

PALM OIL INFORMATION PAPER

About this paper

This aims to be a factual information paper, developed by Accord for its Member companies.

Its purpose is to provide general information on palm oil, to identify some concerns that have been raised with respect to its potential environmental and social impacts, and some of the approaches to potentially address these concerns locally and internationally.

In addition, this paper also focusses specifically on palm oil as a feedstock and ingredient for hygiene, cosmetic and specialty chemical applications. Some information on the processing, chemistries and applications is provided.

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BACKGROUND

What is palm oil?

Palm oil is the most widely used and traded edible oil in the world.

It is one of two oils from the fruit of the oil palm. Palm oil is extracted from the pulp, is edible and used primarily in food products; palm kernel oil is extracted from the seed and is used mainly in personal care products and cosmetics. The yield ratio of palm oil to palm kernel oil is approximately 10:1.

The oil palm grows in tropical areas including Asia, Africa and South America. The main plantations are in Indonesia and Malaysia, which together account for over 85% of world production.¹ Smallholders, that is plantations of less than 50 hectares, account for a significant 35–45% of palm oil production in these two countries.²

Palm oil and palm kernel oil are semi-solid at room temperature. Palm oil consists of approximately 1:1 saturated (palmitic 44.3%, stearic 4.6%, myristic 1%) to unsaturated (oleic 38.7% and linoleic 10.5%) fatty acids,³ while palm kernel oil contains a higher proportion of saturated (lauric 48.2%, myristic 16.2%, palmitic 8.4%, capric 3.4% and caprylic 2.5%) to unsaturated (oleic 15.3%, linoleic 2.3%) fatty acids.⁴ The majority of carbon chain lengths in both oils range from C8-C18. There is slight variation in the exact composition of fatty acids due to the natural source.

For more details on the predominant fatty acids in palm and palm kernel oils, see Appendix A.



Image source:

greenpalm.org/about-palm-oil/what-is-palm-oil

Uses of palm oil

Palm oil, palm kernel oil and their chemically synthesised derivatives – including soap, fatty acids, esters, alcohols, alcohol sulphates, ethoxylates, amines, amides and quaternary ammonium compounds – have a wide range of uses.

Food applications are predominant, including in the manufacture of a wide range of food products such as margarine and ghee, biscuits, breads, breakfast cereals, soup mix, chocolates and ice cream. Globally, its most common use is as a cooking/frying oil by consumers and industry.⁵

Some **cosmetic and personal care products** contain natural palm oil or palm kernel oil as skin conditioning agents. Chemically refined and synthesised derivatives of palm oil and palm kernel oil function as emollients, humectants, surfactants (cleaning agents, emulsifying agents, solubilising agents and foam boosters), viscosity increasing agents, opacifying agents, antistatic agents, hair conditioning agents and skin conditioning agents. Glycerol, produced by the hydrolysis of palm or palm kernel oil, has many applications including in personal care products. According

¹ IndexMundi,
www.indexmundi.com/agriculture/?commodity=palm-oil&graph=production accessed on 24 August 2016)

² www.sustainablepalmoil.org/growers-millers/growers/smallholders/ (accessed on 27 January 2016)

³ Zamiri, R. *et al*, Fabrication of Silver Nanoparticles Dispersed in Palm Oil Using Laser Ablation, *Int. J. Mol. Sci.* 2010, 11(11), 4764-4770; doi:10.3390/ijms11114764

⁴ http://www.oilpalmindia.com/whats_is_palm_oil.php (accessed on 28 January 2016)

⁵ <http://www.pacidunia.com/palmoil/palmoiluses.html>

to the publication *Cosmetics Design Europe*, 70% of personal care products contain palm oil, palm kernel oil or their derivatives.⁶

For more information on cosmetic uses of palm and palm kernel oil based ingredients, see Appendix B.

Cleaning products can contain various chemically synthesised derivatives of palm oil or palm kernel oil, such as soaps, fatty alcohol sulphates, fatty alcohol ether sulfates, fatty alcohol ethoxylates, fatty amines and quaternary ammonium compounds as surfactants and softening agents.

Other non-food uses of palm oil derivatives include in the manufacture of candles, rubber, plastics, pharmaceuticals, and biodiesel production.

For information on the processing and refining of palm oil and palm kernel oil, see Appendix C.

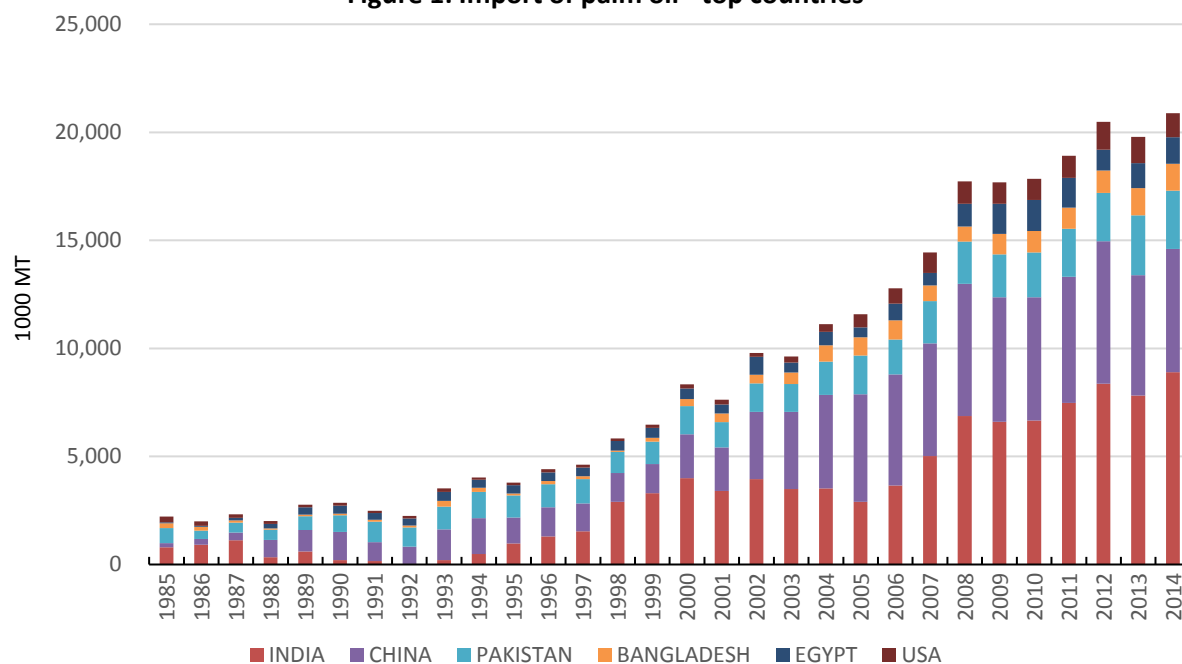
Demand for palm oil

Palm oil demand has increased markedly over the past three decades.

In 2015, the top importers of palm oil were India, EU-27, China, Pakistan, Egypt, Bangladesh and the USA. Even excluding EU-27, for which data is unavailable prior to 1999, demand has increased 10-fold since 1985 (see Figure 1).⁷

Australia imported approximately 125,000 tonnes of palm oil in 2015, approximately 0.2% of global production.⁸

Figure 1: Import of palm oil - top countries



⁶ "RSPO NEXT initiative launched to strengthen no-deforestation and human rights commitments", Andrew McDougall, 11 Feb 2016, www.cosmeticsdesign-europe.com/Business-Financial/RSPO-NEXT-initiative-launched-to-strengthen-no-deforestation-and-human-rights-commitments (accessed 12 February 2016)

⁷ Index Mundi
www.indexmundi.com/agriculture/?country=au&commodity=palm-oil&graph=imports (accessed 11 Feb 2016)

⁸ Index Mundi
www.indexmundi.com/agriculture/?country=au&commodity=palm-oil&graph=imports

Contributing to this increasing demand are a number of advantageous characteristics of palm oil:

Consumer appeal

- Non-animal source
- Perceived health advantages over certain oil alternatives: cholesterol-free, rich in carotenoids (precursors of Vitamin A) and Vitamin E, free from trans-fat

Versatility in cooking (as a frying oil and as an ingredient)

- Hydrogenation is not required for applications that need hard fat (e.g. pastries and biscuits)
- Neutral flavour
- Long-shelf life due to oxidation-resistance

Economic/environmental benefits

- Highest yielding commercial oilseed crop per land area. In 2014, palm oil supplied

32% of global oil from 5.5% of agricultural oilseed land; soybean oil supplied 22% of global oil from 40.1% of agricultural oilseed land – this is a 10-fold efficiency difference (see Figure 2)⁹

- Perennial plant, productive year round
- Commercial plants have a productive life of between 20 to 25 years

Positive social outcomes have also been identified from the growth in palm oil demand:

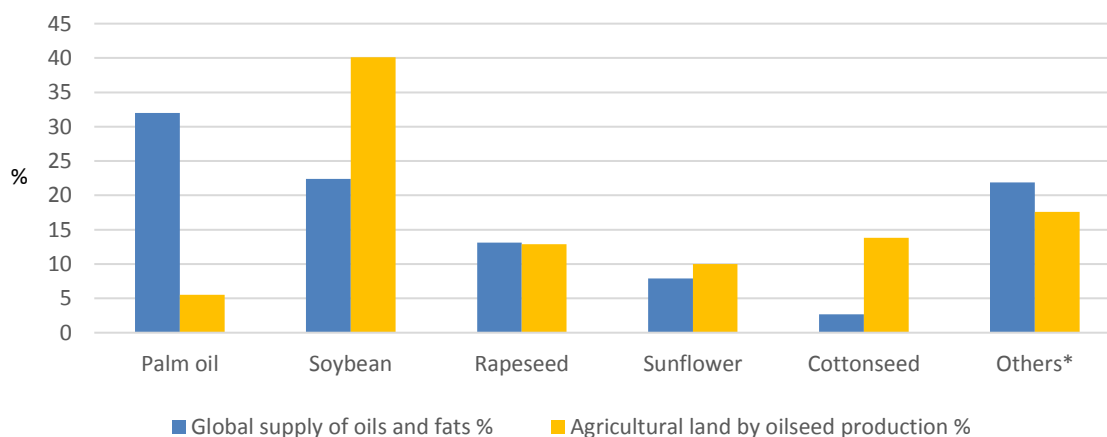
Job creation – directly on oil palm plantations and indirectly down the supply chain

Rural development – increased infrastructure e.g. roads, schools, telecommunications

Self-sufficiency – reduced reliance on imported oil to meet local needs

Overall benefits arising are the alleviation of poverty and improved standards of living.

Figure 2: Comparison of land used and oil produced by oil type



*Including groundnut, copra, linseed, sesameseed, castorseed, olive, lard & tallow, butter, palm kernel oil

⁹ Data source: Oilworld, cited at www.palmoilresearch.org/statistics.html (accessed 11 Feb 2016)

CONCERNS OVER PALM OIL

Many concerns have arisen from increased palm oil production, both environmental and social. The extent of the impacts are debated between palm oil growers and environmental groups.

Environmental

Loss of biodiversity

Tropical rainforest is the most biodiverse ecosystem in the world. Deforestation, i.e. the conversion of primary rainforest to monocrop oil palm plantations, destroys rainforest plants and affects the entire ecosystem. Loss of habitat has threatened many animal species with extinction, including the critically endangered Sumatran orangutan, elephant and tiger, and the endangered Bornean orangutan and pygmy elephant.

Climate change

Forests absorb carbon dioxide as trees (and other green plants) perform photosynthesis. Since climate change occurs through atmospheric build-up of greenhouse gases, which include carbon dioxide, deforestation has a doubly negative effect since not only does absorption cease but also the vast amounts of carbon stored in trees is released to the atmosphere if the wood is burned (or left to rot).

An additional compounding factor is that much of tropical forest is on peat soils, which, when cleared and drained, can release carbon dioxide and methane into the atmosphere. Use of fertiliser and fire accelerate this release.

Forest fires

Use of the 'slash and burn' method to clear land for oil palm plantations has been a common practice as a cheap, easy way to clear land for planting. However, fire on highly flammable peat soils spreads readily and can be difficult to stop. In Indonesia, forest fires have become a seasonal phenomenon with

smoke haze spreading to neighbouring countries – of course, not all of these fires are due to the palm oil industry. (Malaysia and Indonesia have banned 'slash and burn' but there are allegations it occurs illegally.)

Soil erosion

Soil can readily erode when left uncovered during forest clearing and establishment of oil palm plantations. Effects of soil erosion can be costly to address and may necessitate use of additional fertiliser.

Social

There have also been concerns relating to social impacts of palm oil production. These include:

- use of child labour;
- low wages paid to local workers;
- indigenous community displacement;
- rapid changes to cultural norms;
- conflict between locals;
- price increases for basic food; and,
- health impacts from fires.

ADDRESSING PALM OIL CONCERNS

The rapid expansion of the palm oil industry has posed many challenges to managing its environmental and social impacts.

There have been many high-profile campaigns to address these challenges. Some campaigns have called for a boycott of palm oil. Some have used high-profile products to target particular companies. Others have demanded palm oil labelling on products. (This has been introduced in Europe, with December 2014 legislation (Regulation (EU) No 1169/2011) requiring all oils present in food to be individually identified on the label.)

However, given the high yield of oil palm crops, the dependence of millions of indigenous people on palm oil for their livelihood, and the

versatility of palm oil, the most widely supported approach to challenges presented by increased demand for palm oil is to promote the production and use of sustainable palm oil.

Sustainable palm oil

Sustainable palm oil production consists of management and operations that address ethical, economic and environmental considerations. The focus is on improved agronomic practices and improved governance – throughout the supply chain.

Of the systems and standards in place to promote sustainable production of palm oil, by far the most significant is the Roundtable on Sustainable Palm Oil (RSPO). The RSPO was established in 2004 to develop and implement global standards for sustainable palm oil.

The Indonesian and Malaysian Governments also have national certification systems. Indonesian Sustainable Palm Oil (ISPO) and Malaysian Sustainable Palm Oil (MSPO) have been in place since 2011 and 2013, respectively, but in 2015 they announced a plan to merge these two standards to form the 'Council of Palm Oil Producing Countries' (CPOPC).

In addition, the Indonesian Palm Oil Pledge (IPOP) is a voluntary, collaborative pledge between (currently) six major palm-oil companies. Facilitated by Indonesian Government and launched at the United Nations Climate Summit in September 2014 (with four signatories), IPOP's mission is to "Create an environment in Indonesia which enables and promotes the production of sustainable palm oil that is deforestation free, expands social benefits, and improves Indonesia's market competitiveness." Each signatory has pledged to engage with, support and inspire the palm oil companies and

farmers in their supply chain to the IPOP sustainability commitments.

There are also voluntary initiatives by organisations such as the Palm Oil Innovation Group (POIG) and the Sustainable Palm Oil Manifesto (SPOM). Global activist groups who have taken action on palm oil include the World Wide Fund for Nature (WWF) and Greenpeace.

The Roundtable on Sustainable Palm Oil

The Roundtable on Sustainable Palm Oil (RSPO) is a global not-for-profit association uniting stakeholders across the palm oil industry and supply chain, including palm oil producers, processors, traders, consumer goods manufacturers and retailers, financial institutions and non-government organisations (NGOs). There are currently over 1700 members in total, including over 90 members from Australia.

The principal objective of the RSPO is "to promote the growth and use of sustainable palm oil through cooperation within the supply chain and open dialogue between its stakeholders".¹⁰ It has developed globally recognised 'Principles and Criteria' (P&C) for certified sustainable palm oil (CSPO) and certified sustainable palm kernel oil (CSPKO).

All members of the RSPO pay an annual membership fee and must adhere to the RSPO Code of Conduct. This includes commitments such as active support of the RSPO, transparency, implementation of the Principles and Criteria, and annual reporting on progress and future plans. Membership categories are:

- 'Ordinary' – organisations directly involved with the palm oil supply chain or associated NGOs;

¹⁰ Roundtable on Sustainable Palm Oil Press Statement, 8 May 2004, "New global initiative to promote sustainable palm oil". Accessed via

[www.rspo.org/file/RSPO_Press_Statement_\(final\).pdf](http://www.rspo.org/file/RSPO_Press_Statement_(final).pdf)
on 18 December 2015

- ‘Affiliate’ – organisations or individuals not directly involved in the palm oil supply chain e.g. consultants, industry bodies; and
- ‘Supply chain associate’ – organisations trading not more than 500 metric tonnes of palm oil and palm oil products per annum.

RSPO certification

The RSPO governs certification of palm oil producers, supply chain actors, and of the certifying organisations themselves.

Producers

Palm oil producers undergo independent, third-party certification of the production process according to the *RjSPO Principles & Criteria for Sustainable Palm Oil Production*. Certification occurs every five years and there is an annual compliance assessment. The ‘8 Principles’ underpinning this certification are shown in Figure 3.

A voluntary addendum to the existing Principles & Criteria – RSPO NEXT – was launched in early 2016. RSPO NEXT enables growers that have met or exceeded the current P&C requirements to be certified against more advanced criteria relating to no deforestation, fire and planting on peat; reduction of greenhouse gases, and respect for human rights and transparency.

Supply chain actors

Organisations in the palm oil supply chain are audited against the *RSPO Supply Chain Certification Standard*, which aims to control flows of materials and claims.

Supply chain certification is required for all organisations that take legal ownership and physically handle¹¹ RSPO certified sustainable oil palm products. No certification is required after end product manufacture, i.e. traders or

distributors do not require certification but do require an RSPO licence to sell CSPO or CSPKO. Version 3 of the RSPO Supply Chain Certification Standard was adopted in 2014.

There are four RSPO-approved supply chain models through which oil palm products can be traded: Identity Preserved, Segregated, Mass Balance and GreenPalm.



Figure 3: 8 Principles for growers to be RSPO certified¹²

Identify Preserved: Palm or palm kernel oil from a single identifiable certified source is kept separate from conventional palm oil throughout the entire supply chain. The end user can claim that a product “contains only RSPO-certified sustainable palm oil”.

Segregated: Palm or palm kernel oil from two or more identifiable certified sources is combined, and the combined oil kept separate from conventional palm oil throughout the entire supply chain. The end user can claim that a product “contains only RSPO-certified sustainable palm oil”.

Mass Balance: Palm or palm kernel oil from an identified certified source is mixed with conventional palm oil at any stage in the supply chain, with the quantities of both types of oil monitored and tracked. Organisations that

¹¹ The RSPO Supply Chain Certification Standard defines physical handling as “receipt, storage and dispatch, or a combination of these, where there is a risk of mixing certified and non-certified product”

¹² RSPO Principles and Criteria for the Production of Sustainable Palm Oil 2013. Accessed via www.rspo.org/publications/download/224fa0187afb4b7 on 25 August 2016

adopt this approach may claim that their products “contribute to the production of RSPO-certified sustainable palm oil”, matching the sales of palm product derivatives to the volume of CSPO or CSPKO purchased without requiring a physical or chemical link between the certified oil and end product.

GreenPalm Certificates: Tradable certificates represent certified oil. RSPO-certified palm oil growers can convert each tonne of their CSPO or CSPKO into one GreenPalm certificate. Manufacturers and retailers can purchase GreenPalm certificates from an RSPO-certified palm oil grower to offset their use of conventional palm oil. End products will not contain CSPO but can claim that they “support the production of RSPO-certified sustainable palm oil.”

Certifiers

Certification bodies must themselves be accredited by an RSPO-approved organisation against the requirements of *ISO/IEC Guide 17065:2012 Conformity assessment – Requirement for bodies certifying products, processes and services*. The certification process is conducted according to the requirements of *RSPO Supply Chain Certification Systems*, which aims to enable a consistent, objective and controlled certification process.

The RSPO has also published the document *Rules for Home and Personal Care Derivatives*. This document provides guidance on calculating the conversion factor for palm or palm kernel oil in oleochemicals and derivatives. The aim is to encourage rapid acceptance of RSPO certified oil palm products in the personal care derivatives markets – in advance of physical supply chains – via the GreenPalm system.

CSPO production versus demand

Currently, global production of RSPO certified palm oil outstrips demand.

In 2015, the total volume of CSPO was 12.88 million tonnes, or 20% of global production. However, only 6.18 million tonnes of CSPO was sold (49%), and of this only 43% was via identity preserved, segregated or mass balance channels; 57% was via the GreenPalm model.¹³

In 2015, the total volume of CSPKO was 3.00 million tonnes.

Criticisms of the RSPO

Some criticisms have been levelled at the RSPO organisation and processes. Amongst these are concerns that the RSPO lacks enforcement capability in cases of member wrongdoing, and lacks the ability to redress complaints effectively.

In December 2015, the RSPO announced a move to improve monitoring and enforcement, particularly as a response to the seasonal fires in Indonesia. (Fire is not permitted on certified plantations unless it is shown to be the most effective and least environmentally harmful approach.) It has now published digital maps showing the location of all RSPO grower members’ plantations – both certified and uncertified – in several countries. Access to the maps is through the [Global Forest Watch platform](#). In addition, the [Global Forest Watch Commodities platform](#) provides an option to locate oil palm mills and oil palm concessions in selected countries.

Another alleged concern is that some companies use their membership of RSPO as a marketing, or ‘greenwashing’ tool, without actually committing to use of certified palm or

¹³ www.rspo.org/about/impacts (accessed 13 January 2016)

palm kernel oil. Related to this ‘greenwashing’ concern is the observation that some companies continue to make heavy use of GreenPalm certificates – a model created when the RSPO was established so that palm oil users could support sustainable palm oil in advance of physical supply chains – rather than shifting their own palm oil supply chains to traceable sustainable palm oil.

THE AUSTRALIAN PICTURE

Whilst not a major importer or producer of palm oil, the ingredient has been in the spotlight in Australia from time to time because of concerns over the impacts of unsustainable production. However, because the Australian market is so small, there has not been the kind of activist pressure that some companies have experienced overseas.

Nevertheless, a number of campaigns continue to run, primarily focusing on the plight of the endangered orangutan. Some have called for consumers to boycott palm oil, others have called for mandatory labelling in foods and other products, and others have put pressure on manufacturers or retailers to use or supply products made with sustainable palm oil only.

Labelling

Currently, labelling of palm oil in foods is under the generic term ‘vegetable oil’. In cosmetics and personal care products, labelling of the natural ingredient is ‘ELAEIS GUINEENSIS (PALM) OIL’, and palm kernel oil is ‘ELAEIS GUINEENSIS (PALM) KERNEL OIL’, their International Nomenclature of Cosmetic Ingredients (INCI) names.

The situation for palm and palm kernel oil derivatives is much more complicated. For example, derivation of common cosmetic

ingredients such as sodium lauryl sulfate and glyceryl stearate may be from palm oil, or from a wide range of other animal and vegetable oils.

Attempts have been made to introduce palm oil labelling into Australian law. In 2006, the regulator Food Standards Australia New Zealand (FSANZ) received an application seeking mandatory declaration of palm oil as a food ingredient. FSANZ rejected the application as beyond the scope of the FSANZ Act as the application was based on environmental concerns.

In 2010, the Food Standards Amendment (Truth in Labelling – Palm oil) Bill 2009 was introduced into the Australian Senate. This Bill proposed to mandate palm oil labelling in foods based upon human health and environmental considerations; its purpose was to ensure that “consumers have clear, accurate information about the inclusion of palm oil in foods; and to encourage the use of certified sustainable palm oil in order to promote the protection of wildlife habitat”.¹⁴ A subsequent extension to the Bill proposed that mandatory labelling be applied to all products, including hygiene, cosmetic and personal care products.

The Bill passed the Senate in June 2011 against the recommendation of the Senate Committee, but was rejected in the House of Representatives on the advice of the House of Representatives Committee that the Bill would not achieve its intended purpose, be unenforceable, and put Australia at risk of discrimination under WTO international trade rules. Accord opposed the Bill, as did other major industry groups including the Australian Industry Group and Australian Food & Grocery Council. A primary objection for Accord’s personal care products sector related to the fact that product containing palm oil, as is,

¹⁴ Food Standards Amendment (Truth in Labelling – Palm Oil) Bill 2010
<https://www.comlaw.gov.au/Details/C2010B00198>

would already by law be required to list either “palm oil” or “*elaeis guineensis* (palm) oil” on the product label. A further objection related to complications for the many ingredients which could either be derived chemically from palm oil or from other common oils like coconut oil, but still have the same chemistry and function.

Sustainability commitments

Given that the Australian market accounts for approximately 125,000 tonnes and only 0.2 percent of global palm oil consumption, a shift to 100 percent CSPO in Australia would not in itself have significant impact on the overall sustainability of the palm oil industry. However, such commitment could help

goal has included the use of GreenPalm certificates as an interim measure to sourcing CSPO. For example, according to WWF’s 2013 Palm Oil Buyers Scorecard, Coles was using 100 percent CSPO, but all of this was via the GreenPalm model.

Some of the largest Australian-owned users of palm oil are listed in Figure 4. This also shows the years by which these companies committed to sourcing 100 percent CSPO, their 2013 progress against this goal and the RSPO model used.¹⁶ The next WWF Scorecard is due to be published in the second half of 2016.

Activists and campaigns

A number of Australian organisations are active on the palm oil issue but, as noted

Figure 4: 2013 progress towards 100% CSPO by largest Australian-owned users of palm oil¹⁶

Company	Commitment to 100% CSPO	% CSPO (2013)	% Identity preserved or Segregated (2013)	% Mass Balance (2013)	% GreenPalm (2013)	% Non-RSPO (2013)
Coles	2012	100	0	0	100	0
Metcash Trading	2015	16	3	6	0	84
Woolworths	2014	9	9	0	0	91
Snack Brands	2015	79	0	0	78	22
Arnotts	2015	32	32	0	0	68
Goodman Fielder	2014	40	0	0	40	60
Peerless Holdings	Undisclosed					

develop the market for sustainable palm oil, strengthen the RSPO, and drive the change to sustainable development in our region.¹⁵

Many of Australia’s major importers, manufacturers and retailers of products containing palm oil have made commitments to sourcing 100 percent sustainable palm oil. However, in many cases progress towards this

above, there has not been the kind of activist pressure that some companies have experienced overseas.

WWF Australia is part of the global WWF organisation, one of the founding members of the RSPO. It has been working to transform the palm oil supply chain to make it sustainable

¹⁵ Net Balance 2013, Palm Oil in Australia Facts, Issues and Challenges.

¹⁶ WWF–World Wide Fund For Nature 2013, Palm Oil Buyers Scorecard 2013

through all stages of palm oil production and manufacture.

As noted above, WWF publishes a Palm Oil Buyers Scorecard, which assesses major palm oil product retailers and manufacturers (including the largest Australian-owned users) according to their commitment to, use of, and transparency in use of CSPO.

Don't Palm Us Off is a campaign initiated by Zoos Victoria in 2009, and recently joined by Taronga and Taronga Western Plains Zoos in NSW.

Their online 'Zoopersmarket' allows consumers to select popular brands (including baby lotion, toothpaste and shampoo), provides a rating of the manufacturer's performance in use of CSPO and palm oil labelling, and facilitates consumers to contact manufacturers via a pre-filled email that encourages use of 100% CSPO and palm oil labelling on all products.

Palm Oil Investigations (POI) is an Australian volunteer-run, not-for-profit organisation.

POI has launched a free mobile phone app, the 'Palm Oil Barcode Scanner' that shows consumers whether products contain palm oil. The app rates the product in five categories:

- Palm Oil Free
- Active No Deforestation Policy
- RSPO Certified Sustainable Palm Oil
- RSPO Mass Balance
- Fail

POI has announced that they are planning to launch two product trademarks: 'Palm Oil Free' and 'Traceable No Deforestation Policy'. Their website also provides links to purchase 'palm free' products.

The Palm Oil Action Group is a collective of Australian NGOs including the Rainforest Information Centre, Australian Orangutan



Project, Friends of the Earth, and the Borneo Orangutan Survival Foundation.

The focus of their campaigns has been to encourage manufacturers who use palm oil to join the RSPO, source 100 percent certified sustainable oil, and to label on products. The group also lobbies for mandatory palm oil labelling. However, much of their website information is more than 2 years old, including a 2011 'Palm Oil Free Shopping Guide' and 2012 'Palm Oil Shopping Guide'.

Greenpeace Australia Pacific posted 'Palm Oil: Who's still trashing our forests' on 3 March 2016 under their Forests campaigns.¹⁷ However, this was a repost of Greenpeace Indonesia's blog entry of the same name, published to coincide with the release of their latest Palm Oil Scorecard, a survey of progress by 14 global consumer goods manufacturers with 'no deforestation' policies in place. There does not appear to be much activity on palm oil by the local arm of Greenpeace.

¹⁷ <https://www.greenpeace.org.au/blog/palm-oil-whos-still-trashing-forests/> (accessed on 24 March 2016)

PRINCIPLES TO CONSIDER IN SUSTAINABLE SOURCING OF PALM PRODUCTS

Some principles to consider for those companies committed to, or that wish to commit to improvement on the sustainable sourcing of palm oil, palm kernel oil and their chemically synthesised derivatives (“palm products”), are outlined below.

Commitment to sustainable sourcing of palm products. In practice, this currently means a commitment to sourcing palm products that have been certified through the RSPO. This may be highly complex for chemically synthesised palm derivatives, and involve a commitment to investing in tracability throughout the supply chain – potentially comprising plantations, mills, refineries, fractioners, traders and oleo-chemical manufacturers.

Commitment to continuous improvement. This means moving towards sourcing from physical supply chains i.e. Identity Preserved, Segregated or Mass Balance for all palm products. GreenPalm certificates are intended

to provide an interim measure to support the production of sustainable palm and palm kernel oil by covering any volume of palm oil that is not sourced from physical certified supply chains, i.e. no actual certified sustainable palm product is actually being used.

Setting quantitative, time-bound targets for sourcing sustainable palm products. This means identifying the amount of sustainable palm product that will be used, the supply chain model (i.e. Identity Preserved, Segregated, Mass Balance or GreenPalm) and the timeframes involved.

Measuring progress. Progress against targets may need to be measured regularly using consistent, well-defined metrics.

Encouraging best practice in sustainable sourcing of palm products by all suppliers. This may mean providing information and education to supply chain players, and driving behaviour change through buying power.

Transparency. This may include a published position on palm oil, and published progress against any goals or timelines set.

Appendix A: Name and structure of predominant fatty acids in palm oil and palm kernel oil

Common name	Formula	Fatty acid*
caprylic	$\text{CH}_3(\text{CH}_2)_6\text{CO}_2\text{H}$	8:0
capric	$\text{CH}_3(\text{CH}_2)_8\text{CO}_2\text{H}$	10:0
lauric	$\text{CH}_3(\text{CH}_2)_{10}\text{CO}_2\text{H}$	12:0
myristic	$\text{CH}_3(\text{CH}_2)_{12}\text{CO}_2\text{H}$	14:0
palmitic	$\text{CH}_3(\text{CH}_2)_{14}\text{CO}_2\text{H}$	16:0
stearic	$\text{CH}_3(\text{CH}_2)_{16}\text{CO}_2\text{H}$	18:0
oleic	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H}$	18:1
linoleic	$\text{CH}_3(\text{CH}_2)_4(\text{CH}=\text{CHCH}_2)_2(\text{CH}_2)_6\text{CO}_2\text{H}$	18:2

*Carbon chain length: number of unsaturated bonds

Appendix B: Some cosmetic uses of the derivatives of palm oil and palm kernel oil

Derivative (INCI name)	Derivation process ¹⁸	Function
Palm kernel acid	Chemical reaction: hydrolysis	opacifying agent surfactant – cleansing agent surfactant – emulsifying agent
Palm kernel alcohol	Chemical reactions: hydrolysis esterification (methyl ester) hydrogenation	emulsion stabiliser surfactant – foam booster viscosity increasing agent – aqueous and non-aqueous
Palm kernelamide DEA	Chemical reactions: hydrolysis amidation (diethanolamine)	surfactant – foam booster viscosity increasing agent – aqueous
Palm kernelamide MEA	Chemical reactions: hydrolysis amidation (ethanolamine)	surfactant – foam booster viscosity increasing agent – aqueous
Palm kernelamide MIPA	Chemical reactions: hydrolysis amidation (isopropanolamine)	surfactant – foam booster viscosity increasing agent – aqueous
Palm kernelamidopropyl betaine	Chemical reactions: hydrolysis amidation (dimethylaminopropylamine) betaine formation (chloroacetic acid)	antistatic agent hair conditioning agent skin conditioning agent surfactant – cleaning agent surfactant – foam booster viscosity increasing agent – aqueous
Palm kernel/coco glucoside	Chemical reactions: hydrolysis esterification hydrogenationglucosidation	hair conditioning agent skin conditioning agent
Palm kernel glycerides	n/a	skin conditioning agent – emollient
Palm kernel oil polyglyceryl-4 esters	Chemical reactions: hydrolysis esterification (polyglycerol-4)	opacifying agent surfactant – emulsifying agent surfactant – solubilising agent
Palm kernel wax	n/a ¹⁹	skin conditioning agent - occlusive

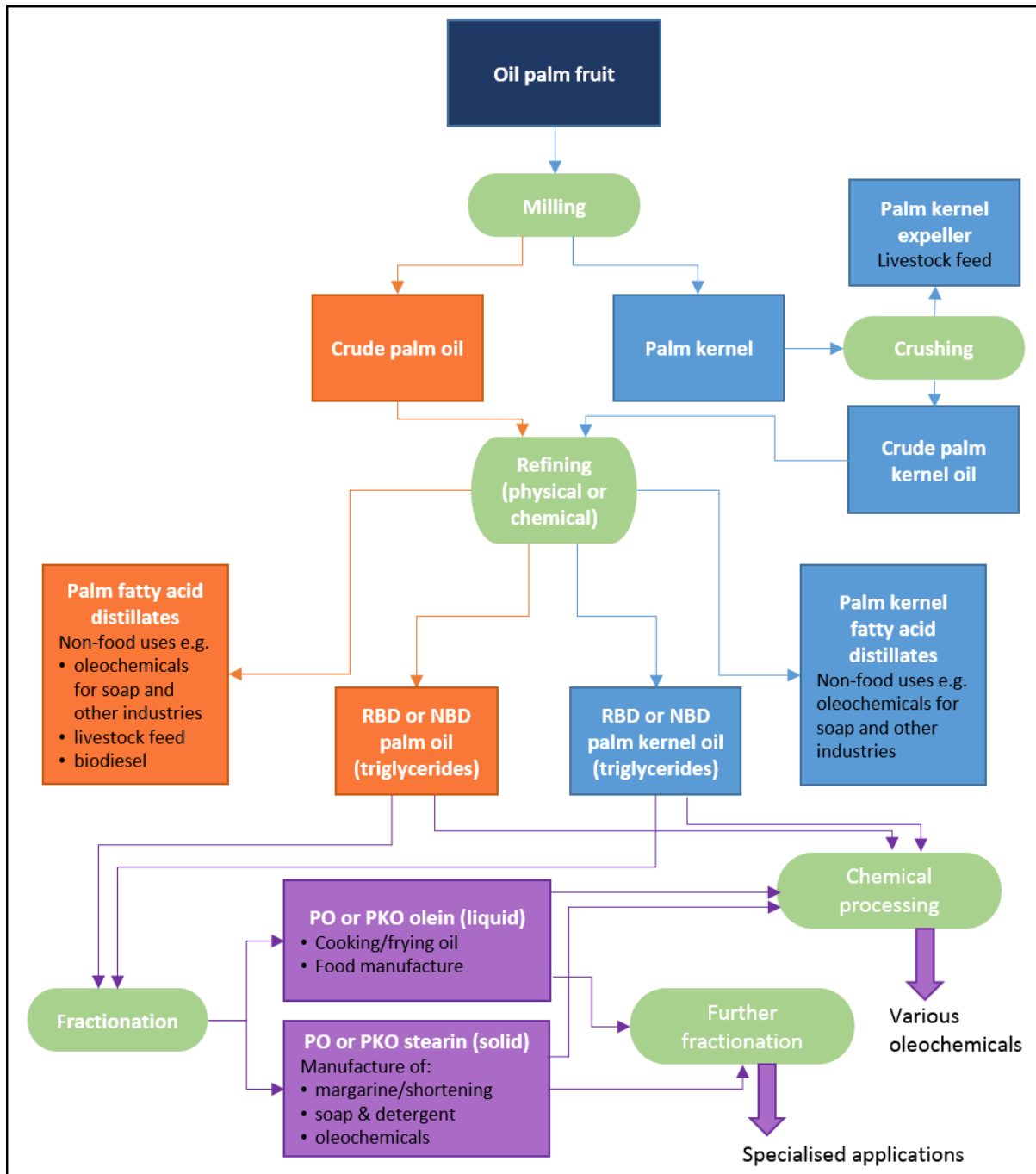
¹⁸ From refined palm oil, refined palm kernel oil, or refined fractions thereof

¹⁹ Predominantly palm kernel stearin fraction – may also undergo chemical reaction (hydrogenation)

Palm oil glycereth-8 esters	Chemical reactions: hydrolysis esterification (glycereth-8)	skin conditioning agent – emollient surfactant – emulsifying agent
Palm oil oleyl esters	Chemical reactions: hydrolysis esterification (oleyl alcohol)	skin conditioning agent – emollient skin conditioning agent – humectant
Palm oil PEG-8 esters	Chemical reactions: hydrolysis esterification (PEG-8)	skin conditioning agent – emollient surfactant – emulsifying agent
Palm oil polyglyceryl-3,-4,-5,-6 esters	Chemical reactions: hydrolysis esterification (polyglycerols)	skin conditioning agent – emollient surfactant – emulsifying agent

Source ('Derivative' and 'Function' columns only): International Cosmetic Ingredient Dictionary and Handbook, Fifteenth Edition 2014, Volumes 1 and 2. Published by Personal Care Products Council, Washington D.C., USA.

Appendix C: Overview of palm oil and palm kernel oil processing



RBD: Refined, bleached, deodorised – product of physical refining

NBD: Neutralised, bleached, deodorised – product of chemical refining

PO: palm oil

PKO: palm kernel oil