodiversity? A case with bird community indicators, *Biological Conservation*, Vol 146, Issue 1, p53-61 <https://doi.org/10.1016/j.biocon.2011.10.033>

¹⁴⁷ Bechara, F.C., Dickens, S.J., Farrer, E.C., Larios, L., Spotswood, E.N., Mariotte, P., and Suding, K.N., 2016, Neotropical rainforest restoration: comparing passive, plantation and nucleation approaches, *Biodiversity & Conservation*, 25: 2021-2034, <https://doi.org/10.1007/s10531-016-1186-7>, p2021

Having established possible ways forward with habitat and species conservation, these all need to be considered in the context of palm oil management, as it would be foolhardy to impose reforestation projects while still allowing primary forest to be cleared for oil palm plantations. Palm oil, as we have seen, is a significant contributor to the economies of both countries, and is a market predicted to top US\$100bn by 2025. According to World Bank statistics for FY2019,¹⁴⁸ Indonesia and Malaysia are placed 104th and 49th in the world based on their Gross National Production (GNP) per capita at purchasing power parity (PPP) of US\$12,335 and US\$29,620 respectively.¹⁴⁹ A flat out ban on all palm oil sales would therefore be catastrophic to both countries and would be likely to lead to social and political upheaval.

What is needed is a two-fold approach to palm oil. Firstly, a consideration by manufacturers of foods, cosmetics and biofuels as to whether they need to use palm oil, or whether there is a more suitable alternative. The existence of alternatives is undeniable, since the current widespread use of palm oil is considerably more recent than the existence of the products containing it. A large measure of this pressure could come from informed consumers – the significant drop in the production of single-use plastics is a good example of how this has worked in the past. Clarification of labelling under the FIC, as outlined above, would go a long way to enable truly informed choice by consumers. Any alternative to palm oil would, unfortunately, bring its own environmental and economic issues, which is why a sudden switch from massive use of palm oil to massive use of peanut, soy, canola or other oils is not recommended.

If manufacturers cannot realistically remove palm oil from their products, then a move to use only palm oil which is certified as sustainable is desirable. As we have seen, only 19% of palm oil is RSPO certified as sustainable, and the EU and USA both consider palm oil to be insufficiently sustainable as a product to licence it for biofuel use. Efforts to work on the future sustainability of the product, for example by adopting one of the approaches above, will be likely to improve this situation.

In order to ensure that palm oil use is better managed, and habitat and species conservation are improved, the issue of corruption must be addressed. We have seen that both countries have well-established anti-corruption bodies, and also that the political status quo, identified by Kupatadze as a possible exacerbating factor for corruption,¹⁵⁰ has been changed. Both countries have seen a slight upward trajectory in their Transparency International CPI in recent years, and there are real signs of progress in their efforts to tackle political corruption. It remains an issue, however, and there is a long way to go before corruption is effectively

¹⁴⁸ World Bank, 2020, GDP per capita, PPP (current international \$), World Bank, https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?most_recent_value_desc=true

¹⁴⁹ By means of comparison, the United Kingdom ranked in 24th place with a GNP PPP of US\$48,698.

¹⁵⁰ Kupatadze, A., 2015, op cit.

tackled. This provides an ideal opportunity for organised criminal groups, whether the well-established transnational organised crime groups, or smaller militias. The issues extend beyond South East Asia, orangutans and Palm Oil, of course. In 2014 the United Nations Environment Programme reported that “estimates from the Organisation for Economic Co-operation and Development (OECD), the United Nations Office on Drugs and Crime (UNODC), UNEP and INTERPOL place the monetary value of all environmental crime - which includes logging, poaching and trafficking of a wide range of animals, illegal fisheries, illegal mining and dumping of toxic waste - at between US\$70 and US\$213 billion each year.”¹⁵¹ A similar joint report from Interpol, RHIPTO and the Global Initiative on Transnational Organised Crime in 2018 found that “proceeds of environmental crime [...] have become the largest source of income for non-state armed groups and terrorist organizations”¹⁵² and that it “is gaining increasing interest as a source of financing among insurgents, terrorist groups and criminal cartels.”¹⁵³ In 2019, Gore *et al.* suggested that transnational environmental crime was not only a threat to peace and security, but also had a significant impact on nations’ abilities to meet the UN Sustainable Development goals.¹⁵⁴ What is clear is that the pressure on officials to bend or break the rules will be immense – whether it is from family members, corporate entities or criminal groups, and so the framework to help those officials resist the pressure needs to be upgraded.

Banning the sale and production of non-sustainable palm oil will not solve corruption or criminality. Indeed, it is likely to open up new opportunities for criminals such as fake certification. However, adopting the measures suggested above will result in a more robust, fairer and more sustainable system of balancing continued, economic growth and protection of habitat and species.

Overall, this discussion hinges on our own values and priorities, and we need to decide what sort of a world we want to leave for future generations. If we are happy to take the benefit of the oils in peanut butter not separating at the top of the jar¹⁵⁵ and ice-cream that melts at a

¹⁵¹ Nellemann, C., Henriksen, R., Raxter, P., Ash, N., and Mrema, E. (Eds). 2014. The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment. Nairobi and Arendal: United Nations Environment Programme and GRID-Arendal

¹⁵² Nellemann, C.; Henriksen, R., Pravettoni, R., Stewart, D., Kotsovou, M., Schlingemann, M.A.J, Shaw, M. and Reitano, T. (Eds). 2018. World atlas of illicit flows. A RHIPTO-INTERPOL-GI Assessment. RHIPTO -Norwegian Center for Global Analyses, INTERPOL and the Global Initiative Against Transnational Organized crime. p8

¹⁵³ Ibid.

¹⁵⁴ Gore, M.L., Braszak, P., Brown, J., Cassey, P., Duffy, R., Fisher, J., Graham, J., Justo-Hanani, R., Kirkwood, A.E., Lunstrum, E., Machalaba, C., Massé, F., Manguiat, M., Omrow, D., Stoett, P., Wyatt, T., and White, R., 2019, Transnational environmental crime threatens sustainable development. *Nature Sustainability* **2**, 784–786 (2019). <https://doi.org/10.1038/s41893-019-0363-6>

¹⁵⁵ Collins, S.C., 2020, Why You Shouldn't be Scared of Oil in Your Peanut Butter, National Peanut Board, <https://www.nationalpeanutboard.org/wellness/why-you-shouldnt-be-scared-oil-in-your-peanut-butter.htm>

slightly higher temperature¹⁵⁶ over the continued existence of some of the rarest and most remarkable species on the planet, then we should continue to clamour for cheap, unsustainable palm oil. If, however, we think that maintaining biodiversity, enhancing workers' rights, and reducing corruption and the power of organised criminal groups are worthwhile prices to pay for minor changes in our shopping habits, then sustainable palm oil is the only viable option.

¹⁵⁶ Ethical Consumer, 2019, Palm Oil — What is it used for? Ethical Consumer, <https://www.ethicalconsumer.org/food-drink/palm-oil-what-it-used>

References

Journals

- Achten, W. M. J., and L. V. Verchot. 2011. Implications of biodiesel-induced land-use changes for CO₂ emissions: case studies in tropical America, Africa, and Southeast Asia. *Ecology and Society* 16(4): 14.
<http://dx.doi.org/10.5751/ES-04403-160414>
- Ancrenaz, M., Gumal, M., Marshall, A.J., Meijaard, E., Wich, S.A. & Husson, S. 2016. Pongo pygmaeus (errata version published in 2018). The IUCN Red List of Threatened Species 2016: e.T17975A123809220.
<https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T17975A17966347.en>
- Austin, K.G., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., and Kasibhatia, P.S., 2017, Shifting patterns of oil palm driven deforestation in Indonesia and implications for zero-deforestation commitments, *Land Use Policy*,
<https://doi.org/10.1016/j.landusepol.2017.08.036>
- Barker, T.W. and Worgan, J. T. (1981). The utilization of palm oil processing effluents as substrates for microbial protein production by the fungus *Aspergillus oryzae*. *European Journal of Applied Microbiology and Biotechnology* 11(4):234-240
- Bashir, M.J.K., Tham, M.T., Lim, J.W., Ng, C.A., and Salem S.A.A., 2016, Polishing of treated palm oil mill effluent (POME) from ponding system by electrocoagulation process, *Water science and technology*, Vol.73(11), pp.270
- Bechara, F.C., Dickens, S.J., Farrer, E.C., Larios, L., Spotswood, E.N., Mariotte, P., and Suding, K.N., 2016, Neotropical rainforest restoration: comparing passive, plantation and nucleation approaches, *Biodiversity & Conservation*, 25: 2021-2034, <https://doi.org/10.1007/s10531-016-1186-7>
- Bello, M.M., Raman, A., and Aziz, A., 2017, Trend and current practices of palm oil mill effluent polishing: Application of advanced oxidation processes and their future perspectives *Journal of environmental management*, 01 August 2017, Vol.198, pp.170-182
- Blackburn, K., Neanidis, K.C., and Rana, M.P., 2017, A theory of organized crime, corruption and economic growth, *Economic Theory Bulletin* volume 5, pages227–245(2017) <https://doi.org/10.1007/s40505-017-0116-5>
- Carlson, K.M., Curran, L.M., Asner G.P., Pittman A.M., Trigg S.N., and Adeney J.M., 2013, Carbon emissions from forest conversion by Kalimantan oil palm plantations, *Nature Climate Change*, 3, 283–287,
<https://doi.org/10.1038/NCLIMATE1702>
- Carlson, K.M., Curran, L.M., Ponette-González, A.G., Ratnasari, D., Ruspita, Lisnawati, N., Purwanto, Y., Brauman, K.A., Raymond, P.A., 2014, Influence of watershed-climate interactions on stream temperature, sediment yield, and metabolism along a land use intensity gradient in Indonesian Borneo, *Journal of Geophysical Research: Biogeosciences*, 119, 1110–1128,
<https://doi.org/10.1002/2013JG002516>
- Carlson, K.M., Heilmayr, R., Gibbs, H.K., Noojipady, P., Burns, D.N., Morton, D.C., Walker, N.F., Paoli, G.D., and Kremen, C., 2018, Effect of oil palm sustainability certification on deforestation and fire in Indonesia, *PNAS* January 2, 2018 115 (1) 121-126; <https://doi.org/10.1073/pnas.1704728114>

- Catterall, C.P., Freeman, A.N.D., Kanowski, J., and Freebody, K., 2012, Can active restoration of tropical rainforest rescue biodiversity? A case with bird community indicators, *Biological Conservation*, Vol 146, Issue 1, p53-61
<https://doi.org/10.1016/j.biocon.2011.10.033>
- Chai, H., Mohammed, B., Chii-Dong, H., and Humaira, N., 2017, Investigation on the performance of hybrid anaerobic membrane bioreactors for fouling control and biogas production in palm oil mill effluent treatment, *Water Science and Technology*, Sep 2017, Vol.76(6), pp.1389-1398.
- Cherciu, E., 2004, *Corruption, Features and Particularities in Romania*. Bucharest: Lumina Lex.
- Choudhary, M., Grover, K., and Kaur, G., 2014, Development of rice bran oil blends for quality improvement, *Food Chemistry* 173 (2015) 770–777;
- Dellios, Paulette, 2008, A Lexical Odyssey from the Malay World, *Studia Universitatis Petru Maior. Philologia*, Issue 4, pp 141-144
- Diprose, R., McRae, D., and Hadiz, V.R., 2019, Two Decades of Reformasi in Indonesia: Its Illiberal Turn, *Journal of Contemporary Asia*, Vol 49, Issue 5, pp691-712, <https://doi.org/10.1080/00472336.2019.1637922>
- El-Ashry, M.T., 1993, Balancing Economic Development with Environmental Protection in Developing and Lesser Developed Countries, *Air & Waste*, 43:1, 18-24, <https://doi.org/10.1080/1073161X.1993.10467115>
- Eldeeb, O., Prochazka, P, and Maitah, M., 2015, Causes for Deforestation in Indonesia: Corruption and Palm Tree Plantation, *Asian Social Science* Vol. 11, No. 27; 2015 http://doi.org/10.5539/ass.v11n27p120_p123/4
- Gaveau, D.L.A., Locatelli, B., Salim, M.A., Yaen, H., Pacheco, P., and Sheil, D., 2019, Rise and fall of forest loss and industrial plantations in Borneo (2000–2017), *Conservation Letters*. 2019;1 Vol 12 Issue 3, <https://doi.org/10.1111/conl.12622>
- Gavreau, D.L.A., Wandono, H., and Setiabudi, F., Three decades of deforestation in southwest Sumatra: Have protected areas halted forest loss and logging, and promoted re-growth?, *Biological Conservation*, Volume 134, Issue 4, February 2007, Pages 495-504 <https://doi.org/10.1016/j.biocon.2006.08.035>
- Gesteiro, E., Guijarro, L., Sánchez-Muniz, F.J., Vidal-Carou, M.d.C, Troncoso, A., Venanci, L., Jimeno, V., Quilez, J., Anadón, A., & González-Gross, M., 2019, Palm Oil on the Edge, *Nutrients*, Vol. 11, Iss. 9, (Sep 2019): 2008. <https://doi.org/10.3390/nu11092008>
- Gore, M.L., Braszak, P., Brown, J., Cassey, P., Duffy, R., Fisher, J., Graham, J., Justo-Hanani, R., Kirkwood, A.E., Lunstrum, E., Machalaba, C., Massé, F., Manguiat, M., Omrow, D., Stoett, P., Wyatt, T., and White, R., 2019, Transnational environmental crime threatens sustainable development. *Nature Sustainability* 2, 784–786 (2019). <https://doi.org/10.1038/s41893-019-0363-6>
- Grehan, J.R., & Schwartz, J.H., 2009, Evolution of the second orangutan: phylogeny and biogeography of hominid origins, *Journal of Biogeography*, Vol 36, Issue 10, pp1823-1844, DOI: <https://doi.org/10.1111/j.1365-2699.2009.02141.x>

- Hassan, M.A., Yacob, S., Shirai, Y., and Hung, Y. 2005, Treatment of palm oil wastewaters, *Waste Treatment in the Food Processing Industry* (2005), pp. 101-117, <https://doi.org/10.1201/9781420037128.ch4>
- Heering, S.H., 2018, Ivory and Antiquities: A Tale of Two Trades, *Art Antiquity & Law*, Vol 23, Issue 2,
- Hewitt, C.N., MacKenzie, A.R., Di Carlo, P., Di Marco, C.F., Dorsey, J. R., Evans, M., Fowler, D., Gallagher, M.W., Hopkins, J.R., Jones, C.E., Langford, B., Lee, J.D., Lewis, A.C., Lim, S.F., McQuaid, J., Misztal, P., Moller, S.J., Monks, P.S., Nemitz, E., D. Oram, E., Owen, S.M., Phillips, G.J., Pugh, T.A.M., Pyle, J.A., Reeves, C.E., Ryder, J., Siong, J., Skiba, U., and Stewart, D.J., 2009, Nitrogen management is essential to prevent tropical oil palm plantations from causing ground-level ozone pollution, *PNAS* November 3, 2009 106 (44) 18447-18451; <https://doi.org/10.1073/pnas.0907541106>
- Ibragimov, A., Arshad, F.M., Bala, B.K., Noh, K.N., & Tasrif, M., 2014, Impact of CPO export duties on Malaysian palm oil industry, *American Journal of Applied Sciences* 11(8):1301-1309, <https://doi.org/10.3844/ajassp.2014.1301.1309>
- Katragadda, H.R., Fullana, A., Sidhu, S., Carbonell-Barrachina, Á.A., 2010, Emissions of volatile aldehydes from heated cooking oils, *Food Chemistry* 120 (2010) 59–65, p59-60
- Koh, L.P., & Wilcove, D., 2008, Is oil palm agriculture really destroying tropical biodiversity? *Conservation Letters* 1 (2008) 60–64
<https://doi.org/10.1111/j.1755-263X.2008.00011.x>
- Kupatadze, A., 2015, Political corruption in Eurasia: Understanding collusion between states, organized crime and business, *Theoretical Criminology*, 2015, Vol. 19(2) 198–215, <https://doi.org/10.1177/1362480615574404>
- Margono, B., Potapov, P., Turubanova, S., Stolle, F., and Hansen, M.C., 2014, Primary forest cover loss in Indonesia over 2000–2012, *Nature Climate Change*, 4 (2014), pp. 730-735 <http://dx.doi.org/10.1038/nclimate2277>
- Martinkus, J., 2004, *Indonesia's Secret War in Aceh*, Sydney: Random House Australia
- Mukherjee, S., Mitra, A., 2009, Health effects of palm oil. *Journal of Human Ecology* 2009 Jun; 26(3): 197–203.
<http://dx.doi.org/10.1080/09709274.2009.11906182>
- Oosterveer, P., 2015, Promoting sustainable palm oil: viewed from a global networks and flows perspective, *Journal of Cleaner Production*, Volume 107, 16 November 2015, Pages 146-153, <https://doi.org/10.1016/j.jclepro.2014.01.019>
- Rosner, H., 2018, Palm oil is unavoidable. Can it be sustainable? *National Geographic Magazine*, December 2018.
- Sabeeha N.B.A. Khadaroo, P.G., Darwin, G., and Phaik, E.P., 2019, Is the dewatering of Palm Oil Mill Effluent (POME) feasible? Effect of temperature on POME's rheological properties and compressive behavior, *Chemical Engineering Science*, Volume 202, Pages 519-528,
<https://doi.org/10.1016/j.ces.2019.03.051>.
- Sastrawan, W.J., 2020, The word "orangutan", *Bijdragen tot de taal-, land- en volkenkunde / Journal of the Humanities and Social Sciences of Southeast Asia*, Vol 176, Issue 4 pp532-541

- Singleton, I., & van Schaik, C.P., 2002, The Social Organisation of a Population of Sumatran Orang-Utans, *Folia Primatol*, Vol 73, No 1, pp 1-20, <https://doi.org/10.1159/000060415>
- Stocks, E., 2017, New great ape species found, sparking fears for its survival, *Science*, <https://doi.org/10.1126/science.aar3900>
- Tarmizi, A.H.A., and Ismail, R., 2008, Comparison of the Frying Stability of Standard Palm Olein and Special Quality Palm Olein, *Journal of the American Oil Chemists' Society*; Vol. 85, Iss. 3, (Mar 2008): 245-251
- Wich, S.A., Singleton, I., Nowak, M.G., Utami Atmoko, S.S., Nisam, G., Arif, S.M., Putra, R.H., Ardi, R., Fredriksson, G., Usher, G., Gaveau, D.L.A and Kühl, H.S. 2016. Land-cover changes predict steep declines for the Sumatran orangutan (*Pongo abelii*). *Science Advances* 2(3): e1500789.
- Wich, S.A., Utami-Atmoko, S.S., Setia, T.M., Rijksen, H.D., Schurmann, C., van Hooff, J.A.R.A.M. and van Schaik, C.P. 2004. Life history of wild Sumatran orangutans (*Pongo abelii*). *Journal of Human Evolution* 47: 385–398.

Books

- Cramb, R., and McCarthy, J.F., 2016, Characterising Oil Palm Production in Indonesia and Malaysia, in Cramb, R., and McCarthy, J.F., eds., 2016, *The Oil Palm Complex*. Singapore, NUS press, pp.27-77.
- Cribb, R., Gilbert, H., and Tiffin, H., 2017, *Wild Man from Borneo: A Cultural History of the Orangutan*, Honolulu: University of Hawai'i Press
- Davies, M., 2006, *Indonesia's War over Aceh: Last Stand on Mecca's Porch*, London: Routledge
- Kingsley, S. 1981. *The reproductive physiology and behaviour of captive orangutans (Pongo pygmaeus)*. University of London.
- Marshall, A.J., Lacy, R., Ancrenaz, M., Byers, O., Husson, S.J., Leighton, M., Meijaard, E., Rosen, N., Singleton, I., Stephens, S., Traylor-Holzer, K., Utami Atmoko, S., Sucri, S., van Schaik, C.P., and Wich, S.A., *Orangutan population biology, life history and conservation*, in Wich, S.A., Utami Atmoko, S., Sucri, S., Tatang M., van Schaik, C.P., eds, 2009, *Orangutans: Geographic Variation in Behavioural Ecology and Conservation*, Oxford: OUP, pp311-326
- Thiessen, T., 2014, *Borneo*, 3rd ed., Guilford, Connecticut, Bradt Travel Guides
- van der Vossen, H., 1974, *towards more efficient selection for oil yield in the oil palm (Elaeis guineensis Jacquin)*, Wageningen, Centre for Agricultural Publishing and Documentation
- Voorra, V., Larrea, C., Bermudez, S., & Baliño, S., 2020, *Global Market Report: Palm Oil*, Winnipeg, International Institute for Sustainable Development
- Williams, A., 2020, U4 Brief 2020:13, *Reducing emissions from deforestation and forest degradation in a context of nationalist oligarchy: Lessons from Indonesia*, Bergen, Chr. Michelsen Institute (CMI) / U4

Government / NGO / IGO Publications

BPK, 2019, Pemeriksaan Pengelolaan Perkebunan Kelapa Sawit (tr: Audit of the management of oil palm plantations), Jakarta, Badan Pemeriksa Keuangan (in Indonesian)

CPET, 2015, Sustainable Palm Derivatives in Cleaning and Personal Care Products, Central Point of Expertise on Timber, London: Department of Food and Rural Affairs

Dermawan, A., Petkova, E., Sinaga, A., Mumu Muhajir, M. and Indriatmoko, Y. 2011 Preventing the risk of corruption in REDD+ in Indonesia. United Nations Office on Drugs and Crime and Center for International Forestry Research, Jakarta and Bogor, Indonesia.

EarthSight, 2019, What we learned from two years investigating corrupt land deals in Indonesia, EarthSight /Mongabay / Gecko Project, <https://www.earthsight.org.uk/news/investigation/conclusion-what-learned-from-investigating-corrupt-land-deals-indonesia-for-sale>

EC, 2018, Imports of Palm Oil to the EU, European Commission, <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeetingDoc&docid=28518>

EP, 2018, Press Release: MEPs set ambitious targets for cleaner, more efficient energy use, European Parliament Press Release, <https://www.europarl.europa.eu/news/en/press-room/20180112IPR91629/meps-set-ambitious-targets-for-cleaner-more-efficient-energy-use>

EPOA, 2019, The Palm Oil Story, <https://palmoilalliance.eu/wp-content/uploads/2019/10/Brochure-Palm-Oil-Story-2019-FINAL.pdf>

EPOA, 2020, Replacing Trans Fat, European Palm Oil Alliance, <https://palmoilalliance.eu/replacing-trans-fat/>

Ethical Consumer, 2019, Palm Oil – What is it used for? Ethical Consumer, <https://www.ethicalconsumer.org/food-drink/palm-oil-what-it-used>

Global Conservation, 2010, Leuser Ecosystem, Sumatra, Indonesia, Global Conservation, at <https://globalconservation.org/projects/leuser-national-park-indonesia/>

Greenpeace, 2009, Illegal Forest Clearance and RSPO Greenwash: Case Studies of Sinar Mas, London: Greenpeace

Hunt, T., 2019, Palm Oil Labelling, Ethical Consumer, <https://www.ethicalconsumer.org/palm-oil/palm-oil-labelling>

ILRF, 2013, Empty Assurances: The human cost of palm oil, International Labour Rights Forum, <https://laborrights.org/stop-child-forced-labor/resources/empty-assurances>

Kadandale, S., Marten., R & Smith., R, 2019, The palm oil industry and noncommunicable diseases, Bulletin of the World Health Organization 2019; 97:118-128. <http://dx.doi.org/10.2471/BLT.18.220434>

KPK, 2016, Kajian Sistem Pengelolaan Komoditas Kelapa Sawit (tr: The Study of Oil Palm Commodity Management System), Jakarta: Komisi Pemberantasan Korupsi (in Indonesian)

- KPK, 2020, About the KPK, Komisi Pemberantasan Korupsi / Anti-Corruption Commission <https://www.kpk.go.id/en/>
- MACC/SPRM, 2016, Corporate: Divisions – Finance, Accounting and Development, Malaysian Anti-Corruption Commission, <https://www.sprm.gov.my/en/profil-sprm/divisions/finance-accounting-and-development-division>
- MHCLG, 2019, National Planning Policy Framework, London: HMSO/Ministry for Housing Communities & Local Government
- MPIC, 2020, Industri Sawit: Sejarah, Malaysian Ministry of Plantation Industries and Commodities, <https://www.mpic.gov.my/mpi/agrikomoditi/industri/industri-sawit> (in Malay)
- Nellemann, C., Henriksen, R., Raxter, P., Ash, N., and Mrema, E. (Eds). 2014. The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment. Nairobi and Arendal: United Nations Environment Programme and GRID-Arendal
- Nellemann, C.; Henriksen, R., Pravettoni, R., Stewart, D., Kotsovou, M., Schlingemann, M.A.J, Shaw, M. and Reitano, T. (Eds). 2018. World atlas of illicit flows. A RHIPTO-INTERPOL-GI Assessment. RHIPTO -Norwegian Center for Global Analyses, INTERPOL and the Global Initiative Against Transnational Organized crime.
- Putra, Rudi, 2020, Leuser Ecosystem, Sumatra 2019-2020 Progress Report, Global Conservation, at <https://globalconservation.org/news/leuser-ecosystem-sumatra-2019-2020-progress-report/>
- Stiles, D., Redmond, I., Cress, D., Nellemann, C., Formo, R.K. (eds). 2013. Stolen Apes – The Illicit Trade in Chimpanzees, Gorillas, Bonobos and Orangutans. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal. www.grida.no
- TI, 2020a, Corruption Perceptions Index 2019, Transparency International, <https://www.transparency.org/en/cpi/2019>
- TI, 2020b, Corruption Perceptions Index 2019 Results: Malaysia Transparency International, <https://www.transparency.org/en/cpi/2019/results/mys>
- TI, 2020c, Corruption Perceptions Index 2019 Results: Indonesia Transparency International <https://www.transparency.org/en/cpi/2019/results/idn>
- TI-M, 2017, PRESS STATEMENT: 2017 – “FELDA Year”, Transparency International Malaysia, <https://transparency.org.my/pages/news-and-events/press-releases/press-statement-2017-felda-year>
- Transparency International, 2004, Global Corruption Report 2004, London: Pluto Press.
- UNESCO, 2019, Convention Concerning The Protection Of The World Cultural And Natural Heritage, World Heritage Committee, Forty-third session: State of conservation of the properties, inscribed on the List of World Heritage in Danger WHC/19/43.COM/7A, at <https://whc.unesco.org/archive/2019/whc19-43com-7A-en.pdf>
- UNESCO, 2020, World Heritage List, at <https://whc.unesco.org/en/list/>

US EPA, 2012, The U.S. Renewable Fuels Standards Program and Palm Oil, archived by US Department of State Embassies and Consulates in Indonesia, at <https://id.usembassy.gov/our-relationship/policy-history/embassy-fact-sheets/the-u-s-renewable-fuels-standards-program-and-palm-oil/>

WEF, 2020, Global Competitiveness Report 2019, World Economic Forum.

WHO, 2018, Press release: WHO plan eliminate industrially-produced trans-fatty acids from global food supply, World Health Organisation Press, <https://www.who.int/news/item/14-05-2018-who-plan-to-eliminate-industrially-produced-trans-fatty-acids-from-global-food-supply>

World Bank, 2020, GDP per capita, PPP (current international \$), World Bank, <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?most-recent-value-esc=true>

WTO, 2020, Indonesia, World Trade Organisation, https://www.wto.org/english/res_e/statistics_e/daily_update_e/trade_profiles/ID_e.pdf

WWF, 2018, WWF's position on the adopted 2018 RSPO Principles and Criteria, WWF, <https://wwf.panda.org/?337932>

WWF, 2020a, 8 things to know about palm oil, WWF, <https://www.wwf.org.uk/updates/8-things-know-about-palm-oil>

WWF, 2020b, Why Orang-utans matter, WWF, <https://wwf.panda.org/discover/knowledge-hub/endangered-species/great-ape/orangutans/>

WWF, 2020c, Borneo Deforestation, WWF, <https://wwf.panda.org/discover/our-focus/forests-practice/deforestation-fronts-2/deforestation-in-borneo-and-sumatra/>

News Reports

Cassin, R.L., 2015, Indonesia: In showdown with police, the KPK blinks, FCPA Blog, 2 Mar 2015, <https://fcpublog.com/2015/03/02/indonesia-in-showdown-with-police-the-kpk-blinks/>

Dunham, W., 2017, Going ape: new orangutan species identified in Sumatra, Reuters, at <https://fr.reuters.com/article/us-science-orangutans/going-ape-new-orangutan-species-identified-in-sumatra-idUSKBN1D227U>

Gelling, P., 2010, Ex-corruption chief in Indonesia sentenced in murder plot, New York Times, 12 Feb 2010, <http://www.nytimes.com>

Gupta, G., 2015, Not Just Out of Africa: South America's "Blood Diamonds" Network, Time, Aug. 20, 2012 <http://world.time.com/2012/08/20/not-just-out-of-africa-south-americas-blood-diamonds-network/>

Jong, H.N., and Nugraha, I., 2018, Palm oil executives arrested in bribery scandal in Indonesia, Mongabay, 30 October 2018.

King, J., 2009 Sustainable palm oil is expensive - but worth it, The Independent, 28 Oct 2009.

MM, 2017, Jerantut forest officer gets jail, RM15,000 fine for graft, Malay Mail, 20 Sept 2017,

<https://www.malaymail.com/news/malaysia/2017/09/20/jerantut-forest-officer-gets-jail-rm15000-fine-for-graft/>

NE, 2017, Disclosed, Here is Chronology of Criminalization against Antasari, Netral English, 14 Feb 2017,

<https://www.en.netralnews.com/news/currentnews/read/1504/disclosed..here.is.chronology.of.criminalization.against.antasari>

Raghu, A., 2019, The World Has Loads of Sustainable Palm Oil... But No One Wants It, Bloomberg, 14 Jan 2019, at

<https://www.bloomberg.com/news/articles/2019-01-13/world-has-loads-of-sustainable-palm-oil-just-no-one-wants-it>

Reuters, 2020, Malaysia estimates 2020 palm oil exports will reach \$15.2 billion-\$16.4 billion, Reuters, <https://in.reuters.com/article/malaysia-palmoil-idINKCN24H0JP>

S&P Global, 2020, Indonesia raises export levy on crude palm oil to \$180/mt effective Dec 10, S&P Global, <https://www.spglobal.com/platts/en/market-insights/latest-news/agriculture/120320-indonesia-raises-export-levy-on-crude-palm-oil-to-180mt-effective-dec-10>

Singh, S., Karim, K.N., and Khairulrijal, R., 2020, Najib sentenced to 12 years' jail, RM210 million fine, New Straits Times, 28 July 2020,

<https://www.nst.com.my/news/crime-courts/2020/07/612343/najib-sentenced-12-years-jail-rm210-million-fine>

Widhiarto, H., 2009, Antasari 'framed', Jakarta Post, 11 Nov 2009

<http://www.thejakartapost.com/news/2009/11/11/antasari-%E2%80%98framed%E2%80%99.html>

IUCN Species Listings

Challender, D., Willcox, D.H.A., Panjang, E., Lim, N., Nash, H., Heinrich, S. & Chong, J. 2019. Manis javanica. The IUCN Red List of Threatened Species 2019: e.T12763A123584856. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12763A123584856.en>.

Hearn, A., Ross, J., Brodie, J., Cheyne, S., Haidir, I.A., Loken, B., Mathai, J., Wilting, A. & McCarthy, J. 2015. Neofelis diardi (errata version published in 2016). The IUCN Red List of Threatened Species 2015: e.T136603A97212874. <https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T136603A50664601.en>.

IUCN, 2012, IUCN Red List Categories and Criteria, Version 3.1 2nd Edition, Gland: International Union for the Conservancy of Nature, also at <https://portals.iucn.org/library/sites/library/files/documents/RL-2001-001-2nd.pdf>

IUCN, 2020, Orangutan, at

<https://www.iucnredlist.org/search?query=Orangutan&searchType=species>

Nowak, M.G., Rianti, P., Wich, S.A., Meijaard, E. & Fredriksson, G. 2017. Pongo tapanuliensis. The IUCN Red List of Threatened Species 2017: e.T120588639A120588662. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T120588639A120588662.en>

Scotson, L., Fredriksson, G., Augeri, D., Cheah, C., Ngoprasert, D. & Wai-Ming, W. 2017. *Helarctos malayanus* (errata version published in 2018). The IUCN Red List of Threatened Species 2017: e.T9760A123798233.

<https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T9760A45033547.en>.

Singleton, I., Wich, S.A., Nowak, M., Usher, G. & Utami-Atmoko, S.S. 2017. *Pongo abelii* (errata version published in 2018). The IUCN Red List of Threatened Species 2017: e.T121097935A123797627.

<https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T121097935A115575085.en>

Websites

Collins, S.C., 2020, Why You Shouldn't be Scared of Oil in Your Peanut Butter, National Peanut Board, <https://www.nationalpeanutboard.org/wellness/why-you-shouldnt-be-scared-oil-in-your-peanut-butter.htm>

DRINC, What is the smoke point of butter? Dairy Research and Information Center, University of California, Davis <https://drinc.ucdavis.edu/dairy-food-sciences/what-smoke-point-butter>

FGV, 2020, Plantation, FGV Holdings, <https://www.fgvholdings.com/our-businesses/plantation/>

GFA, 2020, Palm Oil, Yale School of the Environment Global Forest Atlas, <https://globalforestatlas.yale.edu/land-use/industrial-agriculture/palm-oil>

Hoare, A., 2015, Illegal Logging and Related Trade: The Response in Malaysia, Chatham House Research Paper, London: Chatham House.

IndexMundi, 2020, Palm Oil production by country, 1000MT, IndexMundi at <https://www.indexmundi.com/agriculture/?commodity=palm-oil>

L'Oréal, 2020, Inside our products: Palm Oil, Paris: L'Oréal.

RSPO, 2014, Benefits of certification, Roundtable on Sustainable Palm Oil, <https://rspo.org/certification>

RSPO, 2015, A Shared Vision. 100% Sustainable Palm Oil in Europe: A Snapshot of National Initiatives, Geneva: Roundtable on Sustainable Palm Oil.

RSPO, 2020, Principles and Criteria review, Roundtable on Sustainable Palm Oil, <https://rspo.org/principles-and-criteria-review>

KPCS, 2020, Enforcement: Warnings, Kimberley Process Certification Scheme, <https://www.kimberleyprocess.com/en/enforcement>

Spritzle, F., 2017, Palm Oil: Good or Bad? Healthline, https://www.healthline.com/nutrition/palm-oil#TOC_TITLE_HDR_8

Statista, 2020, Production volume of palm oil worldwide from 2012/13 to 2019/20 (in million metric tons)

<https://www.statista.com/statistics/613471/palm-oil-production-volume-worldwide/>