

Social and environmental impact of palm oil



Deforestation in Riau province, Sumatra, to make way for an oil palm plantation (2007)

Palm oil, produced from the oil palm, is a basic source of income for many farmers in South East Asia, Central and West Africa, and Central America. It is locally used as a cooking oil, exported for use in many commercial food and personal care products and is converted into biofuel. It produces up to 10 times more oil per unit area than soyabeans, rapeseed or sunflowers.^[1]

Oil palms produce 38% of the world's vegetable-oil output on 5% of the world's vegetable-oil farmland.^[1] Palm oil plantations are under increasing scrutiny for their effects on the environment, including loss of carbon-sequestering forest land.^[2] There is also concern over displacement and disruption of human and animal populations due to palm oil cultivation.^{[3][4]}

1 Statistics



Oil palms (Elaeis guineensis).

An estimated 1.5 million small farmers grow the crop in

Indonesia, along with about 500,000 people directly employed in the sector in Malaysia, plus those connected with related industries.^{[5][6]}

As of 2006, the cumulative land area of palm oil plantations is approximately 11,000,000 hectares (42,000 sq mi).^[7] In 2005 the Malaysian Palm Oil Association, responsible for about half of the world's crop, estimated that they manage about half a billion perennial carbon-sequestering palm trees.^[5] Demand for palm oil has been rising and is expected to climb further.

Between 1967 and 2000 the area under cultivation in Indonesia expanded from less than 2,000 square kilometres (770 sq mi) to more than 30,000 square kilometres (12,000 sq mi). Deforestation in Indonesia for palm oil (and illegal logging) is so rapid that a 2007 United Nations Environment Programme (UNEP) report said that most of the country's forest might be destroyed by 2022. The rate of forest loss has declined in the past decade.^[1]

Global production is forecast at a record 46.9m tonnes in 2010, up from 45.3m in 2009, with Indonesia providing most of the increase.^[1]

2 Social issues

Oil palm is a valuable economic crop and provides a source of employment.^{[8][9]} It allows small landholders to participate in the cash economy^[10] and often results in improvements to local infrastructure and greater access to services such as schools and health facilities. In some areas, the cultivation of oil palm has replaced traditional practices, often due to the higher income potential of palm oil.^{[8][9]}

However, in some cases, land has been developed by oil palm plantations without consultation or compensation of the indigenous people occupying the land. This has occurred in Papua New Guinea,^[4] Colombia,^[11] and Indonesia.^[12] In the Sarawak state of Malaysian Borneo, there has been debate over whether there was an appropriate level of consultation with the Long Teran Kanan community prior to the development of local land for palm oil plantations.^[13] Appropriation of native lands has led to conflict between the plantations and local residents in each of these countries.^{[4][11][12][13]} Palm oil plantations are currently rapidly threatening biodiversity, endangering hundreds of thousands of animal species into extinction, emitting enormously damaging and irrevocable carbon emissions into the atmosphere, and violating human

rights. Children as young as seven years old are working excruciatingly long days in the heat in an effort to help support their families; sometimes they are not even paid at all. In addition to the environmental devastation, human rights are a separate but equally devastating problem associated with palm oil plantations. The palm oil industry has been named one in the top four worst industries for forced and child labor. According to a 2008 report by NGOs including *Friends of the Earth*, palm oil companies have also reportedly used force to acquire land from indigenous communities in Indonesia.^[12] Additionally, some Indonesian oil palm plantations are dependent on imported labor or undocumented immigrants, which has raised concerns about the working conditions and social impacts of these practices.^[14]



A Sumatran orangutan at Bukit Lawang, Indonesia.

3 Environmental issues



A satellite image showing deforestation in Malaysian Borneo to allow the plantation of oil palm.



The remaining distribution of the Sumatran orangutan in Indonesia.

In Indonesia, rising demand for palm oil and timber has led to the clearing of tropical forest land in Indonesian national parks. According to a 2007 report published by UNEP, at the rate of deforestation at that time, an estimated 98 percent of Indonesian forest would be destroyed by 2022 due to legal and illegal logging, forest fires and the development of palm oil plantations.^[15]

Malaysia, the second largest producer of palm oil has pledged to conserve a minimum of 50 percent of its total land area as forests. As of 2010, 58 percent of Malaysia

was forested.^[16] Palm oil cultivation has been criticized for:

- Greenhouse gas emissions. Deforestation in tropical areas accounts for an estimated 10 percent of man-made CO₂ emissions, and is a driver toward dangerous climate change.^[17]
- Habitat destruction, leading to the demise of critically endangered species (e.g. the Sumatran elephant, Sumatran tiger,^[18] the Sumatran rhinoceros,^[19] and the Sumatran orangutan.)^{[15][20][21][22][23][24]}
- Reduced biodiversity,^[25] including damage to biodiversity hotspots.^{[23][26]}
- Cultivating crops on land that belongs to indigenous people in the Sarawak and Kalimantan states on the island of Borneo and the Malaysian state of Sabah.^{[27][28]}

3.1 Water pollution

Main article: water pollution

In some states where oil palm is established, lax enforcement of environmental legislation leads to encroachment of plantations into riparian strips,^[29] and release of pollutants such as Palm Oil Mill Effluent (POME) in the environment.^[29] More environment-friendly practices have been developed.^{[30][31]} Among those approaches is anaerobic treatment of POME, which might allow for biogas (methane) production and electricity generation, but it is very difficult to maintain optimum growth conditions for the anaerobic organisms that break down acetate to methane (primarily *Methanosaeta concilii*, a species of Archaea).^[32]

3.2 Greenhouse Gas Emissions

Damage to peatland, partly due to palm oil production, is claimed to contribute to environmental degradation, including four percent of global greenhouse gas emissions^[33] and eight percent of all global emissions caused annually by burning fossil fuels,^[34] due to the clearing of large areas of rainforest for palm oil plantations. Many Indonesian and Malaysian rainforests lie atop peat bogs that store great quantities of carbon. Forest removal and bog drainage to make way for plantations releases this carbon. Researchers are looking for possible solutions and ways to help the situation and have suggested that if enough land is conserved and there remain large enough areas of primary forest reserves, the effects of the palm oil industry may not have as much of an impact on wildlife and biodiversity. Environmental groups like Greenpeace, the Roundtable on Sustainable Palm Oil, and the Amnesty International are also taking part in advocating bans on unsustainable palm oil crops and the companies that purchase these exports.

Environmental groups such as Greenpeace claim that this deforestation produces far more emissions than biofuels remove.^{[35][36][37]} Greenpeace identified Indonesian peatlands, unique tropical forests whose dense soil can be burned to release carbon emissions, that are being destroyed to make way for palm oil plantations. They represent massive carbon sinks, and they claim their destruction already accounts for four percent of annual global emissions. However, according to the Tropical Peat Research Laboratory, at least one measurement has shown that oil palm plantations are carbon sinks because oil palms convert carbon dioxide into oxygen just as other trees do,^[38] and, as reported in Malaysia's Second National Communication to the United Nations Framework Convention on Climate Change, oil palm plantations contribute to Malaysia's net carbon sink.^[39]

Greenpeace recorded peatland destruction in the Indonesian province of Riau on the island of Sumatra, home to 25 percent of Indonesia's palm oil plantations. Growers plan to expand the area under concession by more than 28,500 square kilometres (11,000 sq mi) which would deforest half of the province. Greenpeace claims this would have devastating consequences for Riau's peatlands, which have already been degraded by industrial development and store a massive 14.6 billion tonnes of carbon, roughly one year's greenhouse gas emissions.

Research conducted by Greenpeace through its Forest Defenders Camp in Riau documents how a major Indonesian palm oil producer is engaging in large-scale destruction of peatland in flagrant violation of an Indonesian presidential order and national forestry regulations. Palm oil from peatland is fed into the supply chain for global brands. FoE and Greenpeace both calculate that forests and peatlands that are replaced by palm oil plantations release more carbon dioxide than is saved by replacing diesel with biofuels.

Environmentalists and conservationists have been called upon to team up with palm-oil companies to purchase small tracts of existing palm plantation, so they can use the profits to create privately owned nature reserves.^[40] It has been suggested that this is a more productive strategy than the current confrontational approach that threatens the livelihoods of millions of smallholders.^{[40][41]}

4 National differences



A palm oil plantation in Indonesia.

4.1 Indonesia and Malaysia

Main articles: [Palm oil production in Indonesia](#) and [Palm oil production in Malaysia](#)

In the two countries responsible for over 80% of world oil palm production, Indonesia and Malaysia, smallholders account for 35–40% of the total area of planted oil palm and as much as 33% of the output. Elsewhere, as in West African countries that produce mainly for domestic and regional markets, smallholders produce up to 90% of the annual harvest.^[42]

As a result of Malaysia's commitment to retain natural forest cover on at least 50 percent of the nation's land, the growth of new palm oil plantations has slowed in recent years. According to Malaysia's Plantation Industries and Commodities Minister Bernard Dompok, significant expansion of palm oil is no longer possible, therefore Malaysian farmers are now focusing on increasing production without expansion.^[16]

In January 2008, the CEO of the Malaysian Palm Oil Council wrote a letter to the Wall Street Journal stating that Malaysia was aware of the need to pursue a sustainable palm oil industry.^[43] Since then the Malaysian government, along with palm oil companies, have increased production of Certified Sustainable Palm Oil (CSPO).^[44] Malaysia has been recognized by the Roundtable on Sustainable Palm Oil as the largest producer of CSPO, producing 50 percent of the world's

supply,^[45] and accounting for 40% of CSPO growers worldwide.^[46] Indonesia produces 35 percent of the world's CSPO.^[44]

In Indonesia, the Indigenous Peoples' Alliance of the Archipelago (AMAN) under the direction of Mina Susana Setra has fought for policies that find balance between economic need and indigenous people's rights. 99% of the palm oil concessions in the country concern land that is occupied by indigenous people.^[47] In 2012, AMAN led an advocacy team which won a Constitutional Court case recognizing customary land rights,^[48] however, implementation of programs that protect indigenous rights, the environment and developers have failed to come to fruition except in limited cases.^[47]

4.2 Africa

In Africa, the situation is very different compared to Indonesia or Malaysia. In its *Human Development Report 2007-2008*, the *United Nations Development Program* says production of palm oil in West-Africa is largely sustainable, mainly because it is undertaken on a smallholder level without resorting to diversity-damaging monoculture. The *United Nations Food and Agriculture program* is encouraging small farmers across Africa to grow palm oil, because the crop offers opportunities to improve livelihoods and incomes for the poor.^[25]

5 Increasing demand

Food and cosmetics companies, including *ADM*, *Unilever*, *Cargill*, *Procter & Gamble*, *Nestle*, *Kraft* and *Burger King*, are driving the demand for new palm oil supplies,^[49] demand was partly driven by a need for a replacement for high trans fat content oils.^[50]

Although palm oil is used in the production of biofuels and proposals have been made to use it in large installations,^[51] a 2012 report by the *International Food Policy Research Institute* concluded that the increase in palm oil production is related to food demands, not bio-fuel demands.^[52]

5.1 Biodiesel

Biodiesel made from palm oil grown on sustainable non-forest land and from established plantations reduces greenhouse gas emissions.^[53] According to *Greenpeace*, clearing peatland to plant oil palms releases large amounts of greenhouse gasses, and that biodiesel produced from oil palms grown on this land may not result in a net reduction of greenhouse gas emissions.^[54] However, research by Malaysia's *Tropical Peat Research Unit* has found that oil palm plantations developed on peatland produce lower carbon dioxide emissions than forest peat swamp. How-

ever, it has been suggested that this research unit was commissioned by politicians who have interests in the palm oil industry.^[55]

In 2011, eight of Malaysia's *Federal Land Development Authority (FELDA)* plantations were certified under the *International Sustainability and Carbon Certification System (ISCC)*, becoming part of Asia's first ISCC certified supply and production chain for palm biodiesel. This certification system complies with the *European Union's Renewable Energy Directive (RED)*.^[56] In 2012, the *European Commission* approved the *RSPO's* biofuel certification scheme allowing certified sustainable palm oil biofuel to be sold in Europe.^[57]

6 Sustainability

The *Roundtable on Sustainable Palm Oil (RSPO)*, founded in 2004, works to promote the production of sustainably sourced palm oil through involvement with growers, processors, food companies, investors and NGOs.^[1] Beginning in 2008, palm oil that meets RSPO introduced standards has been designated **Certified Sustainable Palm Oil (CSPO)**. Within two years of implementation CSPO designated palm oil comprised 7 percent of the global palm oil market.^[58] As of October 2012, 12 percent of palm oil has been certified by the RSPO.^[59] However, in the first year of CSPO certification only 30 percent of sustainable oil was marketed as CSPO.^[1]

In *The Economist* in 2010, the RSPO was criticized for not setting standards for greenhouse-gas emissions for plantations and because its members account for only 40 percent of palm oil production.^[1] In a 2007 report, *Greenpeace* was critical of RSPO-member food companies saying that they are "dependent on suppliers that are actively engaged in deforestation and the conversion of peatlands".^[60]

Following a contribution of \$1 billion from Norway, in May 2010, Indonesia announced a two-year suspension on new agreements to clear natural forests and peatlands. Additionally, Indonesia announced plans to create its own organization similar to the RSPO, which, as a government certification system, will introduce mandatory regulation for all Indonesian palm oil producers.^{[1][61]}

In 2011, Malaysia began developing a national certification, the **Malaysia Sustainable Palm Oil (MSPO)** certification, to improve involvement in sustainable palm oil production nationwide.^[62] The certification program, aimed at small and medium-sized producers, is expected to be launched in 2014.^[63] Malaysia has initiated its own environmental assessment on oil palm industry based on *Life Cycle Assessment (LCA)* approaches. LCA has been applied to assess the environmental impact of production of oil palm seedlings,^[64] oil palm fresh fruit bunches,^[65] crude palm oil,^[66] crude palm kernel oil^[67] and refined palm oil.^[68] The assessment on downstream



In Borneo, the forest (F), is being replaced by oil palm plantations (G). These changes are irreversible for all practical purposes (H).

industries such as oil palm plywood^[69] and bio-diesel.^[70] was also conducted.

6.1 Carbon credit programs

Oil palm producers are eligible to take part in Clean Development Mechanism (CDM) programs in which developed nations invest in clean energy projects in developing nations to earn carbon credits to offset their own greenhouse gas emissions and to reduce greenhouse gas emissions worldwide.^[71]

Investors have been cautious about investing in palm oil biofuel projects because of the impact the expansion of

oil palm plantations has had on tropical rain forests,^[72] but according to the South East Asian CDM development company **YTL-SV Carbon**, many CDM projects in the palm oil sector focus on improving use of waste products to reduce gas emissions and do not contribute to the establishment of new oil palm plantations.^[73]

6.2 Use of sustainable oil by corporations

The World Wildlife Foundation (WWF) publishes an annual report on the use of sustainable palm oil by major corporations. In the 2011 report, 31 of the 132 companies surveyed received a top score for their use of sustainable palm oil. This represents an increase from 2009, the first year the report was issued, where no companies received top scores.^[74]

The WWF reports that 87 companies have committed to using only sustainable palm oil by 2015, including **Unilever** and **Nestlé**, both of which committed to exclusively using sustainable palm oil following demonstrations and urgings from environmental organizations in the late 2000s.^{[1][75]} However, according to the WWF, the overall growth in the use of sustainable palm oil is too slow.^[74]

Retailers who have made commitments to offering products containing sustainable oil, including **Walmart** and **Carrefour**, have attributed the slow rate of growth in the availability of sustainable palm oil to a lack of consumer interest and awareness in products made with sustainable palm oil. These companies have expressed concern about the potential impact of low consumer demand on the cost and future availability of sustainable palm oil.^{[76][77]}

6.3 Persuading governments

It may be possible to persuade governments of nations that produce competing products to enact protectionist legislation against the products of deforestation, an approach that was presented in a report by the National Farmers Union (United States) and Avoided Deforestation Partners. The 2010 report estimates that protecting the 13,000,000 hectares (50,000 sq mi) of mostly tropical forest that are lost annually worldwide would boost American agricultural revenue by \$190–270 billion between 2012 and 2030. However, several conservation groups, including Conservation International, Environmental Defense Fund, National Wildlife Federation, and The Nature Conservancy, presented a rebuttal to the report, stating that it was “based on the assumption, totally unfounded, that deforestation in tropical countries can be easily interrupted, and its conclusions are therefore also unrealistic.”^{[1][78]}

7 See also

- 2015 Southeast Asian haze

- Environmental issues with energy
- Food vs. fuel
- Southeast Asian haze
- Sustainable biofuel
- *The Burning Season*, a 2008 documentary that highlights deforestation in Indonesia for palm oil plantations

Companies:

- Criticisms of Cargill
- Wilmar International

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9 Further reading

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10 External links

- Greening the World with Palm Oil? - an in-depth analysis on palm oil's impact on the environment - Mongabay.com, January 26, 2011
- Cooking the Climate - a Greenpeace report on the palm oil industry
- Palm oil publications from Greenpeace
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