

A CLOSER LOOK AT PALM OIL

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INTRODUCTION

In November 2012, the French 'Nutella Tax' scandal brought the environmental and social consequences of palm oil back to centre stage.

The debate over palm oil made its way back into the spotlight in an amendment proposed by Senator Yves Daudigny to the social security finance bill of 2013 that was passed at first reading by the Senate on 14 November 2012. While it was eventually abandoned by the Committee on Social Affairs of the French National Assembly, the amendment's provisions would have instituted an additional tax of €300/tonne, or three times the current duty, on palm oil, palm kernel oil and copra (coconut oil) earmarked for alimentary use¹. Commonly known as the 'Nutella Tax', in reference to this product's

20% palm oil content, the amendment rested on health concerns associated with the use of these products. The debates surrounding palm oil can be traced back to the early 2000s, when NGOs, and Greenpeace in particular, campaigned against its massive use by big multinationals like Nestlé and Unilever. The controversies at that time, however, focused predominantly on the environmental issues raised by cultivation of this primary resource.

What exactly are the environmental and social impacts associated with producing and consuming palm oil? And what conclusions can we draw regarding investment in companies that participate in this value chain?

1. The current tax amounts to €98.74/tonne for palm oil and €107.80/tonne for coconut and palm kernel oils.

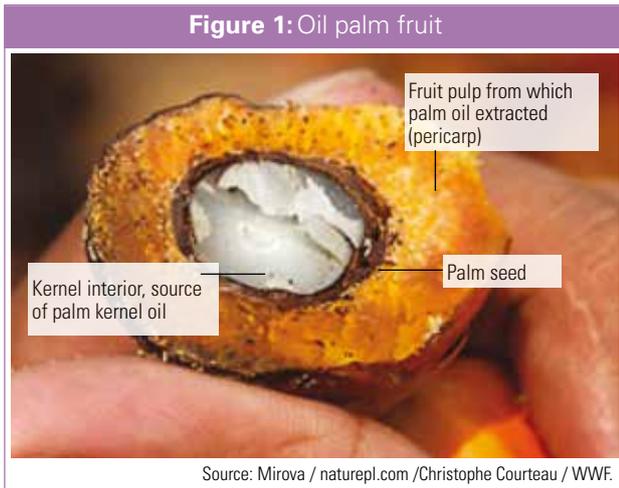
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1 | What exactly is palm oil?

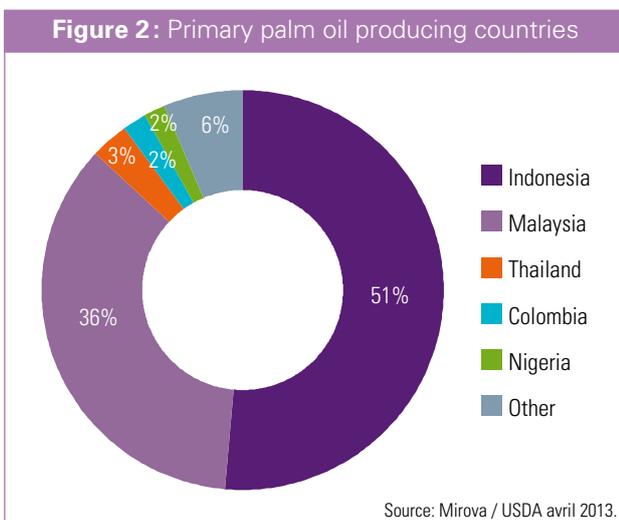
Palm oil is a vegetable fat extracted from the production of the oil palm, *Elaeis guineensis*. The generic term 'palm oil' actually covers two broad categories of substances produced from the oil palm, each of which is then transformed into a plethora of derivative products. These two underlying fats are:

- Crude Palm Oil (or CPO), extracted from the fruit of the oil palm
- Palm Kernel Oil (often referred to as KPO), extracted from the seed of the fruit



A. A crop that leans heavily toward the South

The oil palm's origins lie in Africa, and the cultivation of this plant is practicable only in tropical regions (Asia, Africa, South America). Two countries stand out as having deeply invested in oil palm plantations since the 1960s: Indonesia followed by Malaysia. Together, they account for 87% of the world's supply of this resource (USDA Foreign Agricultural Service, 2013). In order to keep up with demand, however, this crop is increasingly being planted in several African countries such as Nigeria and Liberia.

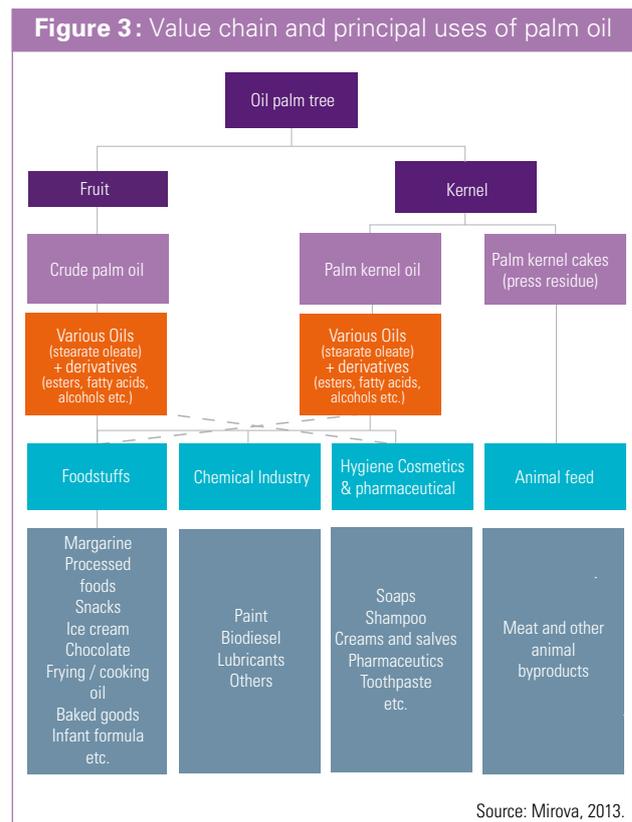


According to USDA predictions (2013), annual production of palm oil in 2012/2013 should amount to around 53 million tonnes worldwide, and palm kernel oil over six million, with a total surface of more than 15 million hectares (37 million acres) under cultivation (Oil World, 2013).

Production has become highly industrialized, with 60% of the total issuing from large vertically integrated groups (those controlling both plantations and refineries); however 40% still comes from small producers. Wholesaling is much more concentrated. In fact, a 40% market share is held by the most important player alone, a company by the name of Wilmar.

B. Multiple uses and many advantages

Traditionally, palm oil was used as a cooking fat. Today, its many derivatives can be found in thousands of different products (see Figure 3). The principal outlet is the agro-food industry, which currently absorbs 80% of the palm oil produced worldwide, followed by the pharmaceutical, chemical, and cosmetics industries which consume 10%, and biofuels which come in at just below 10% (Oil World, 2013). While by no means in the lead, the latter two applications are on the rise.



Properties useful for both edible and cosmetic applications

While still used as a so-called salad oil in cultures where it is native, palm oil has also become ubiquitous for frying and as a fat incorporated in manufactured products, thanks to significant advantages it offers over other available vegetable and animal fats.

Among its virtues, it:

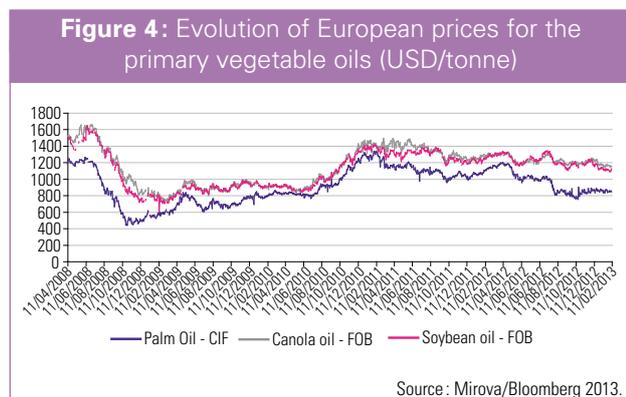
- Is highly resistant to oxidative damage, prolonging the shelf-life of products
- Has a solid consistency at room temperature that lends foodstuffs a rich texture without resorting to hydrogenation, a process used to solidify vegetable oils (canola, sunflower etc.) by stripping the double carbon bonds from fatty acid chains, and which, in addition to being costly, is the cause of trans-fats, found to be hazardous to human health
- Has almost no flavour
- Permits use at very high temperatures (high smoke point)

Similarly, the prevalence of palm kernel oil in the cosmetics industry is due to its singular combination of properties; indeed, it is one of the rare fats (along with copra) that can be used in combination with mineral oils.

Significant cost advantage

The other essential advantage of palm oil is its price, which is significantly lower than that of other vegetable oils (see Figure 4). The price differential between palm oil and its principal competitor, soybean oil, is on average between 100 and 200 USD/tonne.

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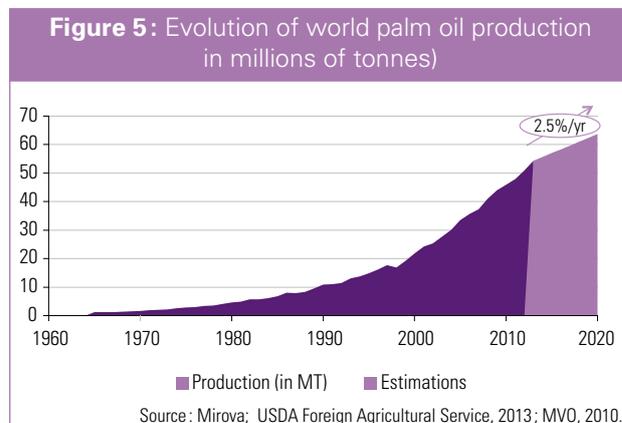


This comparative price advantage is due to the specificities of oil palm cultivation, the costs of which are the lowest of all sources of vegetable oil, 20% less than that of soybean production and even further from canola (Homont, 2010). Oil palm's yield is by far the highest of any oleaginous competitor and despite the significant labour involved in harvesting the fruit, easily makes up for the cost of employing seasonal workers (which remains very low). The average total yield of oil palm plantations in (both palm oil and palm kernel oil) is about 3.4-4 tonnes per hectare (1ha=2.48 acres), and can attain 9t/ha if conditions are optimal. Soybeans, on the other hand, produce only 0.6-0.8 t/ha, and sunflower or canola scarcely more, at around 1t/ha (UNCTAD).

Recent explosion of consumption

Not historically a major export, palm oil production has gone from a few million tonnes in the 1960s to over 50 million in 2012. Demand grew at its steepest rate in the late 1990s and early 2000s, with a fivefold increase in production taking

place between 1990 and 2012. This intense development can be principally attributed to an increasing demand from the food industry. Over this period, not only did dietary oil usage increase in developing countries, but the media hubbub surrounding the negative health effects of trans fats found in the hydrogenated oils traditionally employed by the food industry, caused the sector to turn toward palm oil as a substitute.



The world's favourite oil

Today, palm oil represents more than a third of all vegetable oil produced globally, making it the most used oil in the world, ahead of soybean oil. It is also the most traded oil; over three quarters of current production is exported. While still predominately consumed in highly populated countries experiencing economic development (China, India, Nigeria, etc.), it is increasingly exported all over the world: Europe now ranks third in palm oil imports worldwide, behind China and India (USDA Foreign Agricultural Service, 2013).

The creation of a worldwide market for palm oil has brought with it a value chain of additional complexity, with increasing numbers of participants at each link (these being the cultivation of plantations, extraction, export, refining, transformation, distribution etc.). The trade in palm oil today is part of the commodities market, where direct contracts between producers and consumers are a rarity.

While consumption of palm oil is all over the map, the heavyweight players of the agricultural foodstuffs and cosmetics industries absorb a significant portion. In the front row of global consumption are: Nestlé Oils (more than 3%), Unilever (3%), P&G (>1%), Nestlé (0.6%) and Henkel (0.2%) (estimates by Mirova).

Looking ahead: growth will remain strong, driven by high demand for vegetable fats

The demand for palm oil will likely remain strong in the decades to come, driven by a demand for vegetable oils that has two principal foundations:

- Population increases and changes to dietary practices in developing economies that go hand in hand with GDP growth. These changes result in the increasing caloric density of foods consumed, larger quantities of animal proteins, more oils, fewer grains, and above all, higher consumption of processed foods. Vegetable oil consumption remains four times lower in developing countries



than among OECD members, and even these latter will see consumption increase by 2kg per person between now and 2021, to reach 18kg/person (OECD-FAO Secretariats, 2012, p.138).

→ Demand for biofuels: demand stemming from the biodiesel industry is likely to continue growing, and is expected to increase from 12% of all vegetable oil consumption in 2009-11 to 16% by 2021. While soy and canola will likely remain the primary raw materials, palm oil destined for the production of biodiesel will probably approach 9% of world palm oil output by 2021 (OECD-FAO Secretariats, 2012, p. 137).

According to the latest projections from OECD and FAO sources (OECD-FAO Secretariats, 2012, p. 149), total production of vegetable fats will increase by 30% over the 2011 to 2021 period, with palm oil playing a major role. Among vegetable oils, palm oil possesses a competitive advantage due to its comparatively low production costs, its high yield, and the broad array of fats it can replace. Indeed, the OECD and FAO predict that palm oil production in Indonesia and Malaysia alone will increase by 37%, or 12 million additional tonnes, over the coming decade. However, this same source maintains that total production of palm oil will grow at a lower rate than in the preceding decade, primarily because of obstacles to the expansion of surface area and a lack of manual labour in Malaysia.

The explosive growth of palm oil production of the last few decades, as well as the likely increase in consumption of this product underlie the considerable social and environmental controversies with which discourse about this commodity is fraught.

2 | Principal Social and Environmental Issues Raised

A . An undeniable contribution to economic and social development

An important economic and social driver for producer countries

According to World Bank estimations, the palm oil industry employs about 6 million people worldwide and generates more jobs per acre than any other crop, 30 times more than soybeans (IFC-World Bank, 2010), because oil palm cultivation is difficult to mechanise. Above all, however, it is a source of considerable and stable revenues compared to other tropical crops. The revenues generated by oil palm plantations in Indonesia amount to an estimated 1,000 to 2,000 USD per year per hectare, money that has contributed significantly to a reduction in poverty and the emergence of a rural middle class (McCarthy, 2010). According to some studies, wages are also significantly higher than for other crops: the equivalent of €36 per day for oil palm plantation work compared to €1.7 in rice paddies (Hoyle & Levang, 2012).

The palm oil industry has played a tremendous role as a driving force behind job creation and an improved international balance of trade for the two primary exporting nations, Indonesia and Malaysia. It also continues to contribute to growth and could accelerate development in a number of West and Central African nations.

A partial solution for meeting the food needs of a growing global population?

Thanks to a yield on average five times that of competing crops, palm oil is well positioned vis à vis the challenge of ensuring the food supply of an ever-increasing population without stripping the planet's resources. Indeed, it combines an advantageously competitive price with a lesser need for surface area than alternative crops; currently accounting for a third of all vegetable oil produced, its production occupies only 5% of the territory devoted to cultivating oleaginous plants (RSPO, 2013).

Furthermore, while it does, like any form of agriculture, have a significant impact on the environment, palm oil cultivation appears to require fewer additives than other crops (IFC-World Bank, 2010), particularly as concerns pesticides, because all known blights and parasites can now be treated biologically (CIRAD, 2010).

B . Intense social and environmental controversies surrounding the cultivation of oil palms

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Despite all the oil palm's virtues, however, its cultivation on a mass scale poses considerable problems of both an environmental and a social nature.

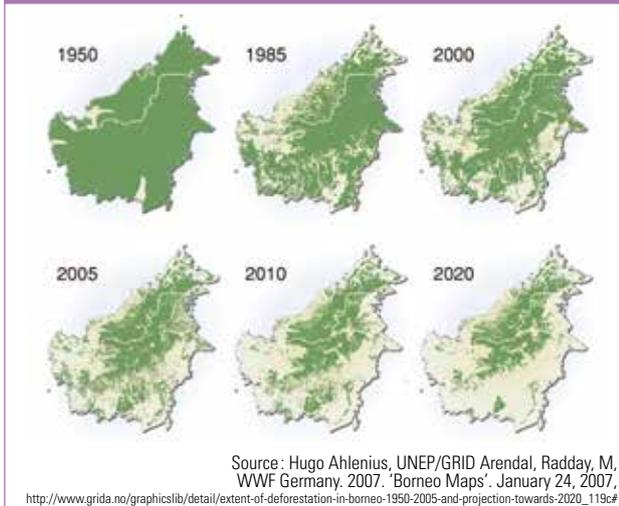
The practice of deforestation at the source of the primary controversies

The swelling supply of palm oil available was indeed largely achieved by increasing the area of land under cultivation. Thus, the total surface occupied by oil palm plantations in Indonesia grew from 0.2 million hectares (0.5 million acres) during the 1970s to more than 8 million today. Similarly, in Malaysia, the amount of land devoted to oil palms went from 0.5 to over five million hectares (FAOSTAT, 2013).

However, these two countries are also comprised of densely wooded land. The forests that covered the majority of their surface at the beginning of the 20th century represent a bit more than 50% of Indonesia's territory and over 60% of Malaysia's (FAO, 2010). In fact, 80% of South-East Asia's natural forests are concentrated here. Indonesia on its own constitutes the third largest equatorial forest basin in the world, after Brazil and the Democratic Republic of Congo.

In the course of the last few decades, these old growth forests, known as primary forests, have suffered serious attrition. Between 1990 and 2010 alone, Indonesia lost 24 million hectares of forest (20% of total forested area), and Malaysia 1.9 million, or 9% (FAO, 2010).

Figure 6: Deforestation in Borneo 1950-2005, with projections to 2020



Although the degree to which oil palm cultivation and deforestation are linked is a matter hotly debated, and the numbers evoked are subject to wild variations, palm oil is without a doubt one of the reasons for which primary forests are felled. The numbers we rely on here are those that appear to generate the most stable consensus. Numerous studies on the topic estimate that the development of oil palm plantations has taken place for somewhat over 50% at the expense of primary forest and sometimes peatlands (Koh & Wilcove, 2008; Gibbs, 2010; Koh et al., 2011); it is thus responsible for approximately 15% of deforestation in Indonesia and Malaysia. Between 1990 and 2005, only 3 of the 21 million hectares of primary forest that have disappeared in Indonesia can be attributed to the creation of oil palm plantations (Persey, 2011). However, while the foremost cause of deforestation remains the trade in exotic woods, conversion of woodlands for oil palm cultivations appears to have accelerated since 2005, according to some studies (Carlson, 2012).

The issue of deforestation appears more pressing for Indonesia than for Malaysia, given the countries' respective geographies and surface areas. In this regard, Indonesia's ambition of doubling its palm oil production between now and 2020 (for an annual total of 40 million tonnes) is nothing if not disturbing. The country does indeed possess a considerable surface area of potentially arable land, much of it occupied by primary forest, whereas in Malaysia no such potential presents itself. It is furthermore worth emphasizing that the issue of deforestation is not limited to Indonesia and Malaysia, but remains a potential concern for all palm oil producing countries. Because the oil palm is essentially a tropical plant, its cultivation is always effectively in competition with the world's rainforests (the Congo, the Amazon, etc.). And deforestation carries a several heavy environmental and social costs that weigh on the sustainability of oil palm cultivation: losses to biodiversity, greenhouse gas emissions and issues of respect for the rights of indigenous peoples.

Losses to biodiversity

Tropical primary forests constitute hotspots of biodiversity (areas with a very high concentration of species). Indonesia's forests are home to tremendous numbers of native species. Land conversion, by destroying their natural habitat, hastens the extinction of already endangered species, among them orang-utans, rhinoceros, Sumatran elephants, tigers and leopards. Moving beyond examples of animals merely on their way to becoming extinct, several studies have attempted to quantify the definitive losses to biodiversity that have already taken place. According to Koh et al. (2011), biodiversity in Borneo has already suffered a 1% decline (equivalent to the extinction of four species of bird), Sumatra a 3.4% loss (16 species), and Malaysia 12.1% (46 species).

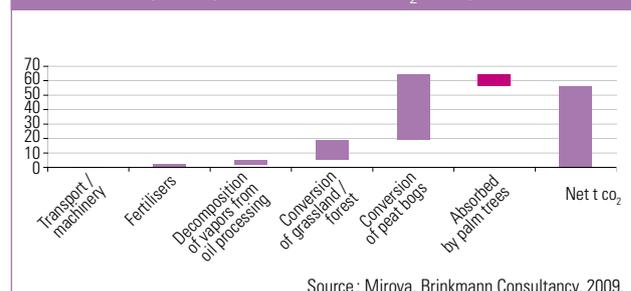
Greenhouse gas emissions

GHG emissions related to palm oil production can have several different sources:

- CO₂ arising from the felling of tropical rainforest or destruction of peatlands/grasslands to make room for new plantations, and all the more so when the forests occupy peaty soil. Such conversions, through soil turnover, increased mineralisation etc., produce a release as CO₂ of carbon previously trapped in the ground
- The average CO₂ equivalent of added traffic is 56 teq of CO₂/ha/yr (20 year projection)
- CO₂ released through the combustion of biomass cleared if the wood is used as fuel
- CH₄ released into the runoff treatment pools by refineries (POME-Palm Oil Mill Effluent)
- Nitrous Oxide (N₂O) from the application of nitrogen rich fertilizers
- CO₂ released by the fuel combustion of tractors and other machines employed throughout the life cycle of palm oil

A literature review shows that the impact on climate change of oil palm cultivation hovers around 56 teqCO₂/ha/yr (20 year projection). Tropical rainforest and/or peatland and grassland conversion accounts for much of this contribution (see Figure 7).

Figure 7: Average GHG emissions per hectare of oil palm plantation (in tCO₂ /ha/yr)



By adding up the total area of land converted for oil palm cultivation, we arrive at estimated net GHG emissions of ~0.8Gt of CO₂ per year, close to 2% of all GHG emissions caused by human activity. Deforestation for the cultivation of oil palms is indeed one of the principal sources of these GHG. According to the IPCC, deforestation represents about 17% of all human induced GHG worldwide. This explains why Indonesia finds itself among the world's top five countries by contribution to GHG emissions (World Resources Institute).

This issue is particularly concerning in Indonesia, because a substantial portion of its forests are situated on peat soil. Tropical peatlands harbour some of the world's largest organic carbon reserves, and an estimated 65% of these are located in Indonesia (Moore, 2013). According to Koh et al. (2011), at least 6% of Indonesian peatlands have already been converted to agriculture. Attrition of the soil due to clearing, draining or burning considerably increases the CO₂ emitted (peaty soil that has been cleared may emit up to 50% more than the intact peat forest).

Social consequences for the rights of indigenous peoples

Another significant consequence ensuing from land conversion to plantations is the impact this has on local communities. The absence of strong governance in certain producer regions has led to a proliferation of social conflicts in the last few years. In particular, many indigenous have suffered displacement and/or loss of their customary right due to the weakness—in some cases a complete lack—of legislation regulating property rights, further exacerbated by modes of land acquisition that are heavily subject to corruption. In addition to violating indigenous property rights, the spread of industrial plantations destroys the means of sustenance on which these populations rely. Indeed, the subsistence economies of the poorest in these rural areas depend heavily on resources provided by the rainforest (wood, rubber, etc.).

Other social and environmental costs of palm oil production

The felling of tropical rainforests for conversion to land for the cultivation of oil palm plantations is at the root of the primary social and environmental issues that make palm oil a controversial commodity: losses to biodiversity, contribution to global warming, and violations of the rights of indigenous peoples.

However, the production of palm oil also entails other environmental and social costs that need to be addressed if sustainable and responsible production is to be established. Among these:

- Social (health of plantation workers) and environmental (soil and water pollution) consequences arising from the use of pesticides. Specifically, Paraquat, an herbicide now outlawed in Europe, is said to be still used, despite the existence of organic alternatives
- Environmental impact (air, water, and soil pollution) due to fertilizer use

- Methane emissions and water pollution associated with POME (Palm Oil Mill Effluents)
- Working conditions on plantations

C . A public health debate over food use marked by pitched controversy

In addition to controversies surrounding the production of palm oil, there are debates brought on by growing concern in developed countries regarding the public health impact palm oil's massive incorporation in foodstuffs, as witness France's Nutella tax proposal, mentioned in the introduction.

The issue is well summarized in the text of France's proposed amendment:

'Coconut, palm, and palm kernel oil are not properly speaking oils, but fats. They are solid at room temperature due to their saturated fat content. They are employed in making margarine and as frying oils. These fats are over employed in institutional catering and in processed food production. They are especially to be found in baked goods as well as both savory and sweet snacks aimed at children. According to the ANSES, saturated fatty acids are consumed in excess by the French population (16% of average daily caloric intake, compared to a daily recommended intake of less than 12%). These substances contribute to obesity throughout the population. They promote cardiovascular disease'.²

Table 1: Fatty acid profiles of various fats

Fat	Saturated fat content (as % of total fatty acids)	Monoun-saturated fatty acid content	Polyunsaturated fatty acid content
Copra (coconut)	92%	6%	2%
Butter	66%	30%	4%
Palm oil	52%	38%	10%
Soy oil	15%	24%	61%
Olive oil	14%	73%	11%
Sunflower oil	11%	20%	69%
Canola oil	6%	62%	32%

Source : Mirova, 2013.

Fats, including oils, contain different types of triglycerides, whose fatty acid chains can most broadly be categorized as saturated and unsaturated, according to the bonds of their carbon backbone. Loosely speaking, unsaturated fats are considered 'good fats' (all 'essential fatty acids' those the body needs but cannot synthesize, are unsaturated), that contribute in particular to cardiovascular health and glucose management. Saturated fat, on the other hand, is viewed with less complacency. Excess consumption of saturated fat has long been considered a public health issue; it is accused of leading to obesity, higher levels of LDL (bad) cholesterol, and increased risk of cardiovascular disease.

1 Data is from 2004 and includes results of land repurposing.

2. Daudigny amendment to the Projet de loi PLFSS pour 2013 : n°103, 107, 104 Available at: http://www.senat.fr/amendements/2012-2013/103/Amdt_7.html

While its saturated fat content remains well below that of animal fats, palm oil has one of the highest concentrations of saturated fatty acids to be found in vegetable oils (see Table 2). Because of this, its common use in processed foods is alleged to have a deleterious impact on public health, whereas oils rich in unsaturated fatty acids, especially the cis variety, are reputed better for health. It is important to realise, however, that saturated fats (while not essential foodstuffs because the body can synthesise them) are not inherently bad for you, unlike the unsaturated fats known as trans fats, which are unknown in nature. The process of partial hydrogenation from which these harmful trans fats arise is used to solidify or partially solidify vegetable oils and reduce their susceptibility to oxidative damage, making them suitable for use in a large number of foodstuffs. The massive adoption of palm oil by the processed food industry is largely the result of pressures to eliminate trans fats, whose harmful effects on health (particularly their contribution to cardiovascular diseases) are well demonstrated. In this regard, the use of palm oil can be considered a step forward from the perspective of public health.

Nonetheless, the processed food industry is currently being squeezed on two fronts. On one side, consumers are demanding greater transparency, as the presence of palm oil is not specifically indicated, but comes under the heading of 'vegetable oil' in ingredient lists. On the other, regulatory agencies and consumers are pressuring companies to reduce the fat content of processed foods.

— 7 — The social and environmental controversies that surround palm oil production as its explosive development has taken shape are undeniable: deforestation, losses to biodiversity, GHG emissions, violations of the rights of the indigenous. Notwithstanding, it is impossible to ignore palm oil's potential contribution to sustainable development in terms of job creation, reducing poverty, as a stable revenue source for developing countries and its relatively limited surface requirements and soil impact. At the same time, public health concerns involving palm oil, whether for or against, must be taken into consideration. In the midst of so many conflicting issues, what solutions are available to make the palm oil production industry more sustainable?

3 | Which Solutions?

A number of possible solutions are available for limiting the negative effects associated with increasing consumption of palm oil, all of which will likely play a role in resolving the social, environmental and public health issues raised by this substance. These solutions will, of course, vary according to the levers for action available to actors at different points along the supply chain: production, refinery, consumption etc.

A . Substitute?

Generally speaking, the curtailing of palm oil production by substitution with other oils does not appear to be a satisfactory solution from either an environmental or a social point of view. Indeed, the expected rise in demand for vegetable oils is considerable, and further extension of other oleaginous crops would also have serious environmental repercussions,

given their lesser yields, which require more land conversion for similar quantities. It is wise to recall that the source of palm oil's principal competitor, soybeans, is also the centre of serious debates on topics such as deforestation (in Brazil), biodiversity, GM crops, the excessive use of fertilizers and pesticides and community relations with local populations (which have led to the creation of a roundtable for sustainable soy).

From a public health perspective however, there is a case to be made for limiting total saturated fat consumption by substituting oils with higher unsaturated fat content for palm oil if and when the application permits their use without hydrogenation. However, this will always be subject to a cost benefit analysis, and the premium for substitution, according to certain manufacturers, can vary between 3% and 20%.

B . Relocate production?

Africa, the promised land?

One solution for palliating the risks of biodiversity loss and conversion of primary forests with a high conservation priority is to expand production into new geographic areas. In anticipation of arable land shortage in Indonesia and Malaysia as well as an ever more restrictive environmental framework making access to new land more difficult, investors are massively pinning their hopes on Africa, the continent to which oil palms are, after all, native (the NGO Grain has counted over 30 planned investments by Asian companies). However, the environmental and social issues raised by plantations remain the same as in the previous centres of cultivation. In fact, oil palms can only really be grown in tropical climates that coincide with diversity 'hotspots'. Furthermore, governance in the countries envisaged is no stronger than in Asian countries as regards the lack of property rights, social protection and environmental legislation. While oil palm cultivation may offer a significant opportunity for economic and social development in these countries, the social and environmental risks it carries are not to be ignored.

Emphasis on already damaged land

Another solution consists of directing the expansion of plantations toward land considered 'degraded'. Indonesia, conscious of the need to protect its forests and its important role in limiting global warming, has established the goal of a 26% reduction in its GHG emissions by 2020. In view of achieving this objective, the government announced a moratorium of two years on all deforestation activities in the context of a 2011 agreement with Norway, which has committed a billion Euros to the UN sponsored project, called programme REDD+4.

The moratorium concerns 65 million hectares of forest and peatlands (approximately one third of Indonesia's land mass) and is designed to promote redirection of planting to the 24 million hectares of despoiled land identified by the government. According to R.H.V. Corley, world renowned specialist on oil palm plantations, the yield from reclamation of these areas as oil plantations would suffice to satisfy the lipid needs of the world's entire population until 2050.

Thus an expansion of oil palm cultivation at a lower environmental cost does appear feasible. However, we must underline here

that Indonesia’s commitments in the area of forest conservation have so far borne very little fruit and continue to be the object of much criticism from international organisations and scientists.

C . Improve yields

Improving the ecological efficiency of oil palm groves is clearly an important component of any solution, especially as a significant number of small-scale plantations continue to have limited access to high quality cultivars. Yields remain extremely variable even today; while hovering around 4 tonnes/ha in Southeast Asia, they are closer to 2 t/ha in Africa and Latin America. The Malaysian Palm Oil Producers Association (MPOA) estimates the maximum potential to be about 9 t/ha, and even 12 t/ha on the basis of the CIRAD’s (Centre de Coopération en Recherche Agronomique pour le Développement) most successful genetic crosses today.

However, it is important to recognize that several obstacles cast shadows on this rosy picture. In particular, the cultivation of oil palms is an activity with an extended timeline that spans 25 years on average. Thus, establishing plantations based on new seedlings from “cutting edge” cultivars is more of a long term solution, given that eight years of growth are required before the first harvest can be made in a new plantation (previously,

sale of the wood recovered from deforestation procedures was an important source of revenues during this latency period).

D . Certified sustainable palm oil: the RSPO system

The RSPO (Roundtable on Sustainable Palm Oil) is a multiparty initiative created in 2004 that aims to promote the establishment of a channel supporting sustainable palm oil production. The group brings together more than 1,100 members representing seven types of stakeholders: palm oil producers, agri-food businesses, distributors, consumer goods manufacturers, retailers, investment banks, and civil society. It is the most widely known framework in the industry,³ with a membership of producers who account for 40% of all palm oil produced worldwide, and processors and users responsible for over 30% of total volume (RSPO, 2013). The round table has developed a system of certification, initially established in 2008, based on respect for 8 principles and 39 criteria (aka P&C), as described in Table 2. Note that membership in the group entails a commitment to progress on the part of actors in the chain but does not mean that they necessarily produce CSPO (Certified Sustainable Palm Oil) oil.

3. It is worth remarking that several important actors among both industry and NGOs have elected to leave or to forgo participation in the round table, citing its framework as either insufficiently or excessively restrictive. The absence of Greenpeace is conspicuous, while Friends of the Earth withdrew from the Indonesian association of palm oil producers in 2011.

Table 2: Principles and Criteria (P&C) of the RSPO (2013)

Principles	Criteria
1. Commitment to transparency	<ul style="list-style-type: none"> Transmission of environmental, social and legal information to all stakeholders Publicly available documentation of management activities Code of ethical conduct applicable to all operations and transactions
2. Compliance with Applicable Laws and Regulations	<ul style="list-style-type: none"> Respect for all local, national and ratified international laws and regulations Be able to show proof of right to land use and absence of legitimate contestation by local communities Use of land for oil palm plantation does not diminish the legal, customary or user rights of other users without their free and informed prior consent
3. Commitment to Long – Term Economic and Financial Viability	<ul style="list-style-type: none"> Implemented action plan by management to achieve long term economic and financial viability
4. Use of appropriate best practices by growers and millers	<ul style="list-style-type: none"> Practices maintain soil fertility and where possible improve it to a level that ensures optimal and sustained yield Practices minimise and control erosion and the degradation of soils and maintain the quality and availability of surface and ground water Pests, diseases invasive species and weeds are effectively managed using appropriate integrated management techniques Pesticides are used in ways that do not endanger health or the environment Occupational health and safety plan is documented, effectively communicated and implemented
5. Environmental responsibility and conservation of natural resources and biodiversity.	<ul style="list-style-type: none"> Awareness of environmental impact, and plans to mitigate negative impacts and promote positive ones are made, implemented and monitored to demonstrate continual improvement Rare, threatened or endangered species and High Conservation Value habitats, if any, that exist on the plantation or could be affected by plantation or mill management are identified and operations managed to best ensure their protection Socially responsible disposal including waste reduction and recycling programs Efficiency of fossil fuel use and renewable energy use is optimised Use of fire for preparing land or replanting is avoided except in specific situations identified in ASEAN guidelines or regional best practices Plans to reduce pollution and emissions including GHG are developed, implemented and monitored
6. Responsible consideration for employees individuals and communities by growers and millers	<ul style="list-style-type: none"> Plans for mitigating the negative social impacts, which are identified in a participatory way, are made, implemented and monitored to demonstrate continual improvement Open and transparent methods for communication and consultations between growers and/or millers, local communities and other stakeholders. Mutually agreed upon and documented system for dealing with complains and grievances which is implemented and accepted by all Respect for minimum legal or industry working condition standards and commitment to a living wage. Respect for freedom of association, children are not exploited, no discrimination on the basis of personal characteristics, protection from harassment Fair treatment of smallholders and other local businesses Growers and millers contribute to local sustainable development where appropriate No trafficking or forced labour Respect for human rights
7. Responsible development of new plantings	<ul style="list-style-type: none"> Independent assessment of social and environmental impacts prior to new plantings or operations. Responses to the results are incorporated into planning, management and operations. Soil surveys and topographic information are used for site planning involving new plantings and results are incorporated into plans and operations. New plantings since 2005 do not replace primary forest or any area considered HCV Extensive planting on steep terrain and/or marginal or fragile soils, including peat, is avoided No new plantings on local peoples’ land without free prior and informed consent when there are legal, customary or users’ rights. Compensation for any agreed land acquisitions or relinquishment of rights subject to negotiated agreements
8. Commitment to continuous improvement in key areas of activity	<ul style="list-style-type: none"> Growers and millers regularly monitor and review activities to develop and implement action plans that produce demonstrable and continual improvements to operations

Source : Mirova ; RSPO, 2013.

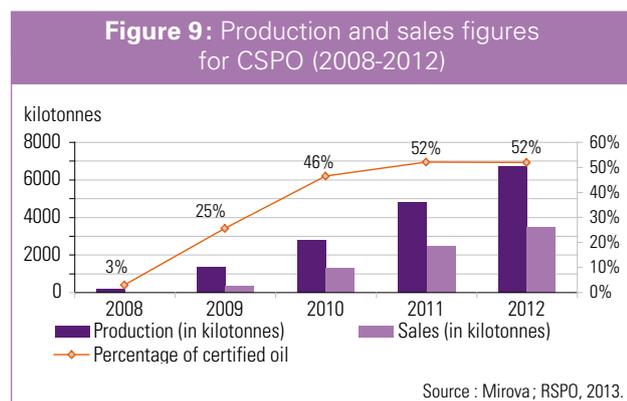
In order to accelerate development of the market for certified sustainable palm oil (CSPO), the round table has created four levels of certification: Book and Claim, Mass Balance,

Segregated and Identity Preserved. Each one (see Figure 8) corresponds to a different degree of strictness and price.



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Production volumes have increased rapidly since certification was first introduced in 2008, to reach 8.3 million tonnes of CSPO palm oil and close to 2.2 million of CSPKO (Certified Sustainable Palm Kernel Oil), or 15% of world production, by the end of 2012. The Book and Claim system is by far the most prevalent at the moment, accounting for 72% of the CSPO bought in 2012 (RSPO, 2013).



But despite its rapid progress in securing converts, the scheme currently faces several hurdles.

Credibility under construction, but still the object of suspicion

The primary criticism of the RSPO is that participation is voluntary, meaning that it can exert very little force. A number of campaigns by NGOs such as Friends of the Earth (FOEI) and Greenpeace have also cast doubt on the initiative as a whole by calling attention to poor practices engaged in by compa-

nies that belong to the RSPO. NGOs that do not support the roundtable emphasise the weakness of its standards and the lack of restrictions on the major issues that are deforestation (only the felling of HCV forests is banned), the conversion of peatlands (discouraged only) and GHG emissions.

In response to this and other criticism, the RSPO has reinforced its code of governance; one notable change is the establishment of a procedure for lodging complaints and a corresponding compliance committee, which has, in fact, suspended the certification of a certain number of members.

In November of 2012, the RSPO undertook the first revision of its principles since 2007 and the changes were approved during the general assembly on 25 April 2013. While a number of NGOs, such as Greenpeace, continue to disparage the criteria as insufficient, the new version does reinforce several requirements, especially as concerns the protection of peatlands and the reduction of GHG. The most significant changes to the Principles and Criteria (P&C) are:

- A new criterion requiring growers to reduce the GHG emissions of new plantings
- A new criterion covering ethical commercial practices that requires companies to create and implement policies to prevent
- A new criterion that makes mandatory a human rights policy that must be implemented and made known to all stakeholders
- A new criterion banning all forced labour

A market in need of structure

Another significant drag on the current system is the difficulty of establishing a stable outlet for the product. While quantities are on the increase, only half of all CSPO oil is sold as such, making it still largely a buyer's market.

Turning now to users, the premium involved in buying CSPO varies considerably with the type of certification. For the mass balance scheme it amounts to around 10-25 USD/tonne; for segregated the extra cost falls between 15 and 50 USD/t (WWF, March 2012) for a 1-6% differential with conventional oil (based on a price of 800 USD/t). The Greenpalm certificate system, which involves very low additional costs, was put in place to reduce this premium and has seen a striking adoption rate. Thus the price of certificates dropped from 8-10 USD/t in 2010 to less than 1 USD/t in 2011, floating back up slightly to 2.5 USD/t in 2012 (Greenpalm, 2013). But despite this minimal cost, supply continues to exceed demand, and half of all CSPO oil is marketed as conventional oil. This is explained by several factors, such as a fragmented market, and the difficulties associated with establishing a segregated system offering strong guarantees for lack of logistical structures able to handle two completely distinct pathways. On the production side, the cost of certification can be prohibitive in the absence of a price incentive, especially for small producers.

Nevertheless, while currently limited to the American and European markets (approximately 10% of total consumption worldwide), the commitment made by most of the largest corporations that employ palm oil to ensure their supplies are 100% CSPO certified palm oil by 2015 ought to have a structuring effect on the market.

Despite these shortcomings, the RSPO system is, from our perspective, the most fully developed standard; it rests on a broad consultation with all stakeholders and is the accepted authority among the primary actors involved in establishing a market for sustainable palm oil.

E. Other certification systems

Several competing systems for guaranteeing sustainable palm oil production have been developed in parallel to the RSPO. Two of these may stand to play a larger role: the ISPO (Indonesian Sustainable Palm Oil) and the MSPO (Malaysian Sustainable Palm Oil). Indonesia created its own certification system following a withdrawal of the Indonesian Association of Palm oil Producers (Gapki) from the RSPO. The great advantage of this standard over the RSPO is its mandatory and legally compulsory character. In fact, by the end of 2014, all plantations and refineries will have to have obtained certification or see their state-issued licenses revoked. However, widespread corruption, the weakness of the criteria, and the disappointing results of Indonesia's forest conservation policies, particularly where the struggle against deforestation is concerned cast doubt on the efficacy of the system. The country ranks 152nd out of 212 on the index of perceived corruption developed by the World Bank (2012).

Turning to Malaysia, the government had announced that it would roll out its own certification system by the end of 2013. So far, however, the Malaysian Palm Oil Board has made no official announcement. This system will rely on voluntary membership and does not appear at the moment to offer any advantage compared to the RSPO.

Thus the RSPO's system remains the most broadly implemented and reliable certification procedure currently in existence.

In the absence of robust standards promulgated and implemented by the governments of producer states, the CSPO label is the certification process that offers the best guarantees. While imperfect in many respects, it constitutes a unique initiative within the commodities trade and offers the most promising avenue toward responsible palm oil production. As a result, it serves as a frame of reference not only for consumers, but national and economic actors such as the IFC and PRI as well. For instance, the Netherlands have committed to importing only CSPO labeled oil by 2015, while the EU has decided to employ only CSPO palm oil in its blending targets.

With demand largely driven by western countries (which currently account for less than a fifth of world consumption, far behind India and China), the progress of responsible palm oil requires support from every class of actor across the value chain. Here, finance may have a significant role to play.

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4 | What are the implications for investors? What role do they play?

A. The types of investor initiatives: supervision, exclusion and engagement

The role of collaborative action

- ➔ The RSPO: insofar as the roundtable is a multiparty initiative, major financial actors involved in the palm oil value chain can join the RSPO and thus participate in shaping the framework for sustainable production.⁴
- ➔ The PRI initiative (Principles for Responsible Investment of the United Nations): as part of its collaborative platform, the PRI sponsors a working group for engagement, the Sustainable Palm Oil Investor Working Group (IWG), which combines the resources of more than 25 investors. The group has two principal objectives:
 - * To define a common stance on the topic (based on a recognition of the RSPO as the best available practice)
 - * To engage with companies that purchase palm oil, encouraging them to improve their practices and contribute to the development of a more sustainable palm oil industry.

4. As of March 2013, 11 financial institutions were members of the RSPO: ANZ Banking Group Limited, BNP Paribas, Citi, Credit Suisse AG, Generation Investment Management, HSBC Bank Malaysia Berhad, International Finance Corporation (IFC), Oversea-Chinese Banking Corporation Limited, Rabobank, Standard Chartered Bank and UBS AG (RSPO, 2013).

More precisely, the group targets two types of companies. It challenges businesses that employ palm oil (including several large Chinese and Indian corporations) to join the RSPO if they have not, and those which are members but have not established a timeline for certifying their procurement to do so. Since July 2013, the group has extended its efforts to include palm oil producers, both growers and millers.

The International Finance Corporation (IFC), financial arm of the World Bank

In 2010, the IFC, a major actor in the financial world whose policies often influence the lending criteria of private sector banks, declared a moratorium of 18 months on loans to the palm oil industry following the controversies surrounding palm oil production, and particularly the large numbers of complaints lodged by NGOs. During this time, it developed stringent criteria on the basis of a broad consultation with all types of stakeholders to create a framework that guides its investments in this resource. The framework affirms the economic and social utility of investments in the palm oil sector and attempts to simultaneously guarantee the satisfactory quality of production conditions (heavily based on the RSPO's P&C) and support smallholders and SMEs. Taking after the IFC, several large banks, such as BNP Paribas in France, have articulated similar guidelines for their investments in palm oil.

Exclusion: the case of the Norwegian pension fund

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In March of 2013, Norway's pension fund, a pillar of the SRI community, raised questions about responsible investment in the palm oil industry that once again aimed a media spotlight on the issue. In its 2012 annual report, the fund announced that it had withdrawn investment from 23 palm oil production companies (including RSPO members) for a 40% reduction of its investment in the sector, although the fund still holds 450 million USD in the sector and has reinforced its holdings in companies it deems the practices to be satisfactory, like Sime Darby.

B. Mirova's insights

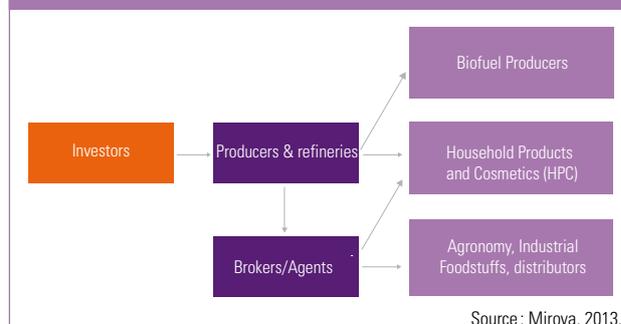
The environmental and social impact of palm oil production and use are clearly not to be ignored. Nonetheless, this resource also offers a large number of advantages both in terms of development and meeting a need. The importance of palm oil in the world markets and its probable growth due to increasing global demand for vegetable oils reinforce the need to address social and environmental issues raised by this commodity.

As an SRI asset manager, Mirova has a duty to act in the long-term interests of its clients and a commitment to take environmental, social and governance issues into account in making its investment decisions. As a result, palm oil is a topic that requires a considerable amount of both attention and reflection.

In our view, palm oil does have a role to play in realising the ambition of a sustainable future for our societies. While they

certainly leave room for improvement, we believe that current initiatives are deserving of support. Thus our funds do not preclude investment in the palm oil value chain a priori. However, participation in palm oil is certainly weighed in our investment decisions and an important topic of discussion and engagement with the companies we do invest in.

Figure 10: Principal types of actors involved in the palm oil supply chain



Companies that own oil palm plantations

The sustainable management of palm oil production is obviously at the heart of our investment choices for this sector. Potential investments in this area must meet two eligibility criteria:

- Member in good standing of the RSPO with a goal of certifying all production in the medium term
- A broader engagement in the struggle against deforestation and conversion of peatlands

We then proceed with a full analysis of companies' environmental and social practices, paying particular attention to investment in improvements to productivity and efforts to support smallholders and local communities. Currently no oil palm growers are held in Mirova's funds. However, we consider that certain companies, like New Britain Palm Oil, stand out from the rest of the sector by their longstanding support of CSPO oil and their efforts at transparency.

Corporate consumers of palm oil: edible applications (producers and distributors), personal care & hygiene and biofuels

The issue of sustainable palm oil affects these sectors less directly. However, it does enter into the larger picture of how primary resources are procured. As such, the practices of each company are scrutinized in the course of the CSR review, and become the basis for discussions and engagements.

Furthermore, one of the most significant barriers to the development of responsible palm oil remains the weakness of demand. This group of actors thus has an essential role to play, which it seems important to encourage. Among the practices we view most favourably and attempt to promote are:

- Membership in the RSPO and establishing a timeline for 100% CSPO certified procurement by 2015

→ Commitment to traceability and investment in adequate infrastructure and supply chains, with an emphasis on the 'segregated' level of RSPO certification.

Among all actors in the sector, we have a preference for those most committed to traceability. While costly in the short run, these commitments are a guarantee of companies' social responsibility. Not only are such businesses better protected from risks to their reputation, they are in a better position to secure their supply at a reasonable price in the future.

Because the environmental bottom line of biofuels made from palm oil is so disputed, the traceability and sustainability of supplies is all the more important a commitment for companies that make these combustibles.

As concerns the agri-food and distribution sectors, we believe that, given the public health issues associated with palm oil,

it is desirable for companies (in addition to complying with best practices already cited) to express a commitment to reducing palm oil or substituting other vegetable oils where this is technically feasible and healthy.

Contributions to the market for responsible palm oil

We also believe that we have a role to play in promoting the improvement of practices all along the value chain of palm oil. For this reason we belong to the PRI Sustainable Palm Oil Working Group (IWG) and participate in actions engaging target companies arising in this context.

At the same time, for companies in which we are invested that have a link to palm oil, the question remains a topic of sustained engagement aimed at improving best practices (RSPO membership, CSPO certification targets, and investment in traceability).

GLOSSARY

CSPO (Certified Sustainable Palm Oil): Certification scheme developed by the RSPO.

Fatty acids: Fatty acids are the principal component of lipids. While necessary to health, they should be consumed in moderation. The three types of fatty acids are defined according to the number of double bonds in their carbon backbone: saturated fatty acids have no double bonds, monounsaturated fatty acids have a single double bond, and polyunsaturated fatty acids have two or more.

HCVF: High Conservation Value Forest. In the terminology of the FSC (Forest Stewardship Council) an HCVF is a forest possessing one or more of the following characteristics: concentration of attributes contributing to biodiversity, habitat of endangered or rare species, essential to the needs of local communities, essential environmental role in crisis circumstances (protection for runoff reservoirs, erosion control).

HPC: Household and Personal Care, meaning household and personal hygiene products as well as cosmetics.

Hydrogenation: industrial process of stripping unsaturated fatty acids of their double bonds, thus straightening their fatty acid chains and making them semi-solid at room temperature. The procedure also wards off oxidative damage, increasing shelf life, but generates potentially dangerous trans fats.

Peatland: a humid zone characterized by the development of soil with an especially high level of organic material. Peatlands are particularly fragile and vital ecosystems and serve as one the earth's primary carbon sinks.

Primary Forest: This, according to the FAO (UN Food and Agricultural Organisation) is a naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.

RSPO: The Roundtable on Sustainable Palm Oil is a not for profit association whose aim is to limit the deleterious social and environmental impact of palm oil production and promote a reliable system for certification of sustainable produced oil.

Saturated fatty acids: Found predominately in animal products such as milk, cheese, butter, and meat, but also in coconut and palm oil, these fatty acids are largely solid at room temperature. Although many are necessary, no saturated fatty acid is considered "essential" because they can be synthesized by the human body. Excessive consumption of saturated fat stands accused of contributing to increased LDL or 'bad' cholesterol and cardiovascular disease in addition to obesity.

Trans fats: A by-product of hydrogenation, these fatty acids are suspected of being particularly harmful to health in any quantity.

Unsaturated fatty acids (mono- and poly-): These fatty acids have long been reputed better for health because of their contribution to HDL, or 'good' cholesterol levels. They are found in almost all vegetable oils, including sunflower, canola and olive. Cis oriented unsaturated fats from the Omega-3 Omega-6 and Omega-9 series in particular contain several essential fatty acids that may protect against cardiovascular disease.

APPENDIX

Principal listed companies involved in the culture and processing of palm oil

Company	Surface under cultivation (ha) (2012)	% of world-wide surface under cultivation	Country of operations	% of surface certified as CSPO (end 2012)	CSPO production capacity (tonnes) (02/2013)	Timeline for achieving 100% CSPO certified plantations
Sime Darby Berhad (Malaysia)	530,010	4%	Malaysia, Indonesia	91%	2,306,639	2013
Golden Agri-Resources (Indonesia)	455,660	4%	Indonesia	16%	637,108	2015
Felda (Malaysia)	340,000	3%	Malaysia	12%	560,363	2017
Astra Agro Lestari (Indonesia)	266,751	2%	Indonesia	Non member of RSPO	Non member of RSPO	NA
Wilmar (Singapore)	250,000	2%	Malaysia, Indonesia	31%	608,582	2016
Indofood group (Singapore)	216,837	2%	Indonesia	26%	253,268	2016
KLK (Malaysia)	187,017	2%	Malaysia, Indonesia	39%	401,104	2015
IOI corporation (Indonesia)	157,045	1%	Malaysia, Indonesia	58%	403,029	2013
First Resources (Singapore)	132,251	1%	Indonesia	NC	NC	NC
BW Plantation (Indonesia)	108,910	1%	Indonesia	NC	NC	2020
New British Palm Oil (Papua-New Guinea)	77,000	<1%	Papua-New Guinea, Solomon Islands	100%	365,534	NA

Source: Mirova/company information, 2013.

Commitments of the principal Food and HPC companies as regards palm oil

Company	Policy on use of palm oil	Timeline for achieving 100% certified oil procurement	Current Progress
Carrefour	The company's current attitude toward palm oil rests on three pillars: substitution when this offers health benefits, sustainable sourcing relying on RSPO certification and a commitment to procurement of oil exceeding RSPO standards	100% RSPO certification for house brand products : 2015	
Casino	Casino has implemented a policy of eliminating palm oil from house brand products since 2010. Where substitution is not yet available, the company aims for 100% RSPO certified procurement	100% RSPO certification for house brand products: 2015	End 2012 : 75% of Casino products were palm oil free
Henkel	The company intends for all its procurement of palm oil, direct and indirect to consist of sustainable oil, initially via the GreenPalm certificate scheme and mass balance in the medium term. Henkel is also working on improving alternatives such as Copra	100% RSPO certification (GreenPalm) for direct procurement and derivative products: 2015 5	
L'Oréal	Since 2010, the company has purchased only oil CPSO certified at the segregated level. L'Oréal intends to extend this certification criterion to sourcing of all palm oil derivatives (currently already GreenPalm certified)	100% RSPO SG certification for direct sourcing: 2010 100% GreenPalm RSPO certification for derivative products: 2012 100% RSPO SG certification RSPO for derivative products: NC	End 2012 : 100% RSPO certified SG for direct procurement 100% RSPO GreenPalm certified for derivatives
Mars	The company has committed to procuring exclusively RSPO mass balance certified palm oil Mars has also promised to increase its awareness of the impact of its palm oil supply chain on deforestation and social issues	100% RSPO Mass balance certification: 2015 100% traceability to sources that guarantee no deforestation, no peatland conversion and full respect for Human Rights: NC	End 2012 : 50% RSPO Mass Balance certified
Mondelez International	The company intends to source only sustainable palm oil. Mondelez works in partnership with the WWF to improve the traceability of its supply chain and has committed above and beyond RSPO standards to fight deforestation, peatland protection and Human Rights.	100% certification RSPO : 2015	End 2012: 70% RSPO certified (via a combination of GreenPalm, mass balance and segregated)
Nestlé	The company intends to source only sustainable palm oil in the medium term, and to slowly increase the proportion of traceable oil purchased. Nestlé has defined its own set of sustainability criteria that include an additional goal regarding non-deforestation above and beyond RSPO standards.	100% RSPO certification (GreenPalm a minima): 2015	As of September 2013 : - 100% RSPO certified (16% RSPO segregated and 84% as GreenPalm certified) - 5% fully meets the groups standards for sustainability and traceability
P&G	Procter and Gamble intends to ensure that 100% of its palm oil is procured from sustainable and responsible sources by 2015. The company has also launched a partnership with the WWF on this theme.	100% responsible and sustainable procurement	mid 2013 : - 13% of palm and palm kernel oil certified by the RSPO (mass balance and GreenPalm certificates)
Reckitt Benckiser	The company intends to procure only sustainable palm oil in the medium term and has committed to encouraging its suppliers of derivative products to become certified.	100% RSPO certified (GreenPalm a minima and mass balance where possible) for direct procurement	
Unilever	The company intends for all its procurement of palm oil to be sustainable and traceable in the medium term	100% RSPO GreenPalm certification: 2015 100% traceability: 2014 100% sustainable and traceable: 2020	A fin 2012 : 100% RSPO certified (primarily GreenPalm certificates) Source: Mirova/company information, 2013

Source: Mirova/company information, 2013.

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