

Anna Barcus
Central Academy
Des Moines, IA
Indonesia, Factor 6: Sustainable Agriculture

Indonesia: Sustainable Palm Oil Production

If you were one of the 249.9 million people living in the Southeast Asian nation of Indonesia, there would be a seven in ten chance that you would live in a rural area where poverty levels are highly concentrated (“Rural Poverty in Indonesia”). It would also be likely that you would be a smallholder farmer owning on average, three hectares of land. From this land, your immediate family, including your three children, would make up most, if not all, of the farm’s working labor. Your farm however, would produce only one crop: palm oil—one of the world’s most popular vegetable oils, which can be found in everything from shampoo, to bread, to fuel.

Today, palm oil is thought to be found in over half of the products in our grocery stores and are being used as an ingredient in biofuel in the transportation industry (“Palm Oil Fact Sheet”). Regrettably, only a small percentage of the palm oil that is used to make these products comes from a sustainable source.

This valuable oil comes from the fruit of the oil palm tree, a tree that can reach over 20 meters in height if grown in the proper tropical conditions on large lowland areas with deep soil and stable high temperatures (“Oil Palm”). The trees will begin to bear fruit after three or four years, producing over 3.1 tons of oil per hectare and can be sold for prices between \$960 and \$2100 per hectare (Grieg-Gran). This level of income typically lifts rural families out of poverty, providing them enough money to put food on the table and still be able to afford education for their children.

Although the role of agriculture in Indonesia has steadily decreased over the past couple of decades, the palm oil industry has sharply increased due to its rise in demand, seen mostly in India and China with production increasing at a growth rate of 11.24 percent annually. In 1993, 3.4 million tons of palm oil were produced, whereas there are now over 26.8 million tons produced, making it Indonesia’s biggest product (*Food and Agriculture Organization*). By 2020, Indonesia hopes to double its production of palm oil through land expansion of nearly four million hectares. Much of this expansion will occur to smallholder farmers, who are estimated to occupy almost half of all plantation land area and produce 41 percent of palm oil (Obidzinski, Krystof).

The palm oil industry in Indonesia is estimated to directly employ 3.2 million people (Obidzinski). Because harvesting is required year round, the labor intensive work involved in the picking and processing of the oil palm fruit brings productive work to communities and families alike.

For the nation as a whole, 14.4 percent of Indonesia’s Gross Domestic Product (GDP) comes from the agricultural sector with \$14.3 billion of their exports stemming from palm oil products. As the industry continues to grow, a rise in agricultural GDP of one percent means that rural poverty is reduced by 2.9 percent (*The Economic Benefit of Palm Oil in Indonesia*). Through this growth, surrounding economies also see more rewards because of the infrastructure that must be established to provide better transportation systems to distribute palm oil, and the spending of both workers and plantation companies in surrounding communities is stimulated, creating exponential opportunities for Indonesians (Budidasono).

The Problems.

Despite all of the economic benefits from the rapid growth of the palm oil industry, there are many associated harms that are not only seen on the farms, but to the world as a whole.

First, due to the high rates of greenhouse gases that are emitted when plantations are created, palm oil production can be extremely harmful to the atmosphere. When palm oil plantations are initially established, tropical forests must be destroyed. Through the destruction of these forests, the world loses vital actors in keeping high levels of carbon dioxide out of the atmosphere. Moreover, the deforestation of peatlands in Indonesia have made forest fires more prevalent. When peatlands are drained to create optimal plantation conditions, the area becomes unnaturally dry, thus being susceptible to fires. In 1997, a single forest fire related to dry peatlands released carbon dioxide equal to the entire amount of carbon dioxide emitted in the United States in one year. Aside from their contribution to global warming, forest fires have also been proven to cause health problems to many Indonesian people (*Palm Oil and Global Warming*).

Second, like many other unsustainable agricultural practices, removing vegetation to establish a plantation disturbs the soil and causes erosion. Without proper vegetative covering, soil is extremely vulnerable to rain and runoff. The top, and most fertile, layer of soil is the most susceptible to erosion. The disruption of this layer means that crop productivity will be lost and off-site depositions will occur, causing expensive problems and waterway contamination that will last far into the future (Lord).

Third, due to the excessive, unregulated deforestation needed to create palm oil plantations, Southeast Asia has suffered a great loss of biodiversity. Occupying just 1 percent of the Earth's surface, the Indonesian landscape holds 10 percent of the world's plant species, 12 percent of the world's mammal species, and 17 percent of the world's bird species, making it one of the most diverse wildlife hotspots ("Indonesia's Rainforests: Biodiversity and Endangered Species"). However, the clearing of the regions lush forests for palm oil plantations puts these species in grave danger of stress—and even extinction. Currently, developed plantations cannot properly maintain natural populations, supporting less than 20 percent of preexisting wildlife. The animals who once roamed the Indonesian forests are now refugees in other areas. While away from their natural habitats animals often starve, die, or get killed. This ultimately lowers the total population of the species as a whole. Many of the species at risk from the expansion of palm oil plantations are keystone species among Indonesia's ecosystems, meaning they have a unique importance to maintaining the ecosystem's balance as a whole. One of the many animals at risk of extinction is the Sumatran Tiger, of which only 400 are estimated to be left in the world. The disappearance of this tiger will cause a domino effect because they are critical to the ecological balance of the area, including its inhabitants, plants, and animals alike.

While the ultimate solution to end these three major environmental harms may be to stop all future development of palm oil, the economic and social implications run too deep. These problems will need to be solved with use of sustainable agriculture methods if the world is to be maintained in such a way that can support future generations.

Current but Challenging Solutions

In order to combat the pollution problems facing the palm oil industry, future plantation development should be limited and if any were to be created, it should occur on preexisting deforested plots or areas of land with minimal amounts of carbon. Furthermore, to counteract carbon emissions by the plantations, the creation of carbon thresholds, such as grasslands, are recommended. These are critical because they provide an alternative to the destructed forests that once provide a place for carbon storage (*Scientists Statement on the...*).

To improve soil fertility, palm oil plantations can implement various techniques. First and foremost, it is important that producers are knowledgeable about the type of soil on their land and the way it tends to act, in order to reduce possibilities of mishap. To avoid erosion, a small strip of vegetation should be left to slow the runoff to the contour of the land. Between the transition of the clearing and planting of palm oil, cover crops should be used to reduce erosion and promote organic build up. Slope farming is another alternative that would use terraces to block erosion on land contours (“Palm oil BMP: Maintaining Soil...”).

The first way palm oil plantations can combat the loss of biodiversity is by stopping the expansion of plantation land use. Specifically, unprofitable land currently devoted to palm oil production can be abandoned and turned into wildlife reserves. If expansion does occur, it should be done in already degraded land and land previously used for crop production (*Sustainable Palm Oil...*). Second, native trees can be planted in areas that do not interfere with plantation practices. Third, the use of riparian buffers and the maintenance of natural land plots can maintain species natural habitat (“Palm Oil and Tropical Deforestation”). These land reserves and riparian buffers can then be linked to the plantation in order to provide wildlife corridors and refuges (*Sustainable Palm Oil...*). Finally, palm oil production can sustain biodiversity by limiting the use of ecotoxic pesticides and promoting integrated pest management systems within the plantation (“Palm Oil BMP: Integrated...”).

Although desirable, these solutions face complex barriers to implement without oversight.

Certification and its Challenges

The first step towards an ecological and economically viable palm oil industry was taken in 2004 by the Roundtable on Sustainable Palm Oil (RSPO), a private organization which created voluntary sustainability standards for palm oil producers. RSPO grants certification to plantations that sell palm oil produced using sustainable methods. These methods, while not only positive toward the environment, also produce more and higher quality palm oil. In order for companies to get the RSPO green sticker of sustainability on their products, their producers must first meet a standard set of requirements. According to the RSPO, these requirements involve the following:

“Commitment to transparency, compliance with applicable laws and regulations, commitments to long-term economic and financial viability, use of appropriate best practices by growers and millers, environmental responsibility and conservation of natural resources and biodiversity, responsible consideration of employees, and of individuals and communities affected by growers and mills, responsible development of new plantings, and a commitment to continuous improvement in key areas of activity.”

One of the main complaints with these voluntary standards is that there is not a clear distinction between sustainable palm oil and unsustainable palm oil when manufacturers are purchasing the oil from mills. A barrel labeled as sustainable may later be mixed with one that is not, even though the label may still say that it is sustainable. The real strength of private certifiers like RSPO is that they are able to create tough and impactful standards for certification, but the implementation is still challenging.

Moreover, incomplete or inadequate descriptions of sustainability requirements can lead to difficult enforcement. Additionally, the RSPO’s nonpermanent monitoring body lacks monitoring capacities to enforce standards (Brandt).

Although the RSPO is the most dominant sustainable palm oil certifier in the region, other certification standards exist, such as the Sustainable Agriculture Network (SAN), “a group of international non-profit

organizations working for the conservation of biodiversity and rural development” (“Who are we?”), and the Roundtable on Sustainable Biomaterials (RSB), “an international initiative that brings together farmers, companies, non-governmental organizations, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of biomaterials production and processing” (“What is RSB?”). The major difference between the RSPO and these other organizations is the RSPO’s specificity of sustainability standards of palm oil, rather than sustainability standards of agriculture in general.

Aside from private certifiers, some governments are taking the needed steps to ensure that palm oil is being produced efficiently. For example, Indonesian Sustainable Palm Oil (ISPO) is a mandatory certification that was established by the Indonesian government, following a series of product contract cancelations due to the exposure of unsustainable deforestation practices. The goal of ISPO is to strengthen preexisting Indonesian laws and regulations towards sustainable palm oil. While many view the certification as a step towards RSPO-like standards, some argue that ISPO was created to directly compete against the RSPO green sticker of sustainability. When comparing the two, the main difference is that unlike RSPO, ISPO memberships keep prices low in order to support the domestic palm oil industry, ultimately boosting the amount of palm oil being produced. Government implemented certification standards are beneficial in implementing and regulating, but lack in significance in regards to the standard’s actual content. However, the presence of the RSPO in Indonesia is extremely beneficial because it uses ISPO standards and takes them further.

Importers are also taking a stand against unsustainable palm oil production methods. This is specifically seen in Europe where there is a high demand for sustainable palm oil found in biofuel. The European Union Renewable Energy Directive (EU-RED) is “a meta-standard that defines sustainable biofuels through a set of criteria, but builds on existing standards for achieving compliance” (Brandi). Although EU-RED can be effective in promoting sustainability across an entire region, it does hinder some trading opportunities (Brandi).

Sustainable palm oil production has been widely requested on multiple fronts. Some corporate food supply chain companies, including agribusiness giant Cargill, understand the benefits of sustainability and have made efforts to increase awareness of the issues. These supply chain companies provide support by working with the growers and educating them on the best management practices (“Palm Oil Supply Chains.”). This education is provided by projects such as the Wild Asian Group Scheme, a Malaysian based initiative of the Wild Asia social enterprise, devoted to providing a platform for small independent palm oil producers with the intention of meeting RSPO sustainability standards (“Wild Asia...”).

Despite the multitude of options available to the producer to gain certified status, smallholders may still find it unfeasible due to the high costs of training and monitoring, land assessing, certification, and segregation (*The Economic Benefit of Palm Oil in Indonesia*). Aside from high costs, many aspects of certification are difficult to manage due to often unattainable technical capabilities required. To address this issue, the RSPO established a Task Force for Smallholders, to create new certification standards that are aimed specifically at smallholders rather than just large plantations. Under these new standards, RSPO hopes to improve management practices, create a higher quality oil palm fruit, increase yields, and improve smallholder access to markets (“Smallholders Certification”). Doing this will increase the income for smallholders and their families.

The Solutions

It is imperative to recognize the growing global demand for palm oil, while at the same time, keeping the livelihood of Indonesian smallholder families in mind. Rather than attempting to stop the production all together, nongovernmental organizations (NGOs) currently active in the certification processes can help

facilitate the production of sustainable palm oil through a tiered consumer fee charged to companies using palm oil in their products. The first step would be encouraging governments involved in the exportation of palm oil to implement the consumer fees, which might require the participation of the international community through trade policy assistance. Moreover, the consumer fee would be tiered in such a way that would promote the sustainability of the palm oil being used. Certified sustainable palm oil would have a low consumer fee and unsustainable palm oil would be much higher, thereby providing an incentive for using sustainable oil. Palm oil destined for use in biofuels might have an even higher fee, discouraging such use. Furthermore, with the help of NGO consumer awareness approaches, ordinary citizens will be aware of the economic and environmental harms associate with unsustainable palm oil production among smallholders and demand that their government acts accordingly. The revenue produced from the fees would be allocated to participating NGOs, who would fund activities necessary to address the barriers facing smallholder families for achieving sustainability certification. This fund distribution would be used for such activities as:

- Training and education for smallholders in financial and sustainable farm management.
- Ensuring certification standards are successfully applied and travel with the product.
- Research funding to find alternatives to palm oil use in biofuels.
- Ensuring market access to smallholders.
- Providing grants and loans to smallholders to purchase quality seeds and modern equipment.
- Promoting consumer awareness and advocacy for certification goals.

Through the application of these suggestions, smallholder families in Indonesia will be offered a sustainable world capable of feeding and providing economically viable lifestyles that can feed generations to come.

Works Cited

- Block, Ben. "Can "Sustainable" Palm Oil Slow Deforestation?" *Worldwatch Institute*. Worldwatch Institute, n.d. Web. 26 Mar. 2015.
- Brandi, Clara, et al. *Sustainability Certification in the Indonesian Palm Oil Sector*. N.p.: German Development Institute, 2013.
- Budidasono, Suseno, Ari Susanti, and Annelies Zoomers. *Oil Palm Plantations in Indonesia: The Implications for Migration, Settlement/Resettlement and Local Economic Development*. N.p.: InTech, n.d. Print.
- "Certification Schemes." *Sustainable Palm Oil Platform*. Zoological Society of London, n.d. Web. 5 July 2015. <<http://www.sustainablepalmoil.org/standards-certification/certification-schemes/>>.
- Fitzherbert, Emily B., et al. "How will oil palm expansion affect biodiversity?" Review. *Trends in Ecology and Evolution* 30.10: 1-8.
- Food and Agriculture Organization of the United Nations Statistics Division*. United Nations, n.d. Web. 26 Mar. 2015. <<http://faostat3.fao.org/browse/Q/QC/E>>.
- Grieg-Gran, Maryanne. *The Cost of Avoiding Deforestation*. London: International Institute for Environment and Development, 2008.
- How Palm Oil Harms Health, Rainforest & Wildlife. N.p.: The Center for Science in the Public Interest, 2005.
- "Indonesia." *DKT International*. DKT International, n.d. Web. 26 Mar. 2015. <<http://www.dktinternational.org/countryprograms/indonesia/>>.
- "Indonesia's Rainforests: Biodiversity and Endangered Species." *Rainforest Action Network*. Rainforest Action Network, n.d. Web. 26 Mar. 2015. <http://www.ran.org/indonesia_s_rainforests_biodiversity_and_endangered_species>.
- Jordan, Rob. "Oil Palm Plantations Threaten Water Quality, Stanford Scientists Say." *Stanford News*. Stanford, 30 June 2014. Web.
- Koh, Lian Pin. "Can oil palm plantations be made more hospitable for forest butterflies and birds?" *Journal of Applied Ecology* 45 (2008): 1002-09.
- "Livelihoods for Smallholder Farmers." *Unilever*. Unilever, n.d. Web. 26 Mar. 2015.
- Lord, Simon, and Jason Clay. *Environmental Impacts of Oil Palm – Practical Considerations in Defining Sustainability for Impacts on the Air, Land and Water*. N.p.: n.p., n.d.
- Obidzinski, K., R. Andriani, H. Komarudin, and A. Andrianto. 2012. Environmental and social impacts of oil palm plantations and their implications for biofuel production in Indonesia. *Ecology and Society* 17(1): 25.
- Obidzinski, Krystof. "Fact File: Indonesia world leader in palm production." *Forest News*. Center for International Forestry Research, n.d. Web. 26 Mar. 2015.
- "Oil Palm." *PlantVillage*. N.p., n.d. Web. 26 Mar. 2015. <https://www.plantvillage.com/en/topics/oil-palm/infos/diseases_and_pests_description_uses_propagation>.
- Opijen, Marjon Van, Arjen Birkmann, and Peter Meekers. *Lessons Learned on RSPO Certification in Indonesia*. Rept. no. C84. Amsterdam: CREM, 2013.

- Palm Oil and Global Warming*. N.p.: Union of Concerned Scientists, n.d.
- "Palm Oil and Tropical Deforestation." *Union of Concerned Scientists*. Union of Concerned Scientists, n.d. Web. 26 Mar. 2015. <http://www.ucsusa.org/global_warming/solutions/stop-deforestation/palm-oil-and-forests.html#.VRTZnfnF9Fw>.
- "Palm Oil BMP: Integrated Pest Management." *World Wildlife Fund*. World Wildlife Fund, n.d. Web. 28 July 2015.
- "Palm Oil BMP: Maintaining Soil Fertility." *World Wildlife Fund*. World Wildlife Fund, n.d. Web. 26 Mar. 2015.
- "Palm Oil Fact Sheet." *Rainforest Action Website*. Rainforest Action Network, n.d. Web. 26 Mar. 2015. <http://www.ran.org/palm_oil_fact_sheet>.
- "Palm Oil Supply Chains." *Cargill*. Cargill, n.d. Web. 30 July 2015. <<http://www.cargill.com/corporate-responsibility/responsible-supply-chains/palm-oil/index.jsp>>.
- Principles and Criteria for the Production of Sustainable Palm Oil*. N.p.: Roundtable for Sustainable Palm Oil, 2013.
- Rist, Lucy, Laurene Feintrenie, and Patrice Levang. *The livelihood impacts of oil palm: smallholders in Indonesia*. N.p.: Biodivers Conserv, 2010.
- Schrier-Uijl, A.P., et al. *Environmental and social impacts of oil palm cultivation on tropical peat – a scientific review. Roundtable on Sustainable Palm Oil*.: Roundtable on Sustainable Palm Oil, 2013.
- Sheil, Douglas, et al. *The impacts and opportunities of oil palm in Southeast Asia*. Bogor: Center for International Forestry Research, 2009.
- Scientists Statement on the Roundtable on Sustainable Palm Oil's Draft Revised Principles and Criteria for Public Consultation*. N.p.: Union of Concerned Scientists, 2013.
- Smallholders: Costs and Challenges of Small-Farmer Certification*. N.p.: World Growth, 2013. Print. Palm Oil Green Development Campaign.
- Sustainable Palm Oil: Good Agricultural Practice Guidelines*. N.p.: Unilever, n.d. Print.
- The Economic Benefit of Palm Oil in Indonesia. World Growth: Palm Oil Green Development Campaign*. World Growth, Feb. 2011. Web. 25 Mar. 2015.
- Ramdani, Fatwa, and Masateru Hino. *Land Use Changes and GHG Emissions from Tropical Forest Conversion by Oil Palm Plantations in Riau Province, Indonesia*. N.p.: PLoS One, 2013.
- RSPO Principles and Criteria for Sustainable Palm Oil Production*. N.p.: Roundtable on Sustainable Palm Oil, 2009. Guidance on Scheme Smallholders.
- "Rural poverty in Indonesia." *Rural Poverty Portal*. International Fund for Agricultural Development, n.d. Web. 26 Mar. 2015. <<http://www.ruralpovertyportal.org/country/home/tags/indonesia>>.
- "Smallholders Certification." *Roundtable on Sustainable Palm Oil*. Roundtable on Sustainable Palm Oil, n.d. Web. 26 Mar. 2015. <<http://www.rspo.org/certification/smallholders>>.
- "What is RSB?" *Roundtable on Sustainable Biomaterials*. Roundtable on Sustainable Biomaterials, n.d. Web. 5 July 2015. <<http://rsb.org/about/what-is-rsb/>>.

"Who are we?" *Sustainable Agriculture Network*. Sustainable Agriculture Network, n.d. Web. 5 July 2015. <<http://san.ag/web/about-us/who-are-we-2/>>.

Wilcove, David S., and Liah Pin Koh. "Addressing the threats to biodiversity from oil-palm agriculture." *Biodivers Conserv* (2010) 19: 999-1007.

"Wild Asia Group Scheme for Small Producers." *Wild Asia*. Wild Asia, 31 Mar. 2015. Web. 28 July 2015. <<http://oilpalm.wildasia.org/small-producers/wags/>>.

Willem Molenaar, Jan, et al. *Diagnostic Study on Indonesia Oil Palm Smallholders*. N.p.: International Finance Group, 2013. Print.