

HOW THE PALM OIL INDUSTRY IS

COOKING THE CLIMATE

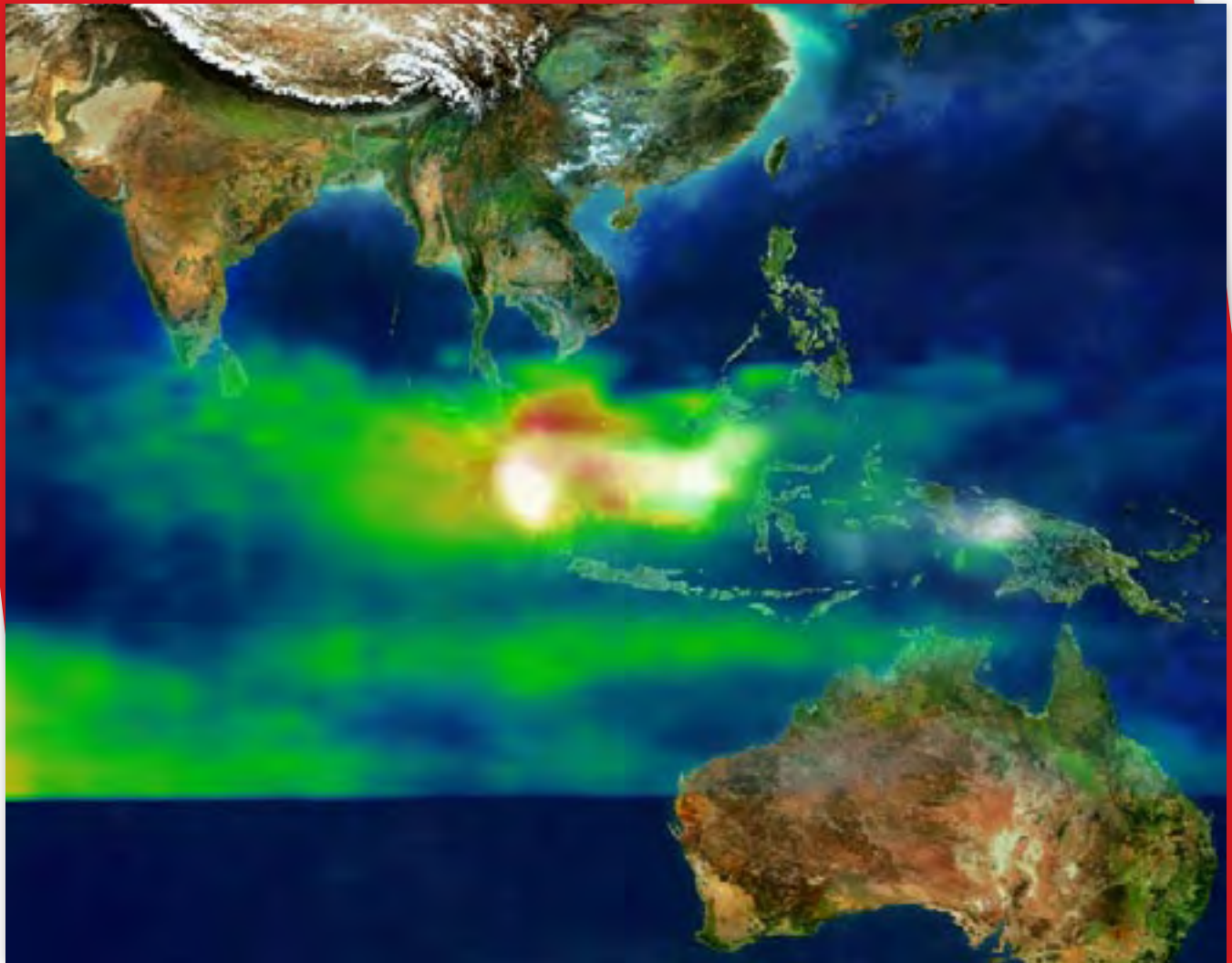




'Climate change is market failure on the greatest scale the world has seen. It results from the fact that the costs of greenhouse gas emissions are not paid for by those who create the emissions.'

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1997: HAZE OVER INDONESIA

Uncontrollable fires in forests and peatlands during 1997 released up to 2.57Gt of carbon, a volume equivalent to up to 40% of the mean annual global carbon emissions from fossil fuels during the period.

EXECUTIVE SUMMARY

INDONESIA'S PEATLAND CARBON STOCKS PLUMMET AS PALM OIL DEMAND SOARS

Every year, 1.8 billion tonnes (Gt) of climate changing greenhouse gas (GHG) emissions are released by the degradation and burning of Indonesia's peatlands – 4% of global GHG emissions from less than 0.1% of the land on earth.

This report shows how, through growing demand for palm oil, the world's largest food, cosmetic and biofuel industries are driving the wholesale destruction of peatlands and rainforests. These companies include Unilever, Nestlé and Procter & Gamble, who between them account for a significant volume of global palm oil use, mainly from Indonesia and Malaysia.

Overlaying satellite imagery of forest fires with maps indicating the locations of the densest carbon stores in Indonesia, Greenpeace researchers have been able to pinpoint carbon 'hotspots'. Our research has taken us to the Indonesian province of Riau on the island of Sumatra, to document the current activities of those involved in the expansion of palm oil. These are the producers who trade with Unilever, Nestlé and Procter & Gamble, as well as many of the other top names in the food, cosmetic and biofuel industries.

The area of peatland in Riau is tiny: just 4 million hectares, about the size of Taiwan or Switzerland. Yet Riau's peatlands store 14.6Gt of carbon – if these peatlands were destroyed, the resulting GHG emissions would be equivalent to one year's total global emissions.

Unless efforts are made to halt forest and peatland destruction, emissions from these peatlands may trigger a 'climate bomb'.

FORESTS AS TICKING CLIMATE BOMBS

Forest ecosystems currently store about one and a half times as much carbon as is present in the atmosphere. Without drastic cuts in GHG emissions, climate change – which is in part driven by forest destruction – may soon tip these carbon stores into sources of emissions. Resulting temperature increase could disrupt ecosystems in ways that provoke yet more greenhouse emissions, potentially leading to further acceleration of climate change.

Conclusions from the world's leading climate scientists in the Intergovernmental Panel on Climate Change (IPCC)

show that large cuts in GHG emissions are needed rapidly. Time is desperately short. The greater the delay in realising emissions reductions, the higher the financial, social and ecological costs will be.

INDONESIA'S RAINFORESTS AND PEATLANDS IN THE POLITICAL SPOTLIGHT

Indonesia offers a critical example of why GHG emissions arising from deforestation and land-use change need to be dealt with at the international level, by governments and corporations.

Indonesia holds the global record for GHG emissions through deforestation, putting it third behind the USA and China in terms of total man-made GHG emissions. During the last 50 years, over 74 million hectares of Indonesia's forests have been destroyed – logged, burned, degraded, pulped – and its products shipped round the planet.

Unlike industrialised country (Annex I) signatories to the Kyoto climate treaty, Indonesia – as a developing country – is not required to set a target to reduce its GHG emissions. Consequently, since the Kyoto Protocol provides no incentives for preventing the destruction of tropical forests, the expansion of palm oil into carbon-rich landscapes such as peatlands and rainforests makes short-term economic sense but no ecological sense.

In December 2007, negotiating teams from governments around the world will gather in Bali, Indonesia to thrash out an agreement that will ideally lead to an international plan to deliver deep cuts in global GHG emissions, as an extension of the current Kyoto climate treaty.

These climate negotiations are first steps toward international political measures to tackle deforestation. Meanwhile, global industry continues business-as-usual, and is expanding into the world's rainforests.

PALM OIL'S BOOM!

NASA's climate scientists warn that 'continued rapid growth of CO₂ emissions and infrastructure for another decade' may make halting high-risk increase in global temperatures 'impractical if not impossible'.

'Our actions now cast their shadow far into the future. [Climate policy needs to] have the economics of risk at its core; and go beyond the marginal changes which are the usual daily fare of economists.'

Nicholas Stern, former Chief Economist of the World Bank

A report published by the United Nations Environment Programme (UNEP), in 2007, acknowledges that palm oil plantations are now the leading cause of rainforest destruction in Malaysia and Indonesia.

Indonesia has destroyed over 28 million hectares of forest since 1990, largely in the name of land conversion for plantations. Yet the area of oil palm or pulp wood plantations established in this period was only 9 million hectares. This clearly implies that most of the companies obtained permits to convert the forest only to gain access to the timber. Rainforest continues to be destroyed for plantations because of the financial value of the timber.

Oil palm plantations feed a growing global demand for cheap vegetable oil used in the production of food, cosmetics and fuel. Compared to the year 2000, demand for palm oil is predicted to more than double by 2030 and to triple by 2050.

A handful of powerful players control much of the international trade in palm oil from Indonesia, among them Cargill, the world's biggest private company, the ADM-Kuok-Wilmar alliance, currently the world's biggest biofuels manufacturer and Synergy Drive, the Malaysian government controlled company that is soon to become the world's biggest palm oil conglomerate.

Following business-as-usual logic, industry's current expansion strategy – including taking advantage of concern about climate change to push palm oil as a source of biodiesel – casts an ominous shadow over our ability to cut emissions.

Much of the current and predicted expansion oil palm plantations is taking place on peatlands which are among the world's most concentrated carbon stores. Ten million of the 22.5 million hectares of peatland in Indonesia have already been cleared of forest and have been drained, resulting in a substantial and continuing increase in GHG emissions as peat soils dry out, oxidise and even burn.

GHG emissions from peatlands are set to rise by at least 50% by 2030 if predicted expansion proceeds.



RIAUI: A LIT FUSE

In early 2007, through satellite monitoring, Greenpeace identified fire hotspots in Riau Province.

Comparing and overlaying maps of peatlands and forest concessions signalled there was significant overlap between the location of fires, oil palm concessions and peatlands.

The peat soils of this once heavily forested province of 9 million hectares have the highest concentration of carbon stored per hectare of anywhere in the world. The area of peatland involved is small: just 4 million hectares – about the size of Taiwan or Switzerland. But they store 14.6Gt of carbon, or 40% of Indonesia's peatland carbon.

Riau's huge carbon store is at high risk from drainage, clearance and ultimately from fire. Destroying these peatlands could release GHG emissions equivalent to one year's total global emissions or to five years' emissions from all fossil-fuel power plants in the world.

A quarter of Indonesia's oil palm plantations are located in Riau. By 2005, 1.4 million hectares of oil palm plantation had been established in the province. Data suggest that over one-third of oil palm concessions in Riau are sited on peat.

Riau is facing further expansion in palm oil due to its available infrastructure. A further 3 million hectares of peatland forests are earmarked for conversion over the next decade. Where once there was mostly forest, soon half of Riau will be covered in oil palms.

According to a 2001 report by the European Union and the Indonesian Ministry of Forestry, 'It is inevitable that most new oil palm will be in the wetlands, as the more "desirable" dry lands of [Sumatra] are now occupied.'



DUTA PALMA: THE OIL PALM INDUSTRY'S RECIPE FOR CLIMATE DISASTER

The privately-held Duta Palma group is a company with major operations in Riau. It is one of Indonesia's ten-largest palm oil refiners.

Duta Palma now controls about 200,000 hectares of land, over half of it in Riau. This landbank overlaps significant areas of deep peat, which are theoretically protected under Indonesian law.

Greenpeace analysed satellite data from the period 2001-2007. This showed significant forest clearance within several of Duta Palma's contiguous concessions in Riau. According to official maps, nearly half of the total area of the concessions is on peatlands with a depth greater than 2 metres. One area is officially designated as protected peatlands, ie more than 3 metres deep.

Measurements made by Greenpeace of the peat depth in October 2007 show that the concessions lie on very deep strata of peat ranging from 3.5 metres in depth outside the boundary of the concession to more than 8 metres in the middle of the concession area. Therefore, the entire area should be protected under Indonesian law.

Additional field investigations by Greenpeace confirms extensive peat drainage, including construction of large canals, and clear-cutting of rainforests is happening across these concessions.

Duta Palma is also involved in the destruction of habitat critical to endangered and protected species including the critically endangered Sumatran tiger.

WHO CONTROLS THE TRADE?

ROUNDTABLE ON SUSTAINABLE PALM OIL

The Roundtable on Sustainable Palm Oil (RSPO) is a high profile initiative chaired by Unilever. Its members include major companies along the supply chain from plantations through to commodities traders, including Cargill and ADM, to the world's food giants, including Cadbury's, Nestlé and Tesco. Together they represent 40% of the global production and use of palm oil.

On-the-ground investigations by Greenpeace reveal that RSPO members are dependent on suppliers that are actively engaged in deforestation and the conversion of peatlands.

THE FOOD GIANTS

The RSPO board president Unilever is a major player in the global palm oil trade. It uses around 1.2 million tonnes of palm oil every year, or about 3% of total world palm oil production, most of which originates from Indonesia and Malaysia. It uses palm oil in brands such as Flora margarine.

Other leading brands including KitKat, Pringles, Philadelphia cream cheese and Cadbury's Flake and leading companies including Gillette, Burger King and McCain are complicit in the expansion of palm oil at the expense of Indonesia's peatlands.

THE COMMODITY GIANTS

Much of the global trade in Indonesian palm oil is handled by traders based in Singapore. Some of the largest Singapore-based commodity traders are RSPO members, including the ADM-Kuok-Wilmar alliance, Cargill, Golden Hope and Sinar Mas.

The traders are also processors, blending palm oil which originates from deforestation and peatland destruction through their refineries and biofuel facilities.

The companies' control over the entire palm oil supply chain – from plantations in Indonesia to refined palm oil or biofuel – means that they are in a decisive position to affect and change the market.

One RSPO member, a major food retailer, has complained to Greenpeace that efforts towards sustainability are hampered because: '...the global palm oil industry is unable at present to provide anyone with evidence of traceability beyond processor, to plantation level'.

Consequently, consumer companies who manufacture products using palm oil have virtually no way of knowing whether or not the palm oil they are using is from rainforest destruction and conversion of peatlands.

Through carrying on business as usual, the commodity trade and other big players are not taking the urgent action necessary to abandon destructive and socially unjust practices linked to the industry's expansion.

'The draining of wetlands to produce any type of biofuel would produce a loss of stored carbon that would take hundreds of years to make up through the biofuels' annual greenhouse gas savings.'

European Commission, 2007

BIOFUELING RAINFOREST DESTRUCTION

The scale of global diesel consumption dwarfs currently available feedstocks for biodiesel production. Substituting even 10% of worldwide demand for diesel fuel for road transport would require more than three-quarters of total current global soya, palm and rapeseed oil production.

Biofuels have a relatively low financial value compared to other agricultural products. Therefore, biodiesel is generally made from the cheapest of the bulk oil crops: soya, palm and rapeseed. Palm is far more productive per hectare than either soya or rapeseed and is the most significant vegetable oil in the world, accounting for 30% of world edible oil production in 2006/7.

Feeding the growing demand for biodiesel is likely to take place through expanding palm oil plantations in Indonesia. Big commodity traders are already planning significant expansion in the biodiesel infrastructure. Once this is established, it will feed off forest destruction and fuel not only cars but climate change.

Supplying Europe's demand for biofuels is being driven by binding EU targets covering transport fuels. In early 2007, the EU Summit endorsed a minimum target for biofuels to constitute 10% of transport fuels by 2020. This almost doubles the target of the 2003 Biofuel Directive of a 5.75% contribution by 2010. The increased target is dependent on production being both 'cost effective' and 'sustainable'.

Diesel fuel currently meets around 60% of the road transport fuel demand in Europe. Europe's diesel fuel consumption was 172 million tonnes (Mt) in 2005. According to one RSPO member company, there is insufficient rapeseed available to meet EU targets. Of the alternatives, 'vegetable oil sourced from palm oil is among the most widely and commercially available'. The company predicts a growth in the demand for biodiesel of 52Mt between 2005 and 2030 in the EU alone as road transport fuel demand continues to rise.

Meeting this projected growth in demand for vegetable oil through palm oil, for example, would require more than 15 million hectares of mature oil palm plantation. This is nearly three times the acreage that was under oil palm in Indonesia in 2005.

Many other countries from oil-dependent regions are turning to biofuels from Indonesia's rainforests. This trade amounts

to emissions transfer, not emissions reduction. GHG emissions associated with palm oil production, such as forest clearance, are attributed to the producer country.

The Chinese government expects that biofuels will meet 15% of its transport fuel demand by 2020. India has set a target of securing 20% of its diesel fuel from biofuels by 2012.

Greenpeace estimates that current plans for biodiesel refineries in Indonesia will create an additional biodiesel production capacity of up to 9Mt a year, including a 5Mt 'mega-project' planned by Sinar Mas.

To feed this desire for an expansion in capacity, companies are thinking ahead and turning their attention to the region of Papua on the island of New Guinea – the last great expanse of rainforest in Southeast Asia. There is already evidence of large-scale land-grabbing in the name of biofuel, with one company alone reportedly laying claim to nearly 3 million hectares of forest.

TICK TICK TICK ... TIME FOR ACTION

Time is running out.

The debate is not whether we need to reduce emissions from fossil fuels in the industrialised world or whether we should stop deforestation in the remaining forests of the developing world. The inescapable reality is that we must do both, and now.

The increasing worldwide demand for vegetable oil for food, combined with current land-grabbing by biofuel companies – many of them RSPO members – is significantly increasing pressure on the world's threatened rainforests and other vulnerable habitats. Continued clearance of tropical rainforests, and their replacement with agricultural commodity crops like palm oil, seems inevitable unless action is taken now by industry and governments.

MAKING BIG EMISSIONS CUTS FAST: HALTING DEFORESTATION

Tropical rainforest destruction accounts for about one-fifth of global GHG emissions – more than the world's cars, lorries and aeroplanes combined. Destruction of Indonesia's peatlands alone accounts for almost 4% of global annual GHG emissions. Curbing tropical deforestation is one of the quickest, most effective ways to cut GHG emissions.

WHERE CAN BIG EMISSIONS BE CUT QUICKLY AND COST EFFECTIVELY?

Cut one:
Cut global deforestation:
annual emissions savings – up to 2Gt CO₂

According to an IPCC report, up to 2Gt CO₂ (equivalent of up to 4% of current annual GHG emissions) can be cut cost effectively. The report puts the cost for making these emissions savings at up to \$100/tonne CO₂.

Significantly, this figure does not include potential to halt emissions from peatland and other bog fires.

Cut two:
Stop Indonesian peatland fires, establish a moratorium on peatland conversion:
annual emissions savings – 1.3Gt CO₂

The emissions from Indonesia's peatland fires largely represent new expansion and peatland clearance. The best way to avoid these emissions is to stop further conversion of peat swamp forests. Since use of fire for forest or agricultural clearance is illegal, as is degradation of deep peat, the only cost is that of law enforcement and improved governance.

Cut three:
Rehabilitate Indonesia's degraded peatlands:
annual emissions savings – 0.5Gt CO₂

Avoiding emissions from the ongoing decay of Indonesia's degraded peatlands poses a cost effective opportunity to make rapid emissions reductions. The area involved is miniscule – about 10 million hectares or less than 0.1% of the earth's land surface. One project being pursued by Wetlands International aims to rehabilitate 43,500 hectares of degraded peatlands in Central Kalimantan, avoiding the emission of 3.4Mt of CO₂ a year, for a one-off investment of 500,000 (this equates to 0.15/tonne). This is small change in global climate change terms.

Total cuts:
Potential annual emissions savings: up to 3.8Gt CO₂. This equates to nearly 8% of current annual GHG emissions.

STOP THE PROBLEM: ZERO DEFORESTATION

Moratorium on forest clearance and peatland degradation.

START THE SOLUTION: CUT ONGOING EMISSIONS

Rehabilitate degraded peatland areas with natural and native flora.

START THE SOLUTION: CLIMATE PROTECTION

Prioritise protection of remaining peat swamp forests and other forest areas with high carbon storage capacity, biodiversity values and benefits for indigenous peoples and other local communities.

Agree a global funding mechanism to reduce emissions from deforestation and make this a central part of the next phase of the Kyoto Protocol (post-2012) agreement on climate change.

Make available international funds to help countries take immediate action to reduce their emissions from deforestation: agree a global funding mechanism to transfer money from rich to poor countries for forest protection.





COOKING THE CLIMATE



This report shows how trade in palm oil by some of the world's food giants and commodity traders is helping to detonate a climate bomb in Indonesia's rainforests and peatlands.

Efforts to prevent dangerous climate change will not succeed unless this and other industries driving forest destruction are brought under control.

Every year, 1.8 billion tonnes (Gt) of climate changing carbon dioxide (CO₂) emissions are released by the degradation and burning of Indonesia's peatlands¹ – from less than 0.1% of the land on earth.² These greenhouse gas (GHG) emissions are comparable to the total reduction in annual emissions required under the Kyoto Protocol from Annex 1 industrialised nations.³

Successfully tackling climate change demands big cuts in emissions from burning fossil fuels. And this has to happen fast. Stopping deforestation also needs to be a priority.

Greenpeace has investigated forest destruction at carbon 'hotspots' in Indonesia by combining satellite imagery of forest fires with maps showing where the most dense carbon stores are. This research has taken us to Riau province on the island of Sumatra.

The peat soils of this once heavily forested province of 9 million hectares have the highest concentration of carbon stored per hectare of anywhere in the world. The area of peatland involved is tiny: just 4 million hectares⁴ – about the size of

Taiwan or Switzerland.⁵ Yet Riau's peatlands store 14.6Gt of carbon.⁶ If these peatlands are destroyed, the resulting GHG emissions would be equivalent to one year's total global emissions of carbon dioxide, or five years' emissions from all fossil-fuel power plants in the world.⁷

Riau is also home to a quarter of Indonesia's oil palm plantations,⁸ and another 3 million hectares are earmarked for conversion over the next decade.⁹ Where once there was mostly forest, soon half of Riau will be covered in oil palms.

Riau's carbon stores are at risk – indeed, they could all go up in smoke if deforestation and degradation continue unabated.

Despite Indonesian government assurances and industry claims, our on-the-ground investigations confirm that oil palm companies continue to actively clear natural forest, and drain and burn deep peat (peat with a depth greater than 2 metres) that underlays these forests.

What's driving this rainforest destruction?
Global demand for palm oil.

So Greenpeace has gone to the world's major traders and users of palm oil – companies like Cargill, Unilever and Nestlé – to find out who supplies them, and what their strategy is for dealing with the links between palm oil, deforestation and climate change.



These companies are all members of the Roundtable on Sustainable Palm Oil (RSPO). Headed by Unilever, the RSPO is a high-profile trade initiative established to 'clean up' the palm oil trade. Its members – including growers like Golden Hope, traders like Cargill, manufacturers like Nestlé and Johnson & Johnson, retailers like Tesco and Carrefour¹⁰ – account for 40% of global production and use of palm oil.¹¹

Cargill, a palm oil supplier, refused to comment on its trade links, claiming: 'our business with [our customers] must remain confidential'.¹² Unilever's response to the devastation linked to palm oil expansion was to say that the company 'hoped suppliers would see sense'.¹³ Nestlé responded that 'most of our suppliers are members of the RSPO and as such have declared their commitment to sustainable sourcing'.¹⁴

By painstakingly piecing together diverse evidence, we have traced the links between Riau's peatland destruction and leading global food, cosmetic and retail brands, including Unilever, one of the world's largest food giants, and Nestlé, one of the world's leading chocolate manufacturers.

Our investigation has revealed the role of commodity traders including Cargill and ADM-Kuok-Wilmar, who control over a third of the Indonesian trade in palm oil. They blend palm oil from deforestation and conversion of peatlands into an undifferentiated supply for the global market, leaving little trace of their sources on the ground.

Further, these traders are investing heavily in infrastructure to allow palm oil to service projected global growth in demand for biofuel, in defiance of the evidence that producing vegetable oil by clearing rainforests and draining peatlands produces considerably more CO₂ emissions than biofuel use can avoid.¹⁵ Indonesia already has the highest level of climate changing emissions linked to deforestation of any country.¹⁶ Without clear market and political measures that preclude the use of palm oil from deforestation, this new market puts additional pressure on Indonesia's carbon-rich rainforests and peatlands. For Kyoto Annex I industrialised countries, which have GHG emissions reduction targets, this is clever carbon accounting, putting the blame on Indonesia for products they consume. Effectively, emissions are not reduced but transferred from the car in industrialised countries to the forest.

The RSPO and its members have taken few meaningful steps to end the devastation and injustice linked to the industry and its expansion. By dragging out and complicating its 'sustainability' process, many in the industry are using the RSPO to cover their backs, putting off urgent action while the destruction continues.

While some RSPO member food manufacturers and retailers want to take action to avoid palm oil from deforestation, Unilever, Cargill, Nestlé and other powerful companies carry on with business as usual.

By driving the expansion of oil palm, these companies are effectively holding the climate to ransom.

TICK TICK TICK...

Time is running out for the climate.

Climate change is undoubtedly the most serious environmental threat currently facing the planet. Leading climate scientists warn that if we allow average global temperatures to rise above 2° Celsius, up to 30% of plant and animal species face increased risk of extinction, and about 15% of ecosystems are likely to be seriously affected.¹⁷ A series of reports released during 2007 by the Intergovernmental Panel on Climate Change (IPCC) acknowledge that climate change is already having serious impacts.

If business continues as usual, we are on track to see a much higher average temperature rise, with significant extinctions and major coastal flooding, as well as extensive damage to agriculture and water supplies.¹⁸

At a certain point, rising global temperatures will tip the planet's ecological balance. Temperature increase will disrupt ecosystems in ways that provoke feedback of more GHG emissions and a catastrophic acceleration of climate change. In the scientific language of the IPCC: 'Synergistic interactions are likely to be detrimental.'¹⁹

Carbon sinks of global significance, such as tropical rainforests and peatlands could become sources of GHG emissions.²⁰ Every ecosystem that tips from a sink to a source increases the likelihood that another will tip – like a series of ever more powerful climate bombs being detonated.

The clock is ticking.

Keeping the global temperature increase below 2°C (compared to pre-industrial levels) means global emissions of GHGs must peak by 2015 and by this time the world must be set on track for drastic reductions in overall emissions.²¹

Concerted action by individuals, international industry and political decision makers is imperative.

FORESTS AS TICKING CLIMATE BOMBS

The destruction of the world's forests is one of the main causes of climate change, second only to the energy sector.

HOW FOREST DESTRUCTION COULD TIP THE BALANCE

Forest ecosystems currently store about one and a half times as much carbon as is present in the atmosphere.²²

Tropical forests are critical to climate regulation, acting as a global cooling mechanism through the carbon they store, absorb and cycle. However, these natural buffers are rapidly being destroyed by industrial logging and deforestation for plantations and agriculture. The rapid ongoing expansion of these industries is a disaster for the climate.

Deforestation drives climate change through substantial GHG emissions: deforestation – virtually all of it from tropical rainforest destruction – accounts for about a fifth of all global emissions.²³ This is more than the emissions from all the world's cars, trucks, and aeroplanes. Deforestation also means that there is less forest area to reabsorb the carbon emitted to the atmosphere.

Moreover, climate change – in part driven by forest destruction – may soon tip these carbon stores into sources as forests start to die back. According to the IPCC, the carbon stored in forests is vulnerable to both current climate change and agricultural expansion.²⁴

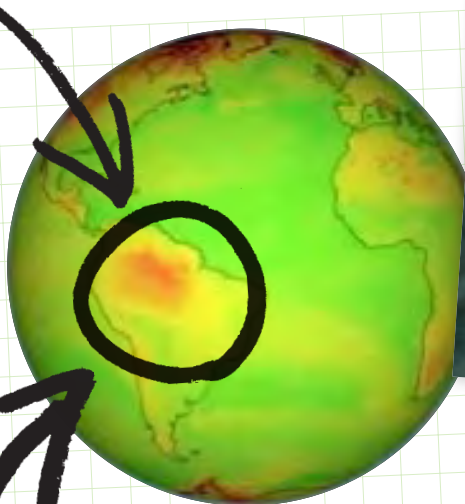
More GHG emissions from deforestation, as well as fossil fuel emissions, increase the risk of reaching an ecosystem tipping point. Such a tip would probably put an end to any chance of stopping catastrophic climate change.

Therefore, addressing deforestation must be a critical component of both political policy and market regulation.

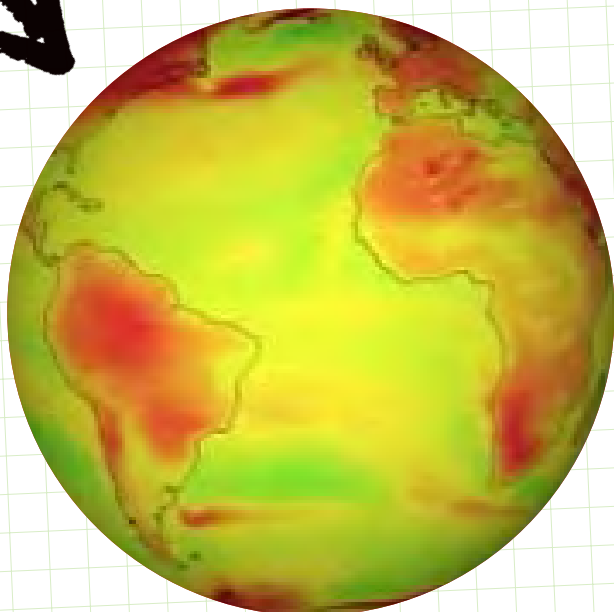
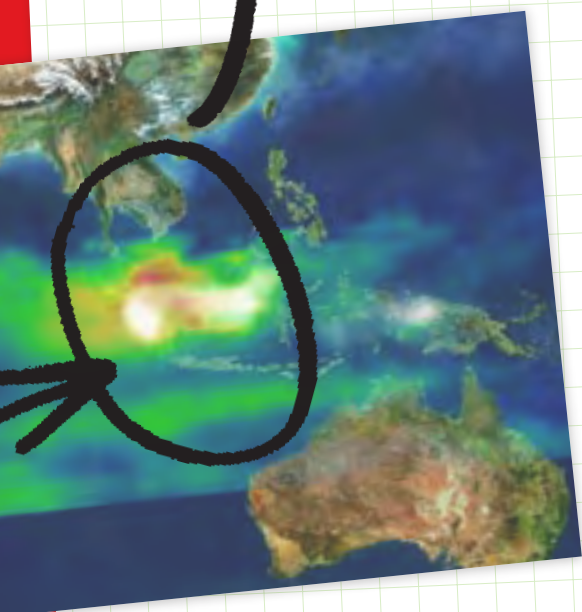
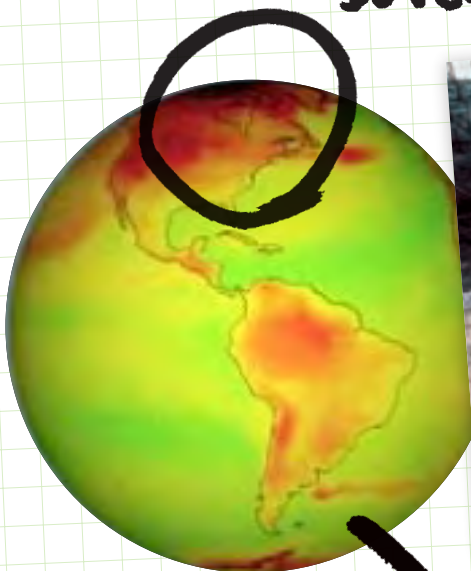


INDONESIA

Amazon



Boreal





INDONESIA'S RECORD-BREAKING DEFORESTATION AND GHG EMISSIONS

Indonesia now has the fastest deforestation rate of any major forested country.²⁶ Losing 2% of its remaining forest every year, Indonesia has earned a place in the Guinness Book of World Records.²⁷ Indonesia also holds the global record for GHG emissions from deforestation, which puts it third behind the USA and China in terms of total man-made GHG emissions.²⁸

Over the last 50 years, over 74 million hectares of Indonesia's forests,²⁹ an area three times the size of the UK,³⁰ have been destroyed – logged, burned, degraded, pulped – and their products shipped round the world.

Oil palm
plantation
in central
Kalimantan



PRIME NUMBERS: INTERNATIONAL COMMITMENT TO TACKLING CLIMATE CHANGE AT BALI

The next phase of the Kyoto Protocol must address deforestation. A strong mandate in Bali is a first critical step towards an international vision and direction that inspires countries to agree and act upon essential measures to reduce collective GHG emissions by 2015.

Such an agreement requires a mechanism – including adequate funding – to drastically reduce deforestation. The reductions from forest protection must be *additional* to cuts in industrial emissions.

PALM OIL EXPANSION IS CREATING A STATE OF EMERGENCY

A 2007 UNEP report recognises that oil palm plantations are now the leading cause of rainforest destruction in Malaysia and Indonesia.³¹

Within Indonesia, virtually all palm oil is currently sourced from Sumatra and Kalimantan. In 2005, three-quarters of the planted area (some 4.2 million hectares) was on Sumatra.³² The Indonesian Palm Oil Research Institute (IOPRI) estimates that two-thirds of all currently productive oil palm plantations involved deforestation.³³

According to World Bank estimates, between 1985 and 1997, 60% of the lowland rainforest of Kalimantan and Sumatra was destroyed,³⁴ with the expansion of oil palm plantations being a major driver.³⁵





On top of Indonesia's existing 6 million hectares of oil palms,³⁶ the country's central government has plans for another 4 million hectares by 2015 dedicated to biofuel production alone.³⁷ Provincial governments are even more ambitious in terms of oil palm expansion, planning for an additional 20 million hectares.³⁸ Of this, nearly 80% of the expansion is planned for Sumatra and Kalimantan, with most of the remainder, some 3 million hectares, in Papua, Indonesia's largest remaining region of intact rainforests. Nearly 40% of the expansion in Sumatra – some 3 million hectares – is earmarked for the province of Riau.³⁹

PALM OIL'S BOOM!

BOOMING DEMAND

Oil palm plantations feed a global demand for cheap vegetable oil used in the production of food, cosmetics and fuel. Demand for palm oil is predicted to more than double by 2030 compared to 2000, and to triple by 2050.⁴¹ Going by current practices in Indonesia, every drop of extra palm oil production means more expansion directly or indirectly into forests and peatlands. More expansion – particularly into peatlands – means more GHG emissions.

Even as European governments attempt to reduce GHG emissions in their own countries, they use ever more palm oil to feed the demand for biofuels for transport and biomass in power stations – up to 1.5 million tonnes (Mt) in 2005.⁴² This use alone equates to the harvest from 400,000 hectares, or 4.5% of global palm oil production.⁴³ Meanwhile, palm oil use in food continues to increase,⁴⁴ partly as food manufacturers shift to using palm oil instead of hydrogenated fats and partly as it replaces other edible oils being used for biodiesel.⁴⁵

INDONESIA'S GREENHOUSE GAS EMISSIONS FROM PEATLAND CONVERSION

The destruction of Indonesia's peat swamp forests is one of the largest sources of GHG emissions in the world.

Indonesia's emissions from destroyed or degraded peatland are around 1.8Gt CO₂ per year,⁴⁶ equivalent to 4% of total GHG emissions,⁴⁷ from less than 0.1% of the world's land surface.⁴⁸

Fires account for about 70% of Indonesia's annual emissions from peatland.⁴⁹ However, even if all further peatland clearance and burning is stopped, substantial emissions from oil palm and pulp wood plantations on degraded peat soils will continue far into the future. Peatland emissions of CO₂ are set to rise by at least 50% by 2030 if predicted expansion goes ahead.⁵⁰

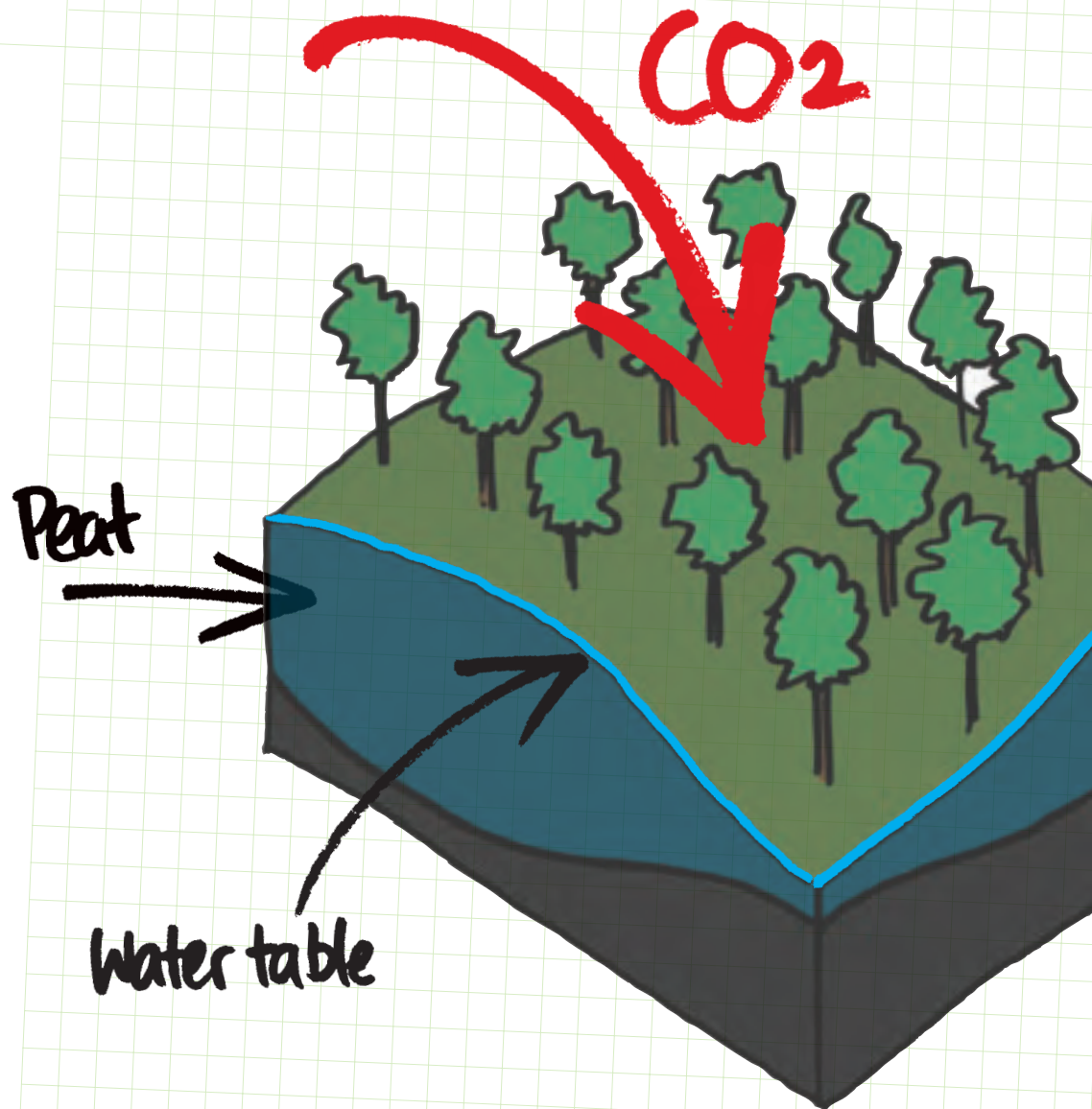
Of the 22.5 million hectares of peatland in Indonesia, some 10 million hectares have already been cleared of forest and drained causing massive ongoing emissions of GHG as the peat soils dry out, oxidise and even burn.⁵¹

According to Wetlands International, production of one tonne of palm oil from peatland results in an average emission of 10 to 30 tonnes of CO₂ from peat decomposition alone. This does not include the emissions from fire or take into account other GHG emissions during the production cycle, such as fertiliser use or methane from refinery waste.

'Deforestation, peatland degradation and forest fires have placed Indonesia among the top emitters of greenhouse gases in the world, among industrial giants the United States and China [...] Global warming will likely cause a vicious cycle by drying up the rainforest and peat swamps, thus increasing the risks of even more intense fires.'







PEAT: A VOLATILE MATERIAL

WHY ARE PEATLANDS IMPORTANT FOR THE CLIMATE?

Peatlands are perhaps the world's most critical carbon stores. Covering just 3% of the earth's land surface,⁵² they nevertheless store somewhere between a fifth and a third of the total carbon contained in the terrestrial biosphere, including all soils and vegetation⁵³ – Wetlands International puts the figure at 528 billion tonnes of carbon.⁵⁴ If all this peat were burnt or fully degraded, it would release 1935Gt of CO₂, or 190 times the current annual global emissions from fossil-fuel power stations.⁵⁵

As a result, preserving peatlands is critical if we are to maintain climate stability. Tropical peat is extremely carbon-rich. Southeast Asian peatlands are estimated to store an average of 60kg of carbon per cubic metre,⁵⁶ and in total they hold an estimated 42Gt of carbon,⁵⁷ equivalent to 15 years' global emissions from fossil-fuel power stations at current levels,⁵⁸ 90% of this is in Indonesia. There are about 22.5 million hectares of peatlands in Indonesia, including peat swamp forests.⁵⁹ These areas contain some of the world's deepest peat deposits – up to 15 metres.⁶⁰

The forest absorbs fresh
Carbon and the peat
beneath it stores
centuries of old carbon



The carbon stored in tropical peatlands is rapidly being released as these habitats are destroyed.⁶¹ Southeast Asian peatlands in particular are being decimated by logging and agricultural expansion, especially for oil palm plantations.

If current trends continue, almost all of Southeast Asia's peatlands could be drained in the coming decades, putting all 42Gt of stored carbon at risk.

CARBON CYCLING AND STORAGE

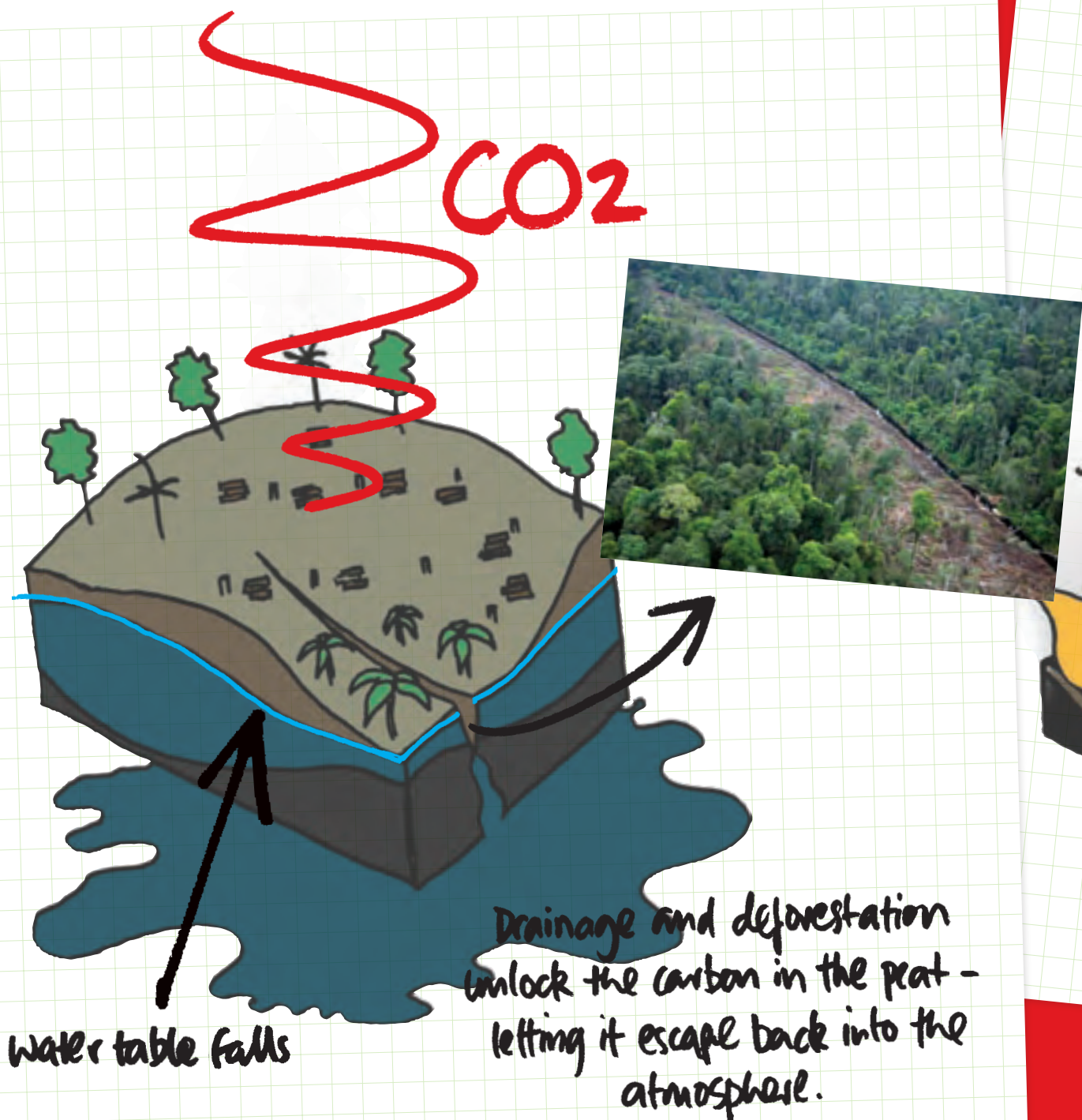
Plants make up an essential part of the global carbon cycle – they take in CO₂ from the atmosphere, store carbon while they live, as a chemical constituent of their tissues and fluids, then return it to the atmosphere through decomposition when they die. In an undisturbed ecosystem this process is largely in balance and as such does not play a role in causing climate change.⁶²

Whole ecosystems such as forests can thus be viewed as long-term carbon stores, holding carbon for centuries or millennia and in huge quantities.⁶³ The separate parts of this store of carbon – individual trees, for example – may die, decay and so release

stored carbon back into the atmosphere, but the ecosystem as a whole retains a store of carbon as each decomposing tree is replaced by a new growing one.

An ecosystem's soils also store carbon. Peat soils, consisting almost entirely of dead vegetation saturated with water, accumulated over hundreds or thousands of years, can store hundreds of tonnes of carbon per hectare.⁶⁴ The micro-organisms which normally carry out decomposition are unable to function due to the limited oxygen content of the water, suspending decomposition and thus storing the carbon indefinitely.⁶⁵ As long as new peat is forming, more carbon is absorbed by the ecosystem than is lost from it, making it a net accumulator of carbon – a carbon sink.⁶⁶ With the right conditions of pressure and heat over thousands or millions of years, peat can turn to coal – fossilised carbon removed from the carbon cycle almost indefinitely unless it is burned.⁶⁷

Destroying natural carbon sinks makes a double contribution to global warming: the stored carbon is released to the atmosphere, and at the same time, the capacity of the ecosystem to absorb new carbon from the atmosphere is curtailed.⁶⁸



COUNTING THE CLIMATE COST OF PEATLAND DESTRUCTION

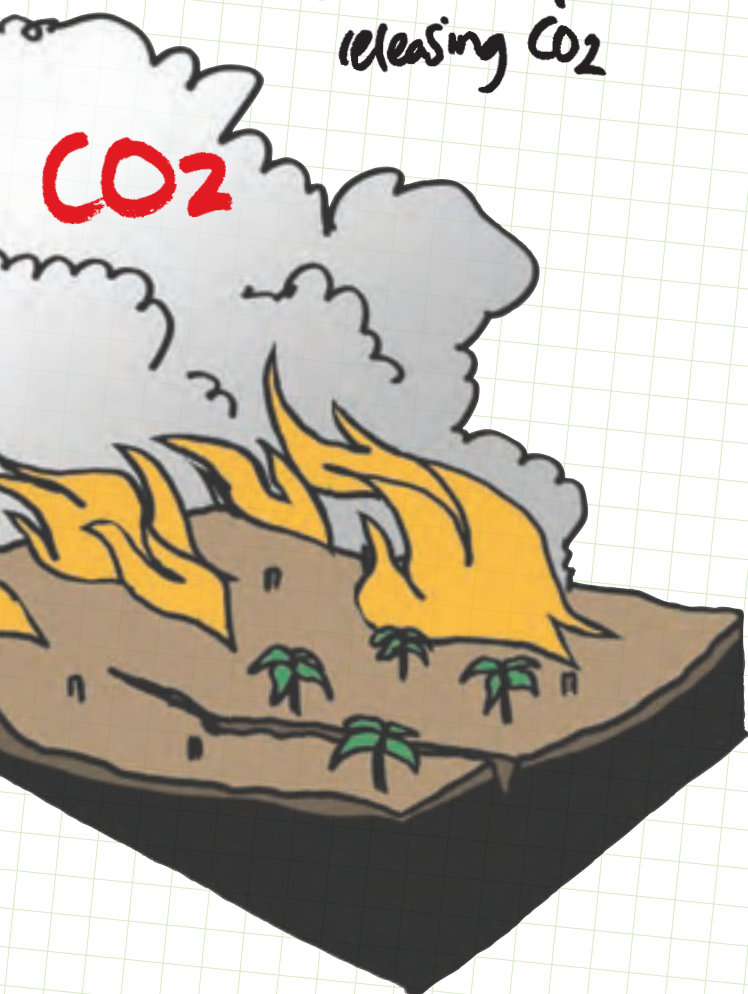
Once peatland is drained, oxygen in the air enables decomposition of the biological material in the peat, releasing the stored carbon as CO₂.⁶⁹ How fast the peat decomposes depends partly on temperature: in the heat of the tropics, decomposition can be up to ten times faster – and annual emissions ten times higher – than in colder regions such as Siberia.⁷⁰ Drainage of tropical peatland to one metre depth results in emissions of 80–100 tonnes of CO₂ per hectare per year, excluding the effects of fire.⁷¹ Emissions continue over a period of decades, tailing off as the carbon store runs out.⁷² Deeper drainage will cause higher emissions. Dry peat is also highly flammable, and once drained, whole areas can catch fire

and can burn for months, producing rapid and massive emissions of greenhouse gases, as well as smog.

In Southeast Asia, large-scale drainage of peatlands takes place to permit logging of the peat swamp forests; logs are also transported in the drainage canals. After logging, drainage continues or even intensifies to enable the establishment of oil palm or pulp wood (acacia) plantations. These tree species require deep drainage, which dries out more peat and so causes more emissions.⁷³ Over a quarter of oil palm plantations are on peat.⁷⁴ Drainage for logging alone is usually less deep, but the effects are significant as it can cover very large areas.⁷⁵

Moreover, peat drainage can have effects on a whole landscape, not just the area targeted. Deep drainage, for

fires incinerate
the dried peat
releasing CO₂



FIRES – SPEEDING UP THE EMISSIONS PROCESS



While degraded tropical forests and peatlands release their stores of carbon over decades, burning releases these stores into the atmosphere rapidly and damages the capacity of the ecosystem to recover.

In 1997/98, Indonesia witnessed an abnormally long, El Niño-influenced, dry season. Uncontrollable fires across millions of hectares of degraded peatlands and forest,⁸¹ released GHG emissions equivalent to up to 40% of annual global emissions from fossil fuels for the 1990s.⁸²

While the practice of burning forest areas has been illegal in Indonesia since 1999,⁸³ in the subsequent decade large peat areas have been burned every year as forest clearance continues unchecked. In 2006 alone, over 40,000 fires occurred in peatland areas in Southeast Asia.⁸⁴

Stopping deliberate burning within concession areas would slow the pace of the alarming GHG emissions from the clearing of peat forests, but would not prevent them. This is because the very process of drainage makes entire peatland landscapes dry, volatile and therefore susceptible to fire. Degrading Indonesia's peatlands puts their carbon stores at risk.

example for oil palm plantations, drains off water from adjoining, still forested areas, and the general water table begins to fall. This effect can extend several kilometres from the intentionally drained area,⁷⁶ resulting in a greatly increased release of CO₂. As a result it is likely that existing calculations of GHG emissions from drained peatlands are underestimated.⁷⁷

Wetlands International estimates CO₂ emissions from peatlands across Southeast Asia between 1997 and 2006 at around 2Gt per year (1,400Mt from fires and 600Mt from decomposition caused by drainage).⁷⁸ 1.8Gt of this – 90% – is estimated to have been from Indonesia. As a result of peatland emissions, Indonesia ranks as the world's third highest emitter of greenhouse gases, after the USA and China.⁷⁹ Brazil ranks fourth, mainly due to deforestation.⁸⁰





RIAU: A LIT FUSE





PALM OIL CONCESSIONS ON PEAT

Riau province in Sumatra has one of the most significant peatland carbon stores anywhere in the world.

The peat forests in Riau account for just over a sixth of Indonesia's peatland area, but due to their great depth they hold more than 40% of the country's peatland carbon store.⁸⁵

The area involved is tiny: just 4 million hectares of peat⁸⁶ – about the size of Taiwan or Switzerland.⁸⁷ This 14.6Gt of carbon stored in Riau's peatlands⁸⁸ is highly vulnerable and could all go up in smoke if deforestation and degradation continues. This would emit the equivalent of one year's global GHG emissions.⁸⁹

In 1982, forests including peat forests covered more

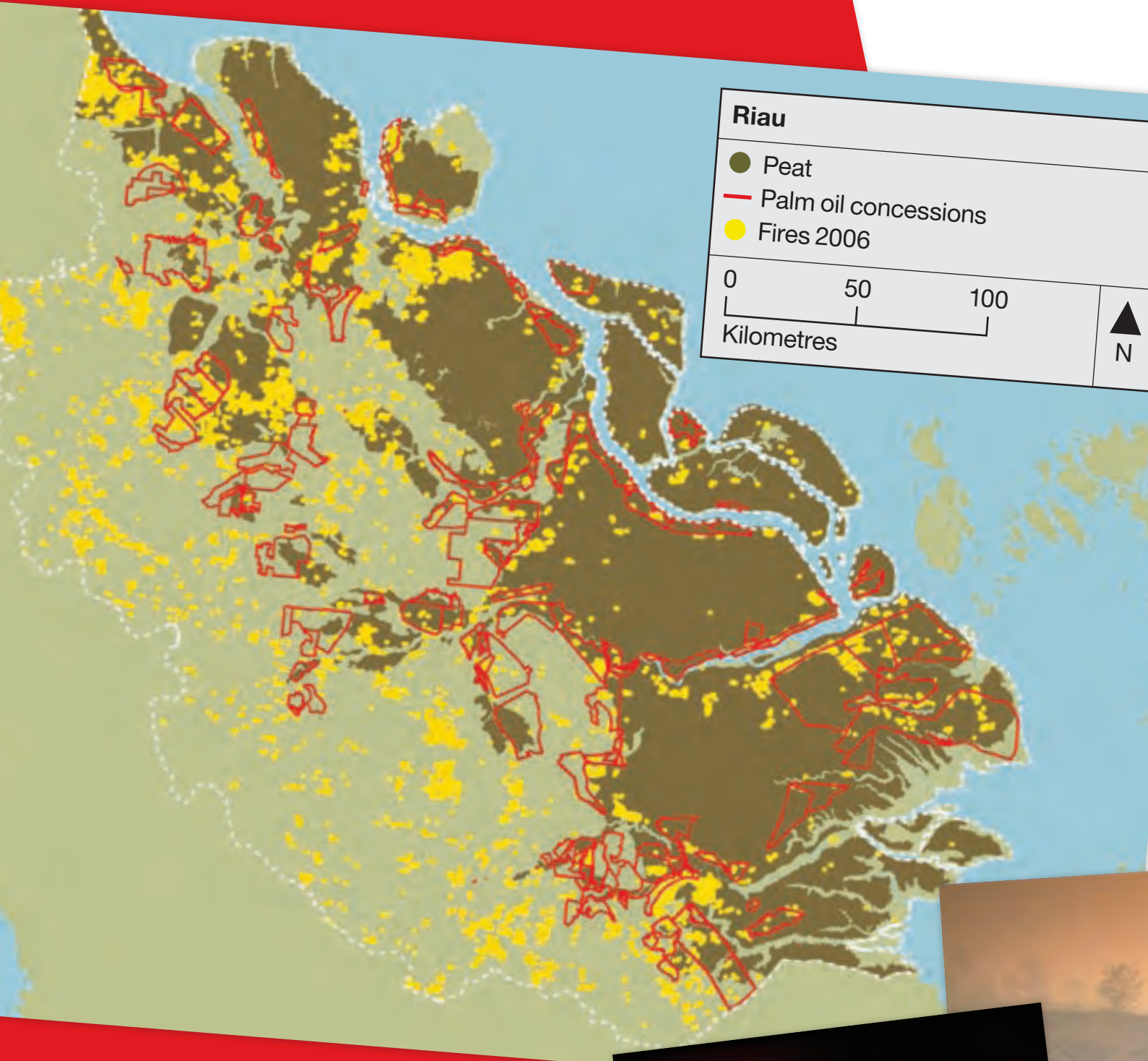
than three-quarters of mainland Riau, some 6.5 million hectares.⁹⁰ By 2000, most of the accessible lowland forests with valuable timber species had been destroyed, and conversion of Riau's peatland forests began in earnest.⁹¹

Greenpeace's analysis of satellite images of forest cover between 2001 and 2007 shows active deforestation has taken place on oil palm concessions, many of which are on peatlands.⁹²

What has been driving this rapid deforestation?

Today, Riau is the largest producer of two of Indonesia's most important export commodities based on forest destruction: paper and palm oil.⁹³

FIRE HOTSPOTS IN RIAU DURING 2006



Two of the world's largest pulp and paper companies, APRIL and APP, have their mills in Riau. In 2006, WWF estimated that around 450,000 hectares of natural forests had been cleared since 2001 to supply APP's pulp mill in Riau.⁹⁴ Accordingly, wherever deforestation occurs, including the expansion of oil palm into natural forest, the majority of the timber harvested is sold for pulp.

By 2005, there were 1.4 million hectares of oil palm plantation in Riau – 25% of Indonesia's total production area.⁹⁵ According to Wetlands International, more than 2 million hectares of Riau's lowland peat is occupied by concessions of one sort or another – logging concessions, pulp wood or oil palm plantations.⁹⁶

Despite grave levels of degradation, Riau has the largest remaining area of natural forest on peat in Sumatra,⁹⁷ making it vulnerable to predatory conversion.

Local governments in Riau collectively have plans to expand oil palm plantations by 3 million hectares.⁹⁸ The 2007 draft of the new provincial land-use plan shows that many hundreds of thousands of hectares of peatland have been designated for conversion. Most of these forests are on peat soils with depths of over 2 metres.⁹⁹



THE PALM OIL INDUSTRY

Oil palm expansion is out of control. Based on permits for conversion to plantations and other agricultural uses, Indonesia has destroyed over 28 million hectares of forest since 1990,¹⁰⁰ yet plantations of either palm oil or pulp wood have been established on only 9 million hectares,¹⁰¹ clearly implying that most of the companies obtained permits to convert the forest only to gain access to the timber. In the Sumatran province of Jambi alone, the NGO Sawit Watch has reported around 800,000 hectares of abandoned cleared forest.¹⁰²

However, palms continue to be planted on newly-cleared forest land, because companies subsidise the establishment of oil palm plantations by selling timber from the concession area. In addition, the industry controls huge landbanks of forested areas that it has yet to clear. Thus, despite assertions to the contrary by government and industry bodies, expansion into peat forests continues, not because of an absolute shortage of land, but because of the economic incentive for companies to cash in on the trees. Data from the Riau Plantation Service suggest that nearly 40% of oil palm concessions in Riau are on peat.¹⁰³

This expansion into forest and peatland, and the related deforestation and GHG emissions, takes place with little oversight from central or local government. Procedures for environmental impact assessment, land use planning and ensuring a proper process for development of concessions are neglected.

Some of these new plantations are located on peat that should be off limits to development or degradation according to Indonesian law.¹⁰⁴ This stipulates that land should not be allocated for oil palm plantations on peat soils deeper than 2 metres; in addition, activities that damage upstream natural swamp forests with deep peat (more than 3 metres) are prohibited.¹⁰⁵ In other words, palm oil development on such peatlands is illegal.







DUTA PALMA: THE OIL PALM INDUSTRY'S RECIPE FOR CLIMATE DISASTER

In early 2007, through satellite monitoring, Greenpeace identified fire hotspots in Riau Province.¹⁰⁶

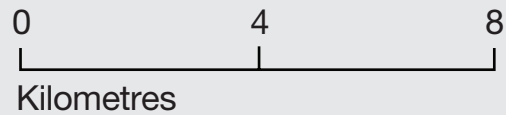
Intelligence, based on the comparison and overlay of peatland maps with concession maps, signalled that there was significant overlap between the location of these fires, peatlands and oil palm concessions.

Duta Palma is one of several groups involved in the oil palm industry that is rapidly expanding its landbank – and thereby its direct influence over future environmental impacts from the expansion of the industry.

Field investigations by Greenpeace of Duta Palma group operations in the district of Indragiri Hulu in Riau between June and September 2007 reveal the serious threat to the climate posed by the expansion of the oil palm industry.

Duta Palma

- 2-4 metre peat depth (official maps)
- Greenpeace sampling point
- Concession boundaries



DUTA PALMA: FAILING TO MEET KEY RSPO REQUIREMENTS

- ☒ Commitment to transparency
- ☒ Compliance with applicable laws and regulations
- ☒ Use of appropriate best practices
- ☒ Conservation of critical habitat and species
- ☒ No fire for land clearance
- ☒ No deforestation post-2005



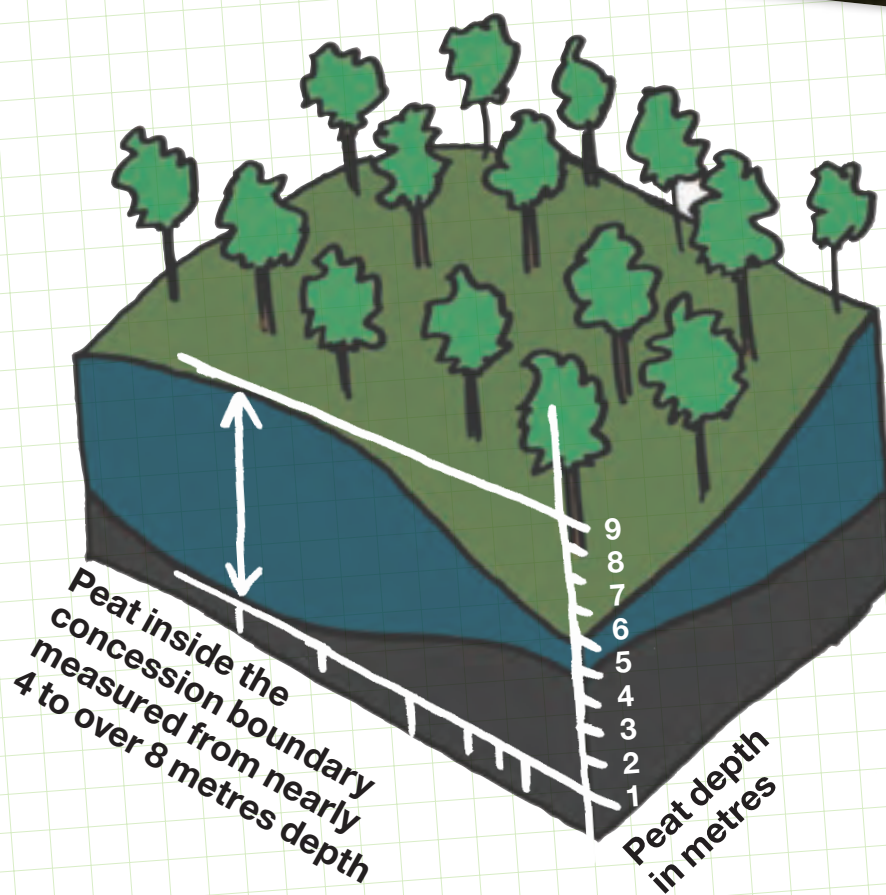
DUTA PALMA

PT Bertuah Aneka Yasa

PT Banyu
Bening Utama



PT Palma Satu



MEET DUTA PALMA

The privately-held Duta Palma group is one of Indonesia's ten largest palm oil refiners¹⁰⁷ and a member of the Roundtable on Sustainable Palm Oil (RSPO).

Greenpeace investigations have revealed evidence of serious breaches of Indonesian law including operating without concession title, illegal clearance of deep peatlands and intentional burning.¹⁰⁸

In the absence of due legal process and governance, however, the destruction – and its climate impacts – continues virtually unchallenged.

TAKE THOUSANDS OF HECTARES OF VALUABLE RAINFOREST

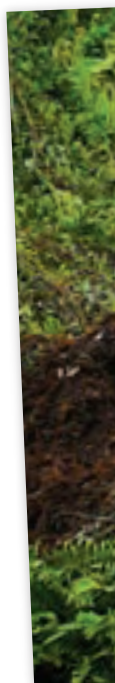
Duta Palma is expanding rapidly.

Greenpeace investigations into Duta Palma-related companies confirm that in the past few years, the Duta Palma group has significantly expanded its plantation concession area, notably in Indragiri Hulu District (Riau) and in West Kalimantan Province.

According to the group's website, the Duta Palma group controls 60,000 hectares of land in Riau with a planted area of 42,000 hectares.¹⁰⁹ Despite the claims made on the group's website, the company now controls about 200,000 hectares, over half of it in Riau.¹¹⁰ This concession area is well in excess of the national regulations in place until February 2007, which forbade company groups from owning a concession area in excess of 20,000 hectares per province.¹¹¹ Duta Palma companies already held permits for well over 20,000 hectares in Riau before the change in the law. Current Indonesian law forbids any one company from holding in excess of 100,000 hectares outside Papua.

Much of Duta Palma's concession area is yet to be cleared or planted with oil palms, and large areas of this landbank are valuable forest habitat for rare and threatened plant and animal species as well as being essential to indigenous or local communities, whose landrights have been ignored by company and government alike.

Particularly in Riau, the Duta Palma concession area overlaps with significant areas of deep (greater than 2 metres) peat. Spacial analysis by Greenpeace of peat distribution shows that the company controls 55,000 hectares of peatland in Riau.¹¹²



ADD PROTECTED PEATLAND DOMES INTO THE MIX

Riau has significant peatlands more than 2 metres deep, yet many plantation concessions are located on such soils despite laws and regulations meant to protect these areas from conversion.

Legally, forest conversion for oil palm plantations should not take place on land with peat depth greater than 2 metres, nor may it directly or indirectly impact forest on land with peat depth greater than 3 metres – such peatlands are formally protected by Ministry of Forestry and Presidential decrees.¹¹³

Analysis by Greenpeace of 2001–2007 satellite data shows significant illegal forest clearance within four of Duta Palma's concession areas PT Kencana Amal Tani (PT KAT), PT Banyu Bening Utama (PT BBU), PT Bertuah Aneka Yasa (PT BAY) and PT Palma Satu.¹¹⁴ Large parts of this clearance are inside areas with peat depths over 2 metres, according to peatland distribution maps produced by Wetlands International and used for the development of provincial land use plans.¹¹⁵ The 1994 provincial land use plan for Riau designates the entire area of PT Palma Satu as protected peatlands,¹¹⁶ ie more than 3 metres deep.

Under the supervision of experts from the Center for International Cooperation in Sustainable Management of Tropical Peatland (CIMTROP), in October 2007, Greenpeace investigators documented the depth of the peatland soils in Duta Palma's PT BBU and PT Palma Satu concessions, immediately adjacent to PT BAY.

According to official maps, peatlands within these concessions cover a total area of about 14,850 hectares – nearly half the area of these concessions.¹¹⁷ Over 90% of this peatland (14,190 hectares) is marked as 2–4 metres deep.

Depth of peat is assessed by boring into the peat with a peat drill until mineral soil is reached. To gauge the volume of the peat dome, Greenpeace took regular depth measurements from the dome's edge beside the Cenuku river, outside the concession areas, along the border between PT BAY and PT BBU to deep inside the PT Palma Satu concession area.

Our investigations show that these concessions lie on very deep strata of peat – ranging from 3.5 metres in depth outside the boundary of the plantation (0°29'15.00"S – 102°37'54.54"E) to more than 8 metres in the middle of the concession area. (0°30'5.93"S – 102°37'54.67"E).

The Greenpeace investigation also involved a survey of the water table in order to assess the condition of the peat within the dome. If the peat is not fully drained, restoration is possible.

Our analysis shows that the peat soil has not yet been irreparably damaged.

However, the team documented active rapid drainage of the concessions through two canals. If the drainage continues at the current rate, restoration and preservation of these peatlands will soon be impossible. In a few years the peat will be dry, making it vulnerable to fire and causing rapid release of CO₂ to the atmosphere.

It is clear from the investigation that provincial land use plans rely on peat distribution maps that have not been properly verified on the ground by the government or any other institution.

Our investigation found that in just one sample area, the peat depth – and therefore the carbon stores – were double that predicted by the maps. It is possible that Southeast Asia's carbon stores as a whole have been grossly underestimated, meaning the potential climate impact from peatland destruction may be even greater than previously thought.





CLEAR THE FOREST AND DRAIN THE PEATLAND

Greenpeace field investigations confirm that the extensive drainage, construction of large canals, and clearcutting of deep peat forest (over 2 metres) is ongoing in PT BBU and PT BAY. Greenpeace field investigations also found recent extensive drainage by PT BAY to depths of up to 7 metres. Within the PT BBU concession Greenpeace documented recent extensive drainage and clearance on peatlands over 3 metres deep.

Greenpeace field investigations in the forest area claimed by PT Palma Satu documented an extensive network of drainage canals indicative of preparations for clearance for oil palm plantations. Investigators documented drainage work taking place to a depth of 8 metres. The peat may be even deeper.



STIR IN AN EARTH MOVER

Drainage allows access by earth movers and other heavy excavation machinery, which speeds up forest clearance.

SKIM OFF THE VALUABLE TREES

Demand for pulp for Riau's pulp and paper mills is part of what subsidises the establishment of oil palm plantations – a key financial incentive to clear forest instead of using degraded lands.

Greenpeace's field investigation found that Duta Palma is operating in areas previously covered with peat swamp forest.

Once access is gained to the forest, either through opening roads or canals, logs for timber or pulp are cut, stacked beside canals and then floated down the canals to the mills.

Previous field investigations in the area of Duta Palma's PT KAT concession tracked timber from forest clearance for oil palm expansion to the RAPP pulp mill owned by APRIL.¹¹⁸

Local people informed Greenpeace investigators that timber from the recent clearance of PT BAY has been sold to the Indah Kiat pulp mill owned by APP.¹¹⁹



'The main areas remaining for new extensive plantations are the large tracts of tropical peatlands – until recently virgin rainforest areas. Over 50% of new plantations are planned in these peatland areas.'

Wetlands International, 2007



CHOP DOWN THE REMAINING FOREST

Trees and other vegetation that cannot be sold to pulp mills are often cleared using heavy machinery. Timber is then stacked for burning. Alternatively, it may just be left lying on the ground to decay.

Greenpeace field investigations found significant recent clearfelling inside PT BBU, PT BAY and PT Palma Satu concessions.¹²⁰



SIMMER OVER A HOT FLAME

Since January 2006, fires have broken out several times inside Duta Palma concession areas or in adjacent areas being cleared. Incidences of burning have been reported to various authorities by the village head of Kuala Cenaku, but no legal action has resulted.

Greenpeace investigators saw evidence suggestive of illegal, intentional and systematic land clearing using fire in virtually all parts of the PT BAY concession. This included burn rows – stacks of timber ready to be burned on recently cleared land – as well as burnt stumps and thick black charcoal lines where rows of timber and debris have been burnt.¹²¹

Planting of oil palm seedlings often takes place immediately after burning as the fire makes the peat more alkaline and suitable for the young plants.

Field investigations found similar evidence within the PT BBU concession.

There is also evidence of extensive burning within the area being cleared by Palma Satu, with burnt stumps visible.

PLUCK OFF THE TIGERS AND OTHER UNWANTED WILDLIFE

Duta Palma is also involved in the destruction of habitat critical to endangered and protected species.

The Sumatran tiger (*Panthera tigris sumatranus*) is critically endangered with less than 250 individuals remaining in the wild.¹²²

The area claimed by PT Palma Satu is tiger habitat. Local villagers told Greenpeace investigators that they could still regularly hear at least two tigers roar in the forest indicating that the concession is located in habitat of high conservation value.





THE RSPO GROUP OF FRIENDS

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Unilever is one of the world's largest food processing giants, selling household food and cosmetic brand names in nearly every country. It is president of the RSPO.

Unilever

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Patricia A. Woertz (ADM)



Gregory R. Page (Cargill)



Franky Widjaja (Sinar Mas)



Sabri Ahmad (Golden Hope)



Robert Kuok

Groups

2 groups

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▼ Photos




Unilever



Patrick Cescau

Unilever, Sustainable Agriculture Initiative

'Conversion of land for agriculture is the biggest threat to tropical rainforests alongside illegal logging... There are instances where the development of new oil palm plantations has led to conversion of forests with high conservation value and has threatened the rich biodiversity of these ecosystems. The use of fire for preparation of land for oil palm planting also contributes to forest fires and widespread polluting haze over vast areas.'

Unilever's palm oil products






CO2 world traveller



Mini feed

factbook

factbook



ADM-Kuok-Wilmar is a shareholder alliance between ADM and the Kuok family controlling over 570,000 hectares of concession area, palm oil refineries and biodiesel plants across Indonesia and Malaysia.

ADM Wilmar



ADM Pura Foods operates a jetty outside London handling more than 300,000 tonnes of edible oils a year, including palm oil. These bulk oils are delivered directly into the Unilever factory next door, the largest margarine factory in the world, producing brands such as Flora and Bertoli.

Photos of ADM Wilmar
Where ADM Wilmar's travelled
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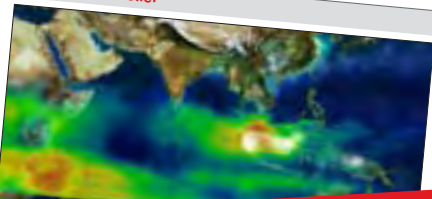
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Favourite palm oil products?



CO2 world traveller



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Sinar Mas is planning to expand its landbank. The group already accounts for 11% of palm oil production in Indonesia.

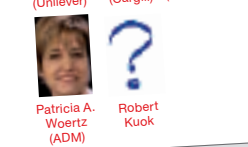
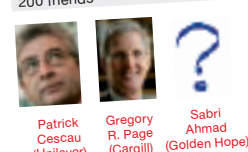
Sinar Mas



Sinar Mas has publicly announced plans to expand its landbank in the heavily forested province of Papua. However, an internal presentation indicates that the company plans to develop a rainforest area of up to 2.8 million hectares in Papua.

Photos of Sinar Mas
Where Sinar Mas's travelled
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Favourite palm oil products?



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factbook



Cargill is the largest privately-held company in the world. It is a major plantation owner, trader, refiner and distributor of palm oil and palm oil products including biodiesel. It has palm oil related operations across Indonesia, Malaysia, Papua New Guinea, Europe, Australia, India, Russia, and the USA.

Cargill



'Unfortunately, not every palm developer operates responsibly. Forests have been logged (sometimes illegally) to make room for palm plantations. Destroying forests to plant palm is a net negative for trapping carbon and mitigating climate change.'

Photos of you
Where Cargill's travelled
FOOD FIGHT
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Favourite palm oil products?



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RSPO • How to profit from climate change



Golden Hope is a Malaysian government owned company controlling plantations, refineries and biodiesel plants across Indonesia and Malaysia.

Golden Hope

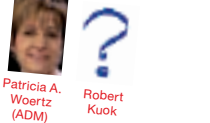
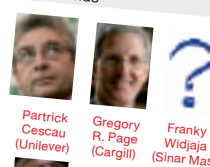


In October 2007, Golden Hope was in the final legal stage of merging with Malaysian palm oil companies Kumpi Guthrie and Sime Darby to form Synergy Drive.

Synergy Drive will be the 'world's biggest palm oil en and potentially 'the world's largest biofuels producer'.

Photos of Golden Hope
Where Unilever's travelled
FOOD FIGHT
Challenge Golden Hope
Edit their profile

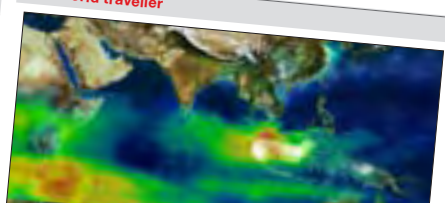
Friends
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Favourite palm oil products?

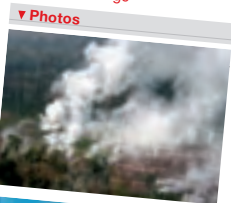


CO2 world traveller



Groups
2 groups
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RSPO • How to profit from climate change



WHO CONTROLS THE TRADE?



ROUNDTABLE ON SUSTAINABLE PALM OIL

The Roundtable on Sustainable Palm Oil (RSPO) is a voluntary association of corporations and NGOs set up in 2002. In October 2007, it had nearly 200 members.¹²³ Corporate members include global food giants such as Unilever, Cadbury's, Nestlé and Tesco, and global commodity traders including Cargill. RSPO members account for an estimated 40% of global palm oil production and use.¹²⁴

The RSPO has aimed to develop a global definition of sustainable palm oil production and better management practices. Companies are required to report on their progress in meeting RSPO criteria, but the organisation's impact on the ground in terms of halting industry expansion into rainforest and peatlands has been negligible.

At present the RSPO scheme does not prohibit palm oil producers from being involved in forest conversion and has no assessment of, or limits on, GHG emissions from the development of oil palm plantations. Furthermore, it has no system to segregate palm oil that meets RSPO criteria from palm oil coming from deforestation including peatland clearance.

UNILEVER – RSPO PRESIDENT

*'In Indonesia and also in countries in Latin America conversion of land for agriculture is the biggest threat to tropical rainforests alongside illegal logging [...] There are instances where the development of new oil palm plantations has led to conversion of forests with high conservation value and has threatened the rich biodiversity of these ecosystems. The use of fire for preparation of land for oil palm planting also contributes to forest fires and widespread polluting haze over vast areas. In many instances the expansion of oil palm has led to social conflicts between local communities and plantation owners and others.'*¹²⁵

Jan Kees Vis, Unilever Sustainable Agriculture Director and President of the Executive Board of the RSPO

Unilever is an RSPO member and one of the world's largest food processing giants, selling household food and cosmetic brand names in nearly every country.¹²⁶ It claims to be the world's biggest ice cream producer with brands such as Walls and Ben & Jerry's.¹²⁷ It also owns the world's largest margarine factory,¹²⁸ producing brands such as Flora and Bertolli.

Ben & Jerry's ice cream, Flora margarine, Knorr soups and cosmetic products such as Dove soap, Vaseline and Timotei shampoo are among the many household name products containing palm oil.¹²⁹

Unilever uses around 1.2Mt of palm oil every year,¹³⁰ about 3% of total world palm oil production.¹³¹ According to a high-level industry source, Unilever is 'one of the biggest palm oil users in Europe'. At the global level, Unilever is a major player in the palm oil trade.

Most of this comes from Indonesia and Malaysia.¹³² During the 12 month period from July 2003 to June 2004, Unilever bought approximately 570,000 tonnes of palm oil from Indonesia, more than 5% of the country's production.¹³³

UNILEVER'S SUPPLIERS – CARGILL, ADM-KUOK-WILMAR, GOLDEN HOPE AND SINAR MAS

*'At the global level, Unilever is a major buyer and exporter from Indonesia of palm oil [...] These purchases represent 5.1% of Indonesian production.'*¹³⁴

Oxfam and Unilever report, 2005

Virtually all of Indonesia's palm oil is exported through Sumatra. Most of the global trade in Indonesian palm oil is handled by traders based in Singapore. In the first half of 2007, Singapore-based brokers traded over 2.6Mt of the palm oil exported through ports of Sumatra – over 50% of total trade.¹³⁵

Some of the largest of these Singapore-based commodity traders are RSPO members, including the ADM-Kuok-Wilmar alliance, Cargill, Golden Hope and Sinar Mas. In the first half of 2007, these traders controlled over a third of Indonesia's exports of palm oil. The traders are also processors, blending palm oil from deforestation and peatland destruction through their refineries and biofuel facilities.

Given that traders' control of the market prevents traceability, one RSPO member, a major food retailer, has complained to Greenpeace: 'It is unfortunate that the global palm oil industry is unable at present to provide anyone with evidence of traceability beyond processor, to plantation level, so we are severely constrained in what we can do at present.'

Greenpeace analysis of trade data, annual reports and information from industry sources shows that Unilever is trading with Cargill, ADM-Kuok-Wilmar, Golden Hope, and Sinar Mas.



CARGILL – TRADING WITH UNILEVER

‘Unfortunately, not every palm developer operates responsibly. Forests have been logged (sometimes illegally) to make room for palm plantations. Destroying forests to plant palm is a net negative for trapping carbon and mitigating climate change.’¹³⁶

Cargill News 2007

Cargill is an RSPO member¹³⁷ and is the largest privately-held company in the world.¹³⁸ Cargill is a major plantation owner, trader, refiner and distributor of palm oil and palm oil products including biodiesel. It has palm oil related operations across Indonesia, Malaysia, Papua New Guinea, Europe, Australia, India, Russia, and the USA.¹³⁹

Industry sources confirm that roughly half of the palm oil imported into Europe by Cargill comes from Indonesia.¹⁴⁰

According to export data for the first half of 2007, Cargill's Singapore trading arm exported at least 220,000 tonnes of palm oil from 13 different oil palm concession holders in Indonesia, some with holdings in Riau, including Astro Agro Group, Salim Group and Musim Mas.¹⁴¹ Over 70,000 tonnes of this went to Germany, The Netherlands and Italy; 40,000 tonnes was shipped to Malaysia; the remainder went to China, India and the rest of the world.¹⁴²

Cargill's palm oil shipments to Malaysia are likely to have been delivered to Cargill's refineries in Port Klang and Kuantan, which export 90% of their production.¹⁴³

For example, Greenpeace has traced palm oil from a Cargill refinery to Knorr soup, one of Unilever's high profile brands. Every week, Unilever in Rotterdam places an order for about 100 tonnes of refined palm oil with Cargill's Hamburg refinery.¹⁴⁴ This is trucked to the Unilever's food processing plant in Poznań, Poland – the main production facility for Knorr brand products, which are exported all over the world, including Germany, the UK, Sweden, Belgium, The Netherlands, Russia, and the USA.¹⁴⁵ The facility uses palm oil in over 150 different products, mainly dehydrated food products like instant soup.¹⁴⁶

Cargill is also one of Unilever's European suppliers of palm oil for ice cream.¹⁴⁷

THE ADM-KUOK-WILMAR ALLIANCE – TRADING WITH UNILEVER

Wilmar is an RSPO member. It claims to be the world's largest producer of palm oil based biodiesel.¹⁴⁸ The group – effectively a shareholder alliance between ADM¹⁴⁹ and the Kuok family¹⁵⁰ – controls over 570,000 hectares of concession area (just over a third of this has been cleared and planted), palm oil refineries and biodiesel plants across Indonesia and Malaysia.¹⁵¹ In 2006,

the group produced over 830,000 tonnes of crude palm oil, accounting for 6% of Indonesia's production.¹⁵² Although Wilmar owns substantial concession areas, more than 75% of its palm oil trade comes from third party plantations.¹⁵³

The Kuok Group was founded by Robert Kuok Hock-Nien, the uncle of William Kuok, one of Wilmar's founders. According to Forbes, in 2005, Robert Kuok Hock-Nien was the richest man in Asia.¹⁵⁴

The US-headquartered ADM claims to be the world's leading processor of agricultural crops and Europe's leader in biofuels.¹⁵⁵ The company trades crude palm oil on the Chicago futures market (ie contracts are signed and traded months ahead of delivery).¹⁵⁶ According to a high-level industry source, ADM is Cargill's main competitor in the palm oil sector.¹⁵⁷

In a 2006 declaration to institutional investors, Wilmar announced that its key international customers include Procter & Gamble, Cargill, Unilever, Nestlé and China Grains & Oils Group Corporation.¹⁵⁸

Immediately next door to Unilever's margarine factory outside London, a subsidiary of ADM operates a jetty handling more than 300,000 tonnes of edible oils a year, including palm oil. These bulk oils are delivered to a wide range of food factories around the UK and overseas, as well as directly into the Unilever factory.¹⁵⁹ This is the largest margarine factory in the world,¹⁶⁰ producing brands such as Flora and Bertolli.¹⁶¹

GOLDEN HOPE – TRADING WITH UNILEVER

‘We are the first plantation company in Malaysia to receive the Global 500 Award by the United Nations Environment Programme (UNEP) for our “Zero Burning” practices’¹⁶²

Golden Hope 2006

Golden Hope is an RSPO member.¹⁶³ Golden Hope controls plantations, refineries and biodiesel plants across Indonesia and Malaysia.¹⁶⁴

In October 2007, Golden Hope was in the final legal stages of merging with Malaysian palm oil companies Kumpulan Guthrie and Sime Darby to form Synergy Drive.¹⁶⁵ All of these publicly listed companies are controlled by the Malaysian government.¹⁶⁶ Golden Hope's website describes the deal as ‘creating the world's biggest palm oil entity’ and potentially ‘the world's largest biofuels producer’.¹⁶⁷

The company explicitly sees Indonesia as a place for expanding its business.¹⁶⁸

While Golden Hope has long-established palm oil plantations in Peninsular Malaysia, the company now also controls a total area of 60,000 hectares in West Kalimantan,

Indonesia, of which 13,000 hectares are planted with oil palms.¹⁶⁹ Kumpulan Guthrie currently owns and operates 52 plantation estates in Indonesia with a total land area of 220,000 hectares¹⁷⁰ spread over Sumatra, Kalimantan and Sulawesi, of which 165,000 hectares has been planted.¹⁷¹ Bloomberg News reports that Synergy Drive will produce 2.2Mt of crude palm oil (CPO) a year,¹⁷² nearly 6% of global palm oil production.¹⁷³

According to a high-level industry source, Golden Hope is a major supplier to Unilever.¹⁷⁴

The relationship between the two companies is longstanding. In 2002, Golden Hope bought Unimills, Unilever's oil refinery in Rotterdam in The Netherlands.¹⁷⁵ Unimills is the second largest diversified oil and fats blend manufacturer in Europe¹⁷⁶ – an industry that uses large quantities of palm oil.

SINAR MAS – TRADING WITH UNILEVER

Sinar Mas is an RSPO member through its oil palm plantation subsidiary PT SMART.¹⁷⁷

The Sinar Mas group accounts for 11% of palm oil production in Indonesia.¹⁷⁸

The group has publicly announced plans to expand its landbank in the heavily forested province of Papua by 1 million hectares and in Kalimantan by 100,000 hectares.¹⁷⁹ However, an internal company presentation obtained by Greenpeace indicates that the company plans to develop a rainforest area of up to 2.8 million hectares in Papua.¹⁸⁰ As Indonesian law does not allow any one company to hold in excess of 200,000 hectares in Papua,¹⁸¹ Sinar Mas has split large forest blocks into several concession areas. For example, it has created 14 separate companies in a bid to gain control of over 1.8 million hectares in the forested southeast corner of Papua.¹⁸²

Unilever has a long-standing relationship with Sinar Mas, with one 1999 Sinar Mas document stating: 'Our major customers include Cargill and Unilever. These sales were made through foreign brokers or directly to the importer located in the countries to which the products were exported.'¹⁸³ The Sinar Mas 2004 and 2006 Annual Reports¹⁸⁴ also indicate that Unilever has been an important client in 2003–2006, along with Nestlé and Carrefour.¹⁸⁵

WHAT THE COMMODITY TRADERS ARE ADDING TO THE MIX

Global commodity traders including ADM-Kuok-Wilmar, Cargill, Golden Hope and Sinar Mas have commanding control over the entire palm oil supply chain – from plantations in Indonesia to refined vegetable oil or biofuel. In addition to their direct control of massive landbanks and processing infrastructure, most of these traders have substantial dealings with third party suppliers. This means that they are in a decisive position to determine supply and influence the market.

Through the indiscriminate purchasing and blending of palm oil from deforestation and the conversion of peatlands into an undifferentiated supply for the global market, their operations render responsible purchasing virtually impossible. In this way, they fuel climate change, biodiversity loss and social conflict. As one RSPO member, a major food retailer, described it: 'Due to the logistics of this particular commodity market, real traceability is simply not possible at this time.'¹⁸⁶

Consequently, consumer companies who manufacture products using palm oil have virtually no way of knowing whether or not the palm oil they are using is from rainforest destruction and conversion of peatlands.

This lack of traceability in the supply stream was described to Greenpeace by RSPO members, including a commodity trader,¹⁸⁷ an international retailer¹⁸⁸ and a food manufacturer.¹⁸⁹

- (1) 'Firstly numerous plantations, of varying sizes, crush the palm fruit at in-country mills' – in other words, many suppliers.
- (2) 'The crude palm oil is then transported to shared storage tanks at ports awaiting export' – in other words, no segregation.
- (3) 'The majority of this volume is shipped using shared vessels which en route to their final destination may pick up additional crude palm oil from other producing countries' – in other words, no segregation.
- (4) 'In Europe, Rotterdam is the main consolidation (bulk storage) port for the imports of crude palm oil' – in other words, no segregation.
- (5) 'Brokers will then sell the oil on to either end users or in the majority of instances, on to processors' where the palm oil may be blended with other oils – in other words, no segregation.
- (6) It is only at this stage that RSPO members who use palm oil in finished products actually buy palm oil: indeed, most Indonesian 'palm oil used within Europe is bought on the open market'.

The conclusion is straight-forward, as one RSPO member said: 'We do not believe it is possible currently to robustly trace and segregate a specific source (country & region) for commercial volumes of palm. The only exception to this being limited quantities of crude organic palm oil.'¹⁹⁰ Further, even when palm oil that meets RSPO criteria becomes commercially available, 'due to the complexity of the supply chain, it will be virtually impossible to guarantee true segregation of sustainable palm oil'.¹⁹¹

Many RSPO members, including one of the world's top names in confectionery, claim that virtually all of their palm oil is supplied by RSPO members – eg refiners and traders like ADM-Kuok-Wilmar, Cargill, Golden Hope and Sinar Mas. However, these actors are driving the expansion of the palm oil industry in Indonesia, leading to further deforestation, degradation of peatlands and GHG emissions.

The commodity trade and other big players who are end users of palm oil are using RSPO membership to deflect attention from the real crisis linked to the industry's expansion.





WHO SUPPLIES THE TRADE?

Sinar Mas Group – directly trading forest destruction

Is Sinar Mas an RSPO member?

Yes¹⁹²

Expanding into biofuels?

Yes

Approximate size of

known concession area:

Indonesia 1.65 million ha.¹⁹³

Riau 109,000ha¹⁹⁴

Links to Riau deforestation and peatland degradation

Peatland:

6 concessions,¹⁹⁵ **estimated total area over 54,000ha**

Historic deforestation within the last two decades (1989–2003):

7 out of 12 concessions¹⁹⁶

Recent or ongoing deforestation (2001–2007):

6 out of 12 concessions¹⁹⁷

Recent fire hotspots (2005–2007):

6 (3 peatland) concessions¹⁹⁸

Global trade:

Sinar Mas exported some 400,000 tonnes of palm oil products in the first half of 2007. India and China took nearly half of all exports. 85,000 tonnes was shipped to Italy, The Netherlands, Germany, Spain and the UK.

Is Unilever using Sinar Mas palm oil?

Yes

ADM-Kuok-Wilmar - directly trading forest destruction

Is ADM-Kuok-Wilmar an RSPO member?

Yes¹⁹⁹

Expanding into biofuels?

Yes

Estimated size of

known concession area:

Indonesia: 210,000ha

+ 283,000ha (with merger in process),²⁰⁰ Riau 51,000ha²⁰¹

Links to Riau deforestation and peatland degradation

Peatland:

3 concessions,²⁰² **estimated total area over 29,000ha**

Historic deforestation within the last two decades (1989–2003):

3 out of 5 concessions²⁰³

Recent or ongoing deforestation (2001–2007):

4 out of 5 concessions²⁰⁴

Recent fire hotspots (2005–2007):

4 (3 peatland) concessions²⁰⁵

Global trade:

Wilmar exported almost 1Mt of palm oil products in the first half of 2007. India and China took almost one-third of all exports. 151,000 tonnes (15%) was shipped to Germany, The Netherlands, Greece, Spain, Portugal and Italy.

Is Unilever using

ADM-Kuok-Wilmar palm oil?

Yes

ADM-Kuok-Wilmar and Cargill – trading Astra Agro destruction

Is Astra Agro an RSPO member?

No

Expanding into biofuels?

No

Estimated size of

known concession area:

Indonesia 291,000ha;²⁰⁶

Riau 77,000ha.²⁰⁷

Links to Riau deforestation and peatland degradation

Peatland:

2 concessions,²⁰⁸ **estimated total area over 20,000ha**

Historic deforestation within the last two decades (1989–2003):

4 out of 6 concessions²⁰⁹

Recent or ongoing deforestation (2001–2007):

4 out of 6 concessions²¹⁰

Recent fire hotspots (2005–2007):

5 (2 peatland) concessions²¹¹

Global trade:

ADM-Kuok-Wilmar shipped 15,250 tonnes to India and nearly 3,000 tonnes to China in the first half of 2007.

Cargill shipped nearly 2,000 tonnes of palm oil products from Astra Agro to Germany in the first half of 2007. Do ADM-Kuok-Wilmar or Cargill know if they are selling Astra Agro palm oil to Unilever?

Once palm oil gets into the system, Unilever cannot know the source.

ADM-Kuok-Wilmar alliance and Cargill – trading Salim Group destruction

Is Salim Group an RSPO member?

No

Expanding into biofuels?

No

Estimated size of known concession area:

Indonesia 230,000ha;²¹²

Riau 28,000 ha.²¹³

Links to Riau deforestation and peatland degradation

Peatland:

1 concession,²¹⁴

estimated total area 8,500ha

Historic deforestation within the last two decades (1989–2003):

3 out of 4 concessions²¹⁵

Recent or ongoing deforestation (2001–2007):

3 out of 4 concessions²¹⁶

Recent fire hotspots (2005–2007):

3 (1 peatland) concessions 2005–2007²¹⁷

Global trade:

Cargill shipped over 12,000 tonnes of palm oil from Salim Group in the first half of 2007, with the bulk going to Germany and The Netherlands.

Various companies within the ADM-Kuok-Wilmar alliance also traded during the same period. Wilmar exported 1,000 tonnes of palm oil products from the Salim Group to the USA. Between them, Wilmar and Kuok Oils exported 2,500 tonnes to Singapore, where Wilmar owns a biodiesel plant.²¹⁸

Do ADM-Kuok-Wilmar or Cargill know if they are selling Salim group palm oil to Unilever?

Once palm oil gets into the system, Unilever cannot know the source.

ADM-Kuok-Wilmar alliance and Cargill – trading Duta Palma destruction

Is Duta Palma an RSPO member?

Yes²¹⁹

Expanding into biofuels?

Yes

Estimated size of known concession area:

Indonesia 200,000ha;²²⁰

Riau 104,000ha²²¹

Links to Riau deforestation and peatland degradation

Peatland:

5 concessions, total area over 55,000ha²²²

Historic deforestation within the last two decades (1989–2003):

5 out of 12 concessions²²³

Recent or ongoing deforestation (2001–2007):

7 out of 12 concessions²²⁴

Recent fire hotspots (2005–2007):

12 concessions²²⁵

Global trade:

Based on export data from the Dumai port in 2002, Duta Palma group subsidiaries²²⁶ sold about 30% of their palm oil to Cargill and about 12% to ADM-Kuok-Wilmar. The primary port destination was Rotterdam, where both Cargill and ADM-Kuok-Wilmar have refineries. A small volume also went to Hamburg in Germany, where both Cargill and ADM have refineries.

In 2004, a third of Duta Palma's exports went to Europe. The primary port destination was Rotterdam.

According to confidential data obtained by Greenpeace, all of Duta Palma's production for the first half of 2007 was shipped through Dumai. Over a fifth of this went to Europe and almost two-thirds to India. The primary European destination ports were Rotterdam and Hamburg.

Do ADM-Kuok-Wilmar or Cargill know if they are selling Duta Palma group palm oil to Unilever?

Once palm oil gets into the system, Unilever cannot know the source.

ADM-Kuok-Wilmar alliance, Cargill and Golden hope – trading Musim Mas destruction

Is Musim Mas an RSPO member?

Yes²²⁷

Expanding into biofuels?

Yes²²⁸

Estimated size of known concession area:

Indonesia 60,000ha;

Riau 31,000ha²²⁹

Links to Riau deforestation and peatland degradation

Peatland:

1 concession,²³⁰ estimated area 30,600ha

Historic deforestation within the last two decades (1989–2003):

None

Recent or ongoing deforestation (2001–2007):

1 concession²³¹

Recent fire hotspots (2005–2007):

1 peatland concession²³²

Global trade:

In the first half of 2007 Cargill exported 14,500 tonnes of palm oil products from PT Musim Mas in North Sumatra, via Belawan port. Over 4000 tonnes were shipped to Germany.

In the same period, Wilmar (Singapore) exported over 10,000 tonnes from PT Musim Mas, mainly to China.

Golden Hope Plantations also bought from Musim Mas. In the first half of 2007, Golden Hope exported 23,500 tonnes of palm oil products from Musim Mas through Dumai and Belawan to Vietnam, Malaysia and The Netherlands.

Golden Hope exported 4,500 tonnes of Musim Mas palm oil products to Rotterdam, where Golden Hope has an oil refinery. Until 2002, this refinery was owned by Unilever.²³³

Do ADM-Kuok-Wilmar, Cargill or Golden Hope know if they are selling Musim Mas palm oil to Unilever?

Once palm oil gets into the system, Unilever cannot know the source.

In March 2006 Unilever's Europe based union wrote to CEO of Unilever in Rotterdam warning that the Unilever products may 'include as ingredients palm oil products from Musim Mas.'²³⁴

FEEDING THE FOOD CHAIN

Riau, Indonesia



Small holders



Plantation



CPO mill



CPO storage tanks



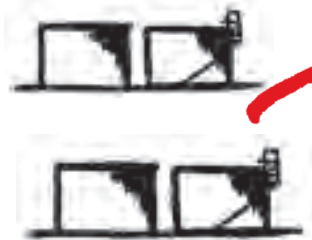
Port storage tanks (shared)

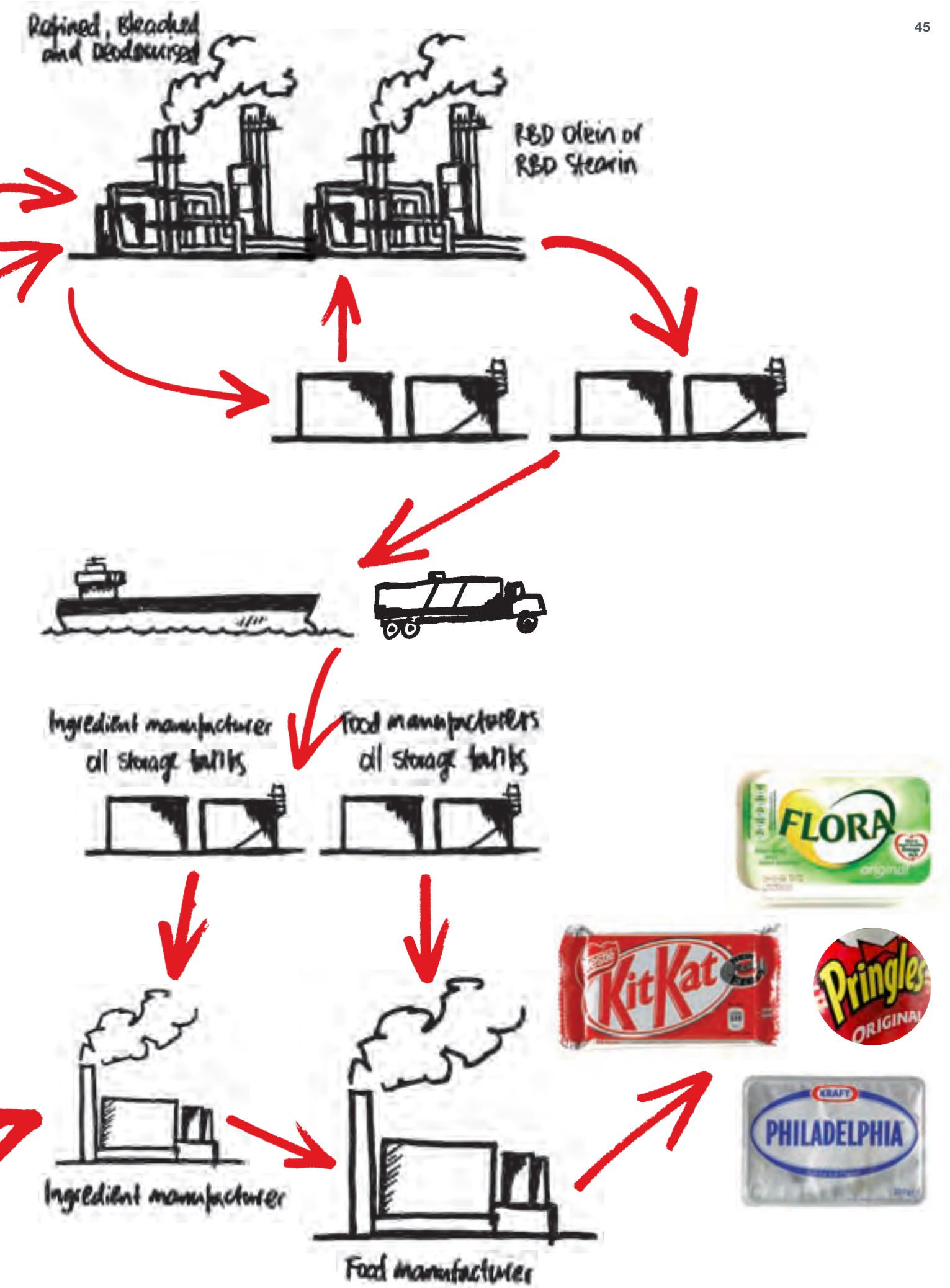


Shipping (shared)



Bulk storage (shared)
eg. Rotterdam/Hamburg





MAJOR NAMES IN THE FOOD INDUSTRY ARE USING TAINTED PALM OIL

PROCTER & GAMBLE USES NEARLY 1% OF GLOBAL PALM OIL PRODUCTION

'Why travel when we've got the freshness of palm trees and sunshine all bottled up?'²³⁵

Procter & Gamble, on one of its laundry detergents that uses palm oil

Greenpeace wrote to all the major palm oil users raising concerns about the contribution of palm oil from deforestation to climate change, and requesting information on companies' supplies. Procter and Gamble did not respond.

Ranked as the number one Household and Personal Products Company in *Fortune's* 'America's Most Admired Companies',²³⁶ Procter & Gamble has one of the strongest portfolios of brands in the world. It declares that 'three billion times a day, P&G brands touch the lives of people around the world'.²³⁷ These brands – ranging from baby care to toothpaste to shaving cream to washing detergent to snack foods to instant drinks to batteries – include Pampers, Crest, Gillette, Head & Shoulders, Ariel, Pringles, Folgers and Duracell.²³⁸

Many Procter & Gamble products contain palm oil derivatives, including iconic brands such as Ariel,²³⁹ Oil of Olay,²⁴⁰ and Pringles.²⁴¹

At the end of October 2007, Peter White, Procter & Gamble's director of global sustainability, declared that the company is committed to 'contributing to the sustainability of our planet',²⁴² and announced the company's five year sustainability goals,²⁴³ including a commitment to 'reduce CO₂ emissions, energy and water consumption, and disposed waste per unit of production by an additional 10% each, contributing to a 40% reduction over the decade (2002–2012)'.²⁴⁴

Since 2005 Procter & Gamble has been busy expanding its market share in palm oil products, setting up a joint venture in Malaysia and a ten-year supply contract in Indonesia. Total contracted production for Procter & Gamble since 2005 is over 320,000 tonnes a year,²⁴⁵ nearly 1% of global palm oil production.²⁴⁶

In March 2005 P&G teamed up with Felda Palm Industries (Malaysia), which claims to be the 'world's largest producer

of palm oil and palm kernel oil'.²⁴⁷ The 50/50 joint venture – FPG Oleochemicals – has led to the construction of a refinery producing 120,000 tonnes of palm oil derivatives each year. Procter & Gamble Chemicals markets the plant's entire output.²⁴⁸

In 2005 Procter & Gamble signed a ten-year deal worth \$1 billion²⁴⁹ with Sawit Mas Group to supply more than 200,000 tonnes a year of palm oil derivatives.²⁵⁰ These palm oil derivatives were to be used as raw materials in Procter & Gamble's Beauty and Fabric Care businesses (ie cosmetics and detergents) around the world, and also marketed to the global chemical industry by Procter & Gamble Chemicals.²⁵¹

The Sawit Mas Group is a member of the RSPO. It owns more than 100,000 hectares of oil palm plantation land spread across the island of Sumatra and operates downstream processing facilities like palm oil mills, kernel crushing plants and refineries in Riau and North Sumatra.²⁵² Greenpeace has identified two concessions on peat, one in Riau and one in Jambi province.²⁵³ The Riau concession, PT Flora Wanaha Tirta, had fire hotspots in 2005.²⁵⁴ The Jambi concession, PT Kaswari Unggul, is on peat with a depth of more than 4 metres according to official maps.

NESTLÉ TRADING WITH CARGILL

Nestlé is an RSPO member.²⁵⁵

In a response to Greenpeace's letter questioning its sources of palm oil, Nestlé replied saying that it uses about 170,000 tonnes of palm-based oil per year – nearly 0.5% of world production.²⁵⁶ The company states that it buys from 'reputable manufacturers who source their crude palm oil mainly from Malaysia and Indonesia'. Nestlé estimates that 95% comes from RSPO members²⁵⁷ – most of the major traders and refiners are RSPO members.

As no suppliers details were given by Nestlé's Public Affairs people, Greenpeace asked Nestlé staff directly. Cargill was named as one of Nestlé's suppliers, at least in Europe. Cargill staff have confirmed this.²⁵⁸

KitKat is one of Nestlé's leading global confectionary brands. According to the Nestlé website, KitKat is listed in the Guinness Book of World Records. Every second, 418 KitKat fingers are consumed worldwide. In fact, 'every five minutes



enough KitKats are manufactured to outstack the Eiffel Tower, while a year's production would stretch around the London Underground more than 350 times.²⁵⁹ Making such a huge quantity of KitKats takes a lot of raw materials.

Greenpeace has been able to trace palm oil from Cargill's refinery in Rotterdam to the Nestlé York factory in the UK. The factory receives about 100 tonnes of refined palm kernel oil (PKO) from Cargill every week, which is used in the manufacture of KitKat.²⁶⁰

Other KitKat factories which use palm oil include ones located in Canada²⁶¹ and Hershey (USA).²⁶²

KRAFT AND A LOAD OF OTHER WORLD LEADERS IN THE FOOD INDUSTRY HAVE THEIR FINGERS IN THE PALM OIL PIE

Kraft is a member of the RSPO.²⁶³

In a letter to Greenpeace, Kraft admitted to using around 0.5% of worldwide palm oil production – putting it on a par with Nestlé, which uses about 170,000 tonnes of palm oil a year. Kraft's palm oil supplies are sourced from Malaysia and Indonesia.²⁶⁴

Kraft uses palm oil in crisps, cookies, crackers and chocolate fillings.²⁶⁵

Its world-famous brands that use palm oil include low-fat Kraft cheese slices,²⁶⁶ Philadelphia cream cheese,²⁶⁷ as well as Oreo cookies.²⁶⁸

McCain is a member of the RSPO.²⁶⁹

McCain claims to be the world's largest producer of frozen food and french fries, producing nearly a third of the frozen french fries produced internationally. The company is known for pizzas, desserts, oven meals and other frozen foods on six continents.²⁷⁰

In response to a request from Greenpeace on the company's palm oil supplies, McCain responded that it did not 'use palm or palm kernel oil in McCain branded products' in the UK.²⁷¹ According to the UK website, however, McCain uses palm oil in its own brand Beer Battered Chips.²⁷²

McCain did admit to using palm oil in food products it

manufactures for a third-party fast food company that specifies a '4% blend of palm oil'. It claims this comes from RSPO member suppliers.²⁷³

In Canada, the company uses palm oil in Delite chocolate, vanilla and marble cakes, Smiles Fun Shaped Potatoes, Microwave Pizza, amongst other products.²⁷⁴

Pizza Hut is not an RSPO member.²⁷⁵

Pizza Hut claims to be the 'biggest Pizza Company on the planet'.²⁷⁶ It uses palm oil in chocolate fudge cake, profiteroles, banoffee pie, ice cream and other desserts.²⁷⁷

Pizza Hut did not respond to a letter from Greenpeace asking the company to track the sources of its palm oil supplies.

Burger King is not a member of the RSPO.²⁷⁸

Burger King is the second largest hamburger chain in the world (it has 'millions of customers, who we love to bits').²⁷⁹ It uses palm oil in its hamburger buns, chicken bites, hash browns, doughnuts and a host of other products.²⁸⁰

Burger King did not respond to a letter from Greenpeace asking the company to track the sources of its palm oil supplies.

Cadbury Schweppes is a member of the RSPO.²⁸¹

Cadbury Schweppes claims to be 'the world's largest confectionery business',²⁸² selling products containing palm oil such as Cadbury's Flake – the 'crumbliest, flakiest chocolate in the world'.²⁸³

In a letter to Greenpeace, Cadbury Schweppes asserted that it could identify all its palm oil suppliers to the UK, 'all of whom are members of the RSPO'.²⁸⁴

Danisco is a member of the RSPO.²⁸⁵

Danisco claims to be the 'world's largest supplier of food emulsifiers',²⁸⁶ its products used in 'every second ice cream and cheese, every third box of detergent and every fourth loaf of bread produced globally'.²⁸⁷


The company uses up to 30,000 tonnes of refined palm oil each year.²⁸⁸





BIOFUELING RAINFOREST DESTRUCTION





'Two to nine times more CO₂ is released than would be saved by using an equivalent area of land to grow biofuels for 30 years. Put another way, to pay back the initial release of CO₂ from clearing the forest would take 60 to 270 years of growing biofuels (using current technologies).'

2007 King Review for the UK Government Treasury

CLIMATE CHANGE – A BRAND NEW MARKETING OPPORTUNITY FOR PALM OIL

RSPO members like the ADM-Kuok-Wilmar alliance see biodiesel as an opportunity to expand their palm oil market share.

The alliance brings together Wilmar, the 'largest palm biodiesel manufacturer in the world', and ADM, the 'world leader in renewable transport fuels'.²⁸⁹ They praise biofuel use because of the notional reduction in CO₂ emissions it provides compared to fossil fuel use:

'Growing concerns about global warming and the impact of carbon emissions on the environment have resulted in several initiatives on emissions control which will encourage the use of renewable fuels and energy. This represents tremendous opportunities for oilseed growers and processors.'²⁹⁰

The idea of producing an endless supply of inexpensive and climate friendly fuel from what sprouts from the soil seems almost too good to be true for a world worried about global warming, yet keen not to change its lifestyle aspirations or the efficiency of its vehicles.

And it is ... too good to be true, but it does present a great market opportunity to expand palm oil production. Just look at the volumes involved.

NAVIGATING THE NUMBERS: KEY NUMBERS FOR CALCULATING LAND AREA NEEDED TO REPLACE A GIVEN AMOUNT OF DIESEL

The energy content of 1 tonne of diesel is equivalent to 1.1 tonnes of vegetable oil.²⁹¹ Or, 1 tonne of vegetable oil can replace 0.9 tonne of diesel.

1 hectare of mature oil palm plantation in Indonesia gives an average yearly harvest of about 3.7 tonnes of palm oil.²⁹²

1 hectare of mature oil palm plantation yields the energy equivalent of 3.36 tonnes of diesel.²⁹³

One tonne of vegetable oil is 1,100 litres;²⁹⁴ the energy in this is equivalent to 990 litres of diesel.

GETTING IT ALL IN PERSPECTIVE – PALM OIL IS NO SILVER BULLET FOR REDUCING TRANSPORT EMISSIONS

'Producing energy crops for biofuel requires a large area of arable land, which for some countries in the EU is a problem. [...] With current conventional crops such as rapeseed, the task of growing sufficient volumes domestically to meet the 10% target appears to be effectively impossible, as it would require most of, or more than, the arable land available. In order for the targets to be met, it is likely that a large amount of the biofuel will need to be imported.'²⁹⁵

Oxera economic consultancy, 2007

The massive scale of global diesel consumption dwarfs currently available feedstock for biodiesel production.

According to the International Energy Agency (IEA), in 2005 the world road transport sector used 1473Mt of fuel – 872Mt of petrol and 601Mt of diesel. Europe alone used 173Mt of diesel.²⁹⁶

Biofuels have a relatively low value compared to many other vegetable oil products. Therefore, biodiesel is generally made from the cheapest of the bulk oil crops: soya, palm or rapeseed.

According to the United States Department of Agriculture (USDA), in 2005/6 global vegetable oil production from soya, palm and rapeseed was 87.43Mt.²⁹⁷ Soya and palm account for 80% of this in roughly equal proportions.²⁹⁸

This means that replacing just 10% of world diesel demand for road transport would require over 76%²⁹⁹ of total current global soya, palm and rapeseed oil production (allowing for the fact that vegetable oil-based biodiesel has only about 90% of the energy content of mineral diesel).³⁰⁰

Supply for biofuels in Europe is being driven by EU targets for its use in transport fuels. In early 2007, the EU Summit endorsed a biofuels minimum target of 10% by 2020,³⁰¹ almost doubling the target of the 2003 biofuel directive of 5.75% by 2010.³⁰² The increased target is dependent on production being both 'cost effective' and 'sustainable'.³⁰³

Europe alone would require over a fifth³⁰⁴ of current global production of the bulk vegetable oils to replace 10% of road transport diesel demand.³⁰⁵



WHY IS PALM OIL PART OF THE MIX? NOT ENOUGH OIL TO GO ROUND

As an economic consultancy for the UK Government observes, there is not enough arable land available to meet EU biofuel targets through domestic production of crops such as rapeseed.³⁰⁶

Large volumes of imports are likely, either to make the biodiesel itself or to fill the deficit left for the food industry by the use of rapeseed oil in biodiesel. As Unilever admits in a factsheet on biofuels: 'Demand for biofuel feedstock has already reduced the availability of raw materials.'³⁰⁷

Palm is the most land-efficient vegetable oil crop – far more productive per hectare than either soya or rapeseed.³⁰⁸

According to one RSPO member company, there is not enough rapeseed available to meet EU targets.³⁰⁹ Of the alternatives, 'vegetable oil sourced from palm oil is among the most widely and commercially available'.³¹⁰ The company predicts demand growth for biodiesel of 52Mt between 2005 and 2030 in the EU alone as road transport fuel demand continues to rise.³¹¹

Meeting this level of growth for vegetable oil through palm oil would mean more than 15 million hectares of mature oil palm plantation would need to be dedicated to meet EU demand. This is nearly three times the 2005 acreage in Indonesia under oil palm.³¹²

Certainly, demand for palm oil as a feedstock is set to grow significantly. According to the OECD, over the next decade to 2016: 'The nurturing of biodiesel production capacity will stimulate oilseed demand in the EU which, when combined with the growing demand for oilseed and palm oil for food use, will almost double EU imports of vegetable oils.'³¹³

Today, palm oil is the most significant vegetable oil in the world, with 30% of world edible oil production in 2006/7.³¹⁴

Estimates of increasing global production of the bulk vegetable oils and palm oil vary;³¹⁵ but the OECD-FAO Agricultural Outlook for 2006–2016 predicts that palm oil alone will account for nearly half the increased volume, close to 15Mt.³¹⁶

This expansion in oil palm plantations is likely to take place in Indonesia. According to one RSPO member, a Malaysian government-owned palm oil producer: 'Indonesia is the preferred destination for many Malaysian plantation companies to increase their plantation size as much of the most sought-

after and fertile plantation land in Malaysia is already planted.'³¹⁷

Already, the big commodity traders and energy companies are empire building – setting up joint ventures, laying claim to huge swathes of Indonesia's remaining forest, scrambling to claim status as the world's largest biodiesel producer.

Once this infrastructure is up and running, it will feed off forest destruction, fuelling not just our cars but also climate change.

The relentless spread of bulk commodity crops such as soya and palm has already taken its toll on soil, water and rainforests globally.³¹⁸ Expanding use of these crops will inevitably lead to further land conversion and further demands on already depleted natural resources, and will seriously exacerbate climate change.

LAYING THE FOUNDATIONS FOR FOREST DESTRUCTION

The ADM-Kuok-Wilmar alliance is a case in point, recently announcing 'rapid expansion plans' in relation to biodiesel.³¹⁹ One subsidiary, PT Wilmar Bio-Energi, commissioned its first biodiesel plant in Dumai, Riau in January 2007 and two more facilities were scheduled to be commissioned later in 2007.³²⁰ Total capacity is 1.05Mt. Wilmar boasts that the location of the plants 'provides easy access to abundant cheap raw materials'.³²¹ At the same time, between early 2006 and mid-2007, the ADM-Kuok-Wilmar alliance has made a fivefold increase in its concession area, gaining control of 570,000 hectares, of which nearly two-thirds have yet to be cleared and planted.³²²

In line with Indonesian law, Wilmar declared that its companies 'adhere strictly to a zero burning policy and do not engage in any logging activities'.³²³ Field investigation in July 2007 in Wilmar's recently acquired holdings in Central Kalimantan documented active and recent evidence of forest clearance.³²⁴

'The bulk of Wilmar's biodiesel capacity for FY 2007 has been pre-sold to buyers in Europe and the USA.'³²⁵

Currently diesel represents about 60% of road transport fuel consumed within Europe.³²⁶ In 2005, Europe's diesel consumption was 173Mt.³²⁷ Were all of PT Wilmar Bio-Energi's forecast biodiesel production (1.05Mt) dedicated to meeting EU biofuel demand, it would only meet 0.5% of 2005 demand for diesel.³²⁸ This production from Wilmar's biodiesel refineries will rely on harvests from almost 300,000 hectares of mature oil palm plantation.³²⁹



WHO IS DRIVING DEMAND FOR PALM OIL? CARGILL AS BACKSEAT DRIVER FOR PALM OIL GROWTH ON ALL FRONTS

According to one RSPO member, conventional diesel used in the UK now already uses a typical blend of 5% biodiesel.³³⁰

However, an alliance between Cargill and Greenergy Biofuels Ltd³³¹ is selling fuel blends of 20%, 30% or 50% biodiesel,³³² which use palm oil, soya and rapeseed oil as feedstocks.³³³ The website champions palm oil as a source: 'To ignore these tropical sources of biofuel [...] would significantly impact the world's ability to cut carbon emissions through biofuel usage.'³³⁴

The Cargill–Greenergy alliance currently controls half of the UK biofuels market. Customers include oil companies and major supermarkets like Tesco, as well as bus companies, road hauliers and train companies.³³⁵ According to one of its customers and shareholders – also an RSPO member – the company sources its palm oil 'from RSPO members in Indonesia and Malaysia'.³³⁶

By the end of 2007, Cargill-Greenergy plans to double its UK biodiesel capacity to 200,000 tonnes per year.³³⁷ It also has substantial biodiesel blending facilities in the port of Rotterdam,³³⁸ from where it ships biodiesel blends to customers across Europe.³³⁹

Despite these expansion plans, the alliance is quick to point the finger for palm oil expansion at others, declaring: 'The main driver of palm oil demand is food industry and population growth.'³⁴⁰ This fits rather oddly with Cargill's own statement to a UK Government committee: 'Our biodiesel investments are additional to and not at the expense of our food business and we recognise the paradox of managing both food and fuel supplies out of the same raw materials.'³⁴¹

WHAT DRIVES A LOW-CARBON ECONOMY? ENERGY EFFICIENCY, NOT EMISSIONS TRANSFER

EU biofuel targets must have strong sustainability safeguards if they are to prevent rainforest destruction and further GHG emissions. Ironically, however, in the desire to cut their own CO₂ emissions linked to transport and energy use, European governments are driving ecosystem destruction and are thereby responsible for vast and significant CO₂ emissions through forest burning and peat swamp drainage to plant oil

palm. CO₂ emissions from conversion of peat swamp forest to oil palm plantations are far greater than any gains from substitution of fossil fuels with palm oil.³⁴²

Use of biofuels linked to deforestation does not reduce GHG emissions – it simply transfers emissions from the biofuel consumer to the producer country.

This is not a realistic basis for tackling climate change. As an article published in *Science* in August 2007 makes clear: 'Policy-makers may be better advised in the short term (30 years or so) to focus on increasing the efficiency of fossil fuel use, to conserve the existing forests and savannahs, and to restore natural forest and grassland habitats on cropland that is not needed for food.'³⁴³

However, rather than focusing on efficient use of fossil fuel and drastic reductions in consumption, projections point in the opposite direction. The impact of cars on climate change is growing worse instead of better: more people are driving, cars are getting bigger, and CO₂ emissions are increasing. Indeed, under a business-as-usual scenario, by 2020 road transport fuel consumption is on track to have risen more than 10%.³⁴⁴

Addressing rising consumption through biofuel imports is not an answer, as the European Commission recognises: 'Increased use of biofuels in the EU will be accompanied by an increased external demand for biofuels and their feedstocks [...] There are substantial CO₂ losses if grassland is ploughed up or forest cleared. These losses can be expected to outweigh CO₂ gains from biofuels for many years.'³⁴⁵ This resonates with the findings of Renton Righelato of the World Land Trust and Dominick Spracklen from the University of Leeds on the impacts of deforestation for biofuel production. They report in the journal *Science* that between two and nine times more carbon emissions are avoided by trapping carbon in trees and forest soil than by replacing fossil fuels with biofuels: 'Taking this opportunity cost into account, the emissions cost of liquid biofuels exceeds that of fossil fuels.'³⁴⁶

Viable approaches exist for reducing transport fossil fuel consumption that do not entail the disastrous side-effects of agricultural expansion into rainforests. These include increasing the fuel efficiency of vehicles (both through technological development and through the use of existing technologies); developing alternative and more environmentally benign power sources such as electricity from renewables; using fuel more efficiently within the public transport system; and reducing the number and length of journeys taken.

In addition, while domestic production of biomass and use of waste undoubtedly has a critical role to play, use of these resources to drive cars rather than heat and power our homes may be inefficient. A report for the UK Government observes: 'When looking at opportunities to reduce CO₂ emissions from fuels, it is important to understand the linkages with other sectors. In particular, road transport must compete for scarce primary energy sources with other sectors, including power generation, animal feed, and food. The challenge is therefore to ensure that low-carbon energy sources are put to the most efficient, effective, environmentally responsible and socially just use.'³⁴⁷

TODAY'S EMPIRE BUILDING, TOMORROW'S DOWNFALL

Many other countries from oil dependent regions are following Europe's example and turning to biofuels from Indonesia's rainforests. The Chinese Government expects that by 2020 biofuel will account for 15% of transport fuel.³⁴⁸ India has set a target of 20% of diesel from biofuels by 2012.³⁴⁹ Already, China and India are the most significant palm oil consumers in the world, using about 25% of palm oil production.³⁵⁰

China and other developing countries in Asia are seeing rapid growth of road transport. Car ownership in China has doubled in the last five years and it already has the third highest car sales in the world.³⁵¹ By 2030, predictions by Goldman Sachs are that India and China will have 400 million cars – three times the number the USA had in 2000. By 2050, these two countries are on track to have 1.1 billion cars, nearly double the total global number of cars in 2000.³⁵²

That means a lot of land dedicated to biofuel production. The

Chinese government is already thinking ahead and turning its eyes to the region of Papua – the last great expanse of rainforest in Southeast Asia.

At the beginning of 2007, a strategic partnership of China National Offshore Oil Corporation (CNOOC),³⁵³ Hong Kong Energy (HKE) and PT Smart, a subsidiary of RSPO member Sinar Mas engaged in a US\$5.5 billion venture to develop what could be the world's largest oil palm and biofuel project to date, covering 1 million hectares of plantations in Papua and Kalimantan.³⁵⁴

Third largest company in the world³⁵⁵ and a member of the RSPO,³⁵⁶ HSBC has a specific policy not to provide financial services to companies involved in 'projects located in and which significantly degrade or convert Critical Natural Habitats' including rainforests.³⁵⁷ HSBC is a principle banker for the parent holding company for HKE.³⁵⁸ HSBC also holds up to a quarter of shares in one Sinar Mas subsidiary.³⁵⁹

Documents obtained by Greenpeace³⁶⁰ indicate that RSPO member Sinar Mas has plans far beyond this million hectare project. The internal company presentation shows that the Sinar Mas has mapped out plans to gain control of up to 2.8 million hectares of rainforest in Papua. Because, by Indonesian law, a single company cannot control more than 200,000 hectares of plantations in Papua,³⁶¹ Sinar Mas has already formed 14 subsidiaries.³⁶²

Planned facilities include a 7Mt/year crude palm oil refinery, a 5Mt/year biodiesel plant and bulk-handling terminals.³⁶³

To achieve this landgrab, according to investigations by a Singapore-based journalist, throughout 2007 Sinar Mas has been surveying plantation sites and wooing the local bureaucracy.³⁶⁴



'The draining of wetlands to produce any type of biofuel would produce a loss of stored carbon that would take hundreds of years to make up through the biofuels' annual greenhouse gas savings.'

European Commission, 2007

WHO ELSE IS GRABBING LAND AND SETTING UP INFRASTRUCTURE?

The Indonesian government is currently planning to expand biofuel production through 7 million hectares of dedicated plantation by 2015, including 4 million hectares of oil palm and 3 million of jatropha.³⁶⁵

At the beginning of 2007, 67 contracts committing to biofuel development were signed by industry and the Indonesian government.³⁶⁶

In addition to Sinar Mas' ambitious biodiesel project, Greenpeace estimates that current plans for biodiesel refineries will create additional capacity for biodiesel production within Indonesia in the region of 4Mt a year.³⁶⁷ Between Sinar Mas and these other players, therefore, over 2.5 million hectares of land will be dedicated to biofuel production.³⁶⁸

Where will they go?

Indonesia's Ministry of Forestry has already earmarked up to 9 million hectares of forests in Papua for conversion.³⁶⁹ Companies also already hold significant forested landbanks that have yet to be cleared. For instance, Sinar Mas has an undeveloped landbank of 200,000 hectares.³⁷⁰

EMISSIONS EXPLOSION – DUTA PALMA'S SMOKING GUN

'The carbon sequestered by restoring forests is greater than the emissions avoided by the use of the liquid biofuels.'³⁷¹

Science 17 August 2007

As noted above, the Duta Palma group is one of Indonesia's ten largest palm oil refiners³⁷² and a member of the RSPO. One of Duta Palma's subsidiaries³⁷³ is constructing a biofuel refinery with a capacity of 200,000 tonnes a year.³⁷⁴

Duta Palma is rapidly expanding its landbank and rapidly deforesting existing concession areas, some on deep peat over 2 metres deep.

According to the maps compiled by Wetlands International, which form the basis for Riau's current land use plan,

the peatlands within the three Duta Palma concessions investigated by Greenpeace cover a total area of 14,850 hectares. Over 90% of this (14,190 hectare) is marked as 2–4 metres deep.³⁷⁵

Drainage and fires on these peatlands puts substantial carbon stores at risk.

Assuming an average depth of 3 metres, these peatlands store about 25.5Mt of carbon.³⁷⁶

Were this volume of carbon released to the atmosphere, it would be equal to 2% of the annual global GHG emissions from road transport,³⁷⁷ or on a par with the annual GHG emissions of the UK's ten most inefficient coal power stations.³⁷⁸ The area in question is tiny: 0.0001% of global land area³⁷⁹ – about one-tenth the size of the city of Jakarta,³⁸⁰ or two-and-a-half times the size of Manhattan Island, New York.³⁸¹

Greenpeace's measurement of peat depths and visual observation of peat depths elsewhere (eg drainage canals) shows that substantial areas of these concessions are on very deep peat – in places greater than 8 metres depth – suggesting that the carbon store at risk is far greater.

The more we allow conversion of peat, the more GHG emissions the world will be burdened with. How many more areas have been allocated to oil palm concessions with peat far deeper than maps would indicate?

WHAT DOES ALL THIS MEAN?

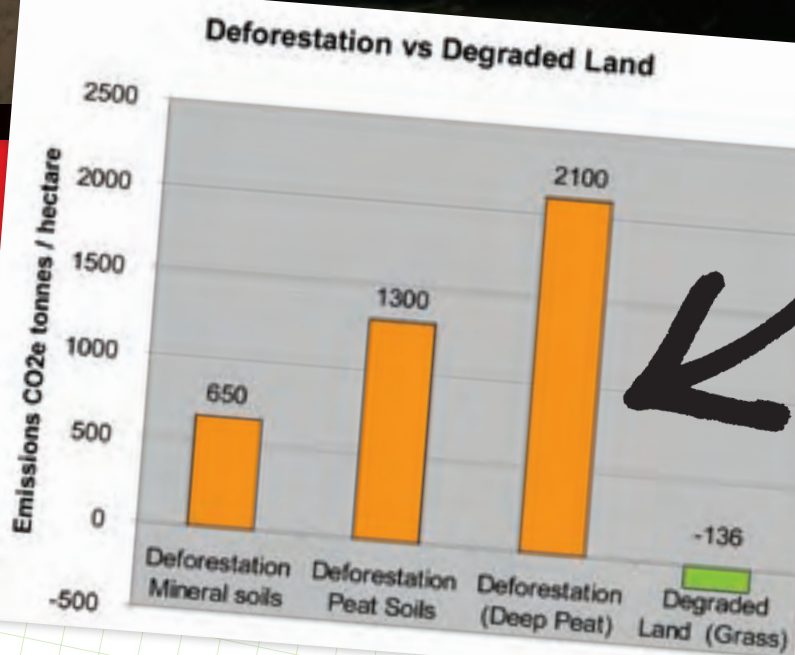
Duta Palma is just one example of an RSPO company driving palm oil expansion and peat degradation that is involved in biodiesel.

Growing global demand for vegetable oil for food combined with current landgrabbing by biofuel interests – many of them RSPO members – is significantly increasing the pressure on the world's threatened rainforests and other vulnerable habitats. Continuing clearance of tropical rainforests seems inevitable unless action is taken now. Biofuel production from oil palm expansion – presented as a solution to climate change – spells disaster for the climate.

An end to deforestation is the only solution.

'The loss of natural forests around the world contributes more to emissions than the global transport sector and therefore it is important to ensure that increased biofuel demand does not exacerbate this problem.'

2007 King Review for the UK Government Treasury



Germer J and J Sauerborn (2007)
'Estimation of the impact of oil palm
plantation establishment on greenhouse
gas balance' *Environ Dev Sustain* DOI
10.1007/s10668-006-9080-1

DEFUSE OR DETONATE?

NASA climate scientists warn us that 'continued rapid growth of CO₂ emissions and infrastructure for another decade' may make halting high-risk increase in global temperatures 'impractical if not impossible'.³⁸²

Developing countries with tropical rainforests – such as Indonesia and Brazil – do not have targets for emissions reductions under the Kyoto Protocol. There is no international financing mechanism to support them in reducing their emissions from deforestation, although countries that are signatories to the UN Convention on Climate Change have made a general commitment to protect and conserve the world's carbon reservoirs.³⁸³

While international climate negotiations in 2007 are opening discussions on ways to reduce emissions from deforestation, global commodity traders continue to expand commodity infrastructure into the world's rainforests. Once such infrastructure is in place, stopping the 'rapid growth of CO₂ emissions' linked to rainforest destruction becomes 'impractical if not impossible'.

Faced with impending climate catastrophe, the palm oil industry is speculating on the predicted growth in global demand for vegetable oil by grabbing valuable, available cheap land – ie Indonesia's carbon-rich peatland and rainforest – and building infrastructure, including palm oil refineries and biodiesel plants.

By maintaining a business-as-usual relationship with commodity traders, the big food giants like Unilever and Nestlé are supporting the 'rapid growth of CO₂ emissions and infrastructure' that may render halting dangerous climate change 'impractical if not impossible'.

Just as perverse are political strategies for reducing emissions from transport. National energy policies and current emissions accounting incentivise this infrastructure development.

'The simplest and most effective measure to prevent a further increase in fires and CO₂ emissions is thus by conservation of remaining peat swamp forests and rehabilitation of degraded peat swamp forests.'

Wetlands International, 2006

In an effort to reduce their own emissions, oil dependent countries are striking deals with oil palm companies in Indonesia – for instance, Sinar Mas' partnership with the Chinese National Offshore Oil Corporation. This trade amounts to emissions transfer not emissions reduction: emissions linked to palm oil production, such as forest clearance and peatland destruction, are attributed to the producer country. Unlike Annex I signatories to the Kyoto treaty, Indonesia – as a developing country – is not required to set a target to reduce its GHG emissions.

Consequently, since the Kyoto Protocol does not provide incentives to prevent the destruction of tropical forests, the expansion of oil palm into carbon-rich landscapes such as peatlands and forests makes huge short-term economic sense, but no ecological sense.

Urgent action and cooperation is needed on a global level to shift the economic drivers of society. As NASA's climate scientists observe: 'The task is to achieve a transition to clean carbon-free energy sources without pushing the climate system beyond a level where disastrous irreversible effects become inevitable.'³⁸⁴

The debate is not whether we need to reduce emissions from fossil fuels in the industrialised world or whether we should stop deforestation in the remaining forests of the developing world. The inescapable reality is that we must do both, and soon.

At the same time, growing global demand for vegetable oil for food combined with current landgrabbing by biofuel interests – many of them RSPO members – is significantly increasing the pressure on the world's threatened rainforests and other vulnerable habitats. Continuing clearance of tropical rainforests for agricultural commodity crops like oil palm seems inevitable unless action is taken now by industry and governments.

MAKING BIG EMISSIONS CUTS FAST: HALTING DEFORESTATION

*'Activities in forestry are the largest contributor to emissions of greenhouse gases in Indonesia. It is time we put together all of our resources to prevent forest fires and irresponsible deforestation. We need to be united in this effort because the potential dangers of climate change are too great to ignore'*³⁸⁵

World Bank/ UK Government funded report, 2007

Forest destruction is responsible for about one fifth of global GHG emissions. Destruction of Indonesia's peatlands alone accounts for 4% of global annual GHG. Curbing tropical deforestation is one of the quickest, most effective ways to cut GHG emissions.

Where can big emissions be cut quickly and cost effectively?

Cut one: Cut global deforestation: annual emissions savings – up to 2Gt CO₂

According to an IPCC report, up to 2Gt CO₂ (equivalent of up to 4% of current annual GHG emissions) can be cut cost effectively. The report puts the cost for making these emissions savings at up to \$100/tonne CO₂.³⁸⁶

Significantly, this figure does not include potential to halt emissions from peatland and other bog fires.³⁸⁷

Cut two: Stop Indonesian peatland fires, establish a moratorium on peatland conversion: annual emissions savings – 1.3Gt CO₂

The emissions from Indonesia's peatland fires largely represent new expansion and peatland clearance. The best way to avoid these emissions is to stop further conversion of peat swamp forests. Since use of fire for forest or agricultural clearance is illegal, as is degradation of deep peat, the only cost is that of law enforcement and improved governance.

Cut three: Rehabilitate Indonesia's degraded peatlands: annual emissions savings – 0.5Gt CO₂

Avoiding ongoing emissions from Indonesia's degraded peatlands poses a cost effective opportunity to make rapid emissions reductions. The area involved is miniscule – about 10 million hectares or less than 0.1% of the earth's land surface. One project being pursued by Wetlands International aims to restore 43,500 hectares of degraded peatlands in Central Kalimantan, avoiding the emission of 3.4Mt of CO₂ a year, for a one-off investment of about \$720,000 (this equates to \$0.22/tonne).³⁸⁸ This is small change in global climate change terms.

Total cuts: Potential annual emissions savings: up to 3.8Gt CO₂. This equates to nearly 8% of current annual GHG emissions.



TIME FOR ACTION:

*'A moratorium will be a strong signal. [It] can be a first step in countering peatland degradation [,] to buy time to maximize the new opportunity of carbon finance. A moratorium needs to be part of a longer-term strategy of land use planning.'*³⁸⁹

Yogyakarta statement, endorsed by the Indonesian Minister of the Environment, August 2007

Protecting the world's remaining forests is crucial to efforts to stabilise the climate, to preserve global biodiversity and to ensure the livelihoods of millions of people who depend on forests.

Forest destruction is responsible for about one fifth of global GHG emissions – Indonesia and the Amazon are by far the two largest sources of GHG emissions. Emissions from Indonesia's degraded peatlands represent 4% of global GHG emissions, but the area of degraded peatlands involved is relatively small – about 10 million hectares or less than 0.1% of the earth's land surface.

If we are to prevent dangerous global climate change, we need a global effort to halt forest destruction as well as bringing about a drastic reduction in our use of coal, oil and gas by using energy more efficiently and utilising cleaner sources of energy.

In order to help protect the climate, Greenpeace is calling for an end to deforestation in Indonesia and the Amazon rainforest – by far the two largest sources of GHG emissions from deforestation.



WHAT DOES THE INDONESIAN GOVERNMENT NEED TO DO?

STOP THE PROBLEM: ZERO DEFORESTATION

Establish a moratorium on forest clearance and peatland degradation.

START THE SOLUTION: CLIMATE PROTECTION

Prioritise protection of remaining peat swamp forests and other forest areas with high carbon storage capacity, biodiversity values and benefits for indigenous peoples and other local communities.

START THE SOLUTION: CUT ONGOING EMISSIONS

Rehabilitate degraded peatland areas with natural and native flora.



WHAT DOES THE INDUSTRY NEED TO DO?

STOP THE PROBLEM: SUPPORT ZERO DEFORESTATION

Support a moratorium on forest clearance and peatland degradation.

START THE SOLUTION: CLEAN UP THE TRADE

Do not trade with those engaged in deforestation and peatland degradation.

Inform suppliers that purchasers will no longer buy from companies engaged in forest conversion and peatland degradation.



WHAT DO OTHER GOVERNMENTS NEED TO DO?

STOP THE PROBLEM: REDUCE EMISSIONS FROM DEFORESTATION

Countries should take immediate action to reduce their emissions from deforestation and consumption of and trade in products coming from the destruction of the world's remaining forests.

Devise strict sustainability criteria to ensure all supportive government policies for biomass or biofuels, such as subsidies, tax exemptions and targets do not include products directly or indirectly responsible for deforestation.

START THE SOLUTION: FUND CLIMATE PROTECTION

Agree a global funding mechanism to reduce emissions from deforestation and make this a central part of the next phase of the Kyoto Protocol (post-2012) agreement on climate change.³⁹⁰

Make available international funds to help countries take immediate action to reduce their emissions from deforestation: agree a global funding mechanism to transfer money from rich to poor countries for forest protection.





ENDNOTES

- 1 Hooijer et al (2006): 29
- 2 There are 27.1 million hectares of peatlands in SE Asia, 83% of this is in Indonesia. 10.6 million hectares (39%) of peatland in SE Asia was deforested in 2000. Accounting for continued deforestation at a rate of 1.5%/year, the deforested peatland area in 2006 is around 45% of total peatland area, or 12.1 million hectares. 83% of 12.1 = 10 million hectares of peatland deforested and degraded. Source: Hooijer et al (2006): 9, Wetlands International (2006a, 2006b). CIA (2007) gives global land area as 15 billion hectares. So Indonesia's degraded peatlands equal 0.07% of the earth's land surface.
- 3 0.5Gt carbon, or 1.8Gt CO₂. Santilli et al (2005): 2 'Table 1, Carbon emissions from fossil fuel, tropical deforestation, forest fires (Brazil and Indonesia), fires and emission reductions targeted by the Kyoto Protocol'
- 4 **4,043,601 hectares.** Wahyunto et al (2003): 34
- 5 Land areas of Taiwan and Switzerland are 3.5 and 4 million hectares respectively. CIA (2007)
- 6 14.6Gt of carbon. Wahyunto et al (2003): 34
- 7 based on emissions of 10.18Gt CO₂ from fossil-fuel power stations in 2004. IPCC WGIII (2007) 104 'Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)'
- 8 1.4 million hectares. IPOC (2006)
- 9 Colchester et al (2006): 25 citing Forest Peoples' Programme and Sawit Watch (2006)
- 10 RSPO (2007b)
- 11 Adam Harrison, WWF, letter to Greenpeace, 19 October 2007
- 12 Dave Rogers, Cargill Europe, letter to Greenpeace, 15 October 2007
- 13 Gavin Neath, Unilever, letter to Greenpeace, 2 October 2007
- 14 Hilary Parsons, Nestlé, letter to Greenpeace, 11 October 2007
- 15 Righelato, Renton and Dominick V Spracklen (2007)
- 16 WRI (2007)
- 17 IPCC WGII (2007): 11
- 18 IPCC WGIII (2007): 23
- 19 IPCC WGII (2007): 213
- 20 IPCC WGII (2007): 44 Technical Summary: Box TS.5. 'The main projected impacts for systems and sectors'; IPCC WGI (2007): 543-544
- 21 IPCC Fourth Assessment report Working Group III states that to keep temperature rise below 2°C, global emissions need to peak by 2015 and then be reduced by 50-85% by 2050 (from 1990 levels). This means industrialised countries cutting their emissions by 25-40% by 2020 and by 80-95% by 2050. UNFCCC (2007): p5, Table 1, 'Characteristics of greenhouse gas stabilization scenarios'; p20, Table 4 'Estimates of emission reductions by Annex I Parties using various methods'
- 22 IPCC (2000): 4, Table 1: 'Global stocks in vegetation and soil carbon pools down to a depth of one metre' gives atmospheric carbon storage as 760Gt and forests including forest soils as 1,146Gt.
- 23 IPCC WGIII (2007): 104 'Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)'
- 24 IPCC WGII (2007): 213 states that there are several major carbon stocks that are 'at a high degree of risk from projected unmitigated climate and land-use changes'
- 25 World Bank (2007)
- 26 FAO (2005)
- 27 Greenpeace SE Asia, 'Indonesia makes it to 2008 Guinness World Records as fastest forest destroyer on the planet' 3 May 2007 www.greenpeace.org/seasia/en/news/indonesia-makes-it-to-2008-gui
- 28 2.8Gt CO₂ per year through deforestation during the 1990s; 3Gt CO₂ through deforestation and fossil fuel use WRI (2007) Climate Analysis Indicators Tool vs 4.0
- 29 Down from 162 million to 88.5 million hectares in 2005. FWI/GFW (2002) and FAO (2005)
- 30 CIA (2007)
- 31 Nelleman et al (2007): 28
- 32 Total area in 2005 was 5.5 million hectares. IPOC (2006)
- 33 cited in IFC (2007): 208: according to the industry data 3% of all oil palm plantations are established in primary forests and 63% in secondary forest and vegetation.
- 34 FWI/GFW (2002): 14 citing Holmes D (2000)
- 35 FWI/GFW (2002): 43
- 36 5.5 million hectares in 2005. IPOC (2006). 6.1 million hectares in 2006. Suharto (2007): 4 'Area and production by category of producer, preliminary data for 2006'
- 37 Legowo (2007)
- 38 Colchester et al (2006): 26, Table 1.2 'Provincial government plans to expand oil palm plantations'
- 39 Colchester et al (2006): 25, citing Sawit Watch
- 40 Wetlands International (2007)
- 41 FAO (2006): 56
- 42 WWF (2007b): 5
- 43 Based on an Indonesian average yield of 3.7 tonnes CPO per hectare of mature oil palm plantation and global production of 37.1Mt CPO. Mielke Oil World (2007) Letter from RSPO member, 9 October 2007
- 44 OECD-FAO (2007)
- 45 See for instance Unilever, 'Unilever's position statement on renewable energy and biofuels.' [www.unilever.com/ourvalues/environment-](http://www.unilever.com/ourvalues/environment-society/sus-dev-report/climate-change/renewable-energy-biofuels.asp)
- [society/sus-dev-report/climate-change/renewable-energy-biofuels.asp](http://www.unilever.com/ourvalues/environment-society/sus-dev-report/climate-change/renewable-energy-biofuels.asp) accessed 31/10/07
- 46 Hooijer et al (2006): 29
- 47 IPCC WGIII (2007): 3
- 48 Based on emissions from deforestation of 8.52 billion tonnes. IPCC WGIII (2007): 104 'Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)'. Indonesia's peatland emissions are 1.8Gt/year. Hooijer et al (2006): 29. There are 27.1 million hectares of peatlands in SE Asia, 83% of this is in Indonesia. 10.6 million hectares (39%) of peatland in SE Asia was deforested in 2000. Accounting for continued deforestation at a rate of 1.5%/year, the deforested peatland area in 2006 is around 45% of total peatland area, or 12.1 million hectares. 83% of 12.1 = 10 million of peatland deforested and degraded. Source: Hooijer et al (2006): 9, Wetlands International (2006a, 2006b). CIA (2007) gives global land area as 15 billion hectares. So Indonesia's degraded peatlands equal 0.07% of the earth's land surface.
- 49 1.26 Gt CO₂ (90% of annual 1.4 Gt CO₂) from peatland fires out of 1.8 Gt CO₂. Source: Hooijer et al (2006): 29
- 50 Hooijer et al: 17
- 51 There are 27.1 million hectares of peatlands in SE Asia, 83% of this is in Indonesia. 10.6 million hectares (39%) of peatland in SE Asia was deforested in 2000. Accounting for continued deforestation at a rate of 1.5%/year, the deforested peatland area in 2006 is around 45% of total peatland area, or 12.1 million hectares. 83% of 12.1 = 10 million of peatland deforested and degraded. Source: Hooijer et al (2006): 9, Wetlands International (2006a, 2006b). CIA (2007) gives global land area as 15 billion hectares.
- 52 Hooijer et al (2006): 1
- 53 UNEP (2002)
- 54 Hooijer et al (2006): 1
- 55 based on emissions of 10.18Gt CO₂ from fossil-fuel power stations in 2004. Source: IPCC WGIII (2007) 104. 'Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)'
- 56 Page et al (2002); Hooijer et al (2006): 1
- 57 Hooijer et al (2006): 6
- 58 based on emissions of 10.18Gt CO₂ from fossil-fuel power stations in 2004. IPCC WGIII (2007) 104 'Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)'
- 59 Hooijer et al (2006): 6
- 60 UNEP (2002)
- 61 UNEP (2002)
- 62 Hadley Centre (2007)
- 63 NASA (2007)

- 64 Page et al (2002) estimates tropical peatland carbon storage at 60kg/m³, or 600 tonnes per hectare at 1m depth of peat – deeper soils would store even larger quantities of carbon.
- 65 Wetlands International (2006a): 2
- 66 Wetlands International (2006a): 4
- 67 Scottish Mining Museum (2007)
- 68 Hadley Centre (2007)
- 69 Wetlands International (2006a): 3
- 70 Hooijer et al (2006): 18, Figure 12
- 71 Hooijer et al (2006): 18, Figure 12
- 72 Germner and Sauerborn (2007): 1
- 73 Hooijer et al (2006): 17
- 74 Hooijer et al (2006): 13
- 75 Hooijer et al (2006): 26
- 76 Hooijer et al (2006): 26
- 77 Hooijer et al (2006): 26
- 78 Hooijer et al (2006): 29
- 79 WRI (2007)
- 80 WRI (2007)
- 81 5 million hectares of largely forest land in ten months. Goldammer and Hoffmann (2001)
- 82 The report estimates that between 0.81 and 2.57Gt of carbon were released to the atmosphere in 1997 as a result of burning peat and vegetation in Indonesia, a volume equivalent to 13–40% of the mean annual global carbon emissions from fossil fuels. Source: Page et al (2002): 61
- 83 Forestry Act No. 41/1999; Plantation Law 18/2004, article 26 states: 'any entrepreneur of plantation business is not allowed to open and/or manage its land by burning it, which can result in pollution and destruction of environment'. Source: Sawit Watch et al (2007)
- 84 Wetlands International (2007)
- 85 Based on area of 4,043,601 hectares and 14.6Gt of stored carbon. Wahyunto et al (2003): 34
- 86 Wahyunto et al (2003): 34
- 87 Land areas of Taiwan and Switzerland are 3.5 and 4 million hectares respectively. Source: CIA (2007) World Factbook
- 88 Wahyunto et al (2003): 34
- 89 Based on 14.6Gt of carbon stored in Riau's peatland area (equivalent to 53.5Gt CO₂) and 49Gt CO₂e global annual GHG emissions in 2004. Wahyunto et al (2003): 34, IPCC WGIII (2007): 3
- 90 Uryu et al (2007): 3-8
- 91 Uryu et al (2007): 3-8, and Wahyunto et al (2003)
- 92 Greenpeace investigations 2006-2007
- 93 IPOC (2006)
- 94 WWF (2006b)
- 95 IPOC (2006)
- 96 499,000 hectares logging, 767,000 hectares timber plantations and 882,000 hectares palm oil concessions. Hooijer et al (2006): 13 Table 4
- 97 WWF (2001)
- 98 Colchester et al (2006): 25 citing SawitWatch
- 99 Copy held by Greenpeace
- 100 Annual deforestation rate at 1.87 million hectares a year. FAO (2005): 157 Table 4
- 101 Suharto (2007); FAO (2005)
- 102 Friends of the Earth (2004) citing Sawit Watch (2002)
- 103 37.7% Source: Hooijer et al (2006): 14 Figure 10
- 104 Decree of Minister of Forestry and Plantation Number 376/1998, dated 8 April 1998. Decree no 376/1998 issued by the Ministry of Forestry and Plantations, 8 April 1998, gives criteria for choosing areas for oil palm plantations: 'plantation developments on peat soils deeper than two metres are not allowed'
- 105 Presidential Decree No. 32/1990, source: Walhi et al (2006). Presidential decree no 32/1990 on 'Management of Protected Areas' 25 July 1990: Article 10 specifies that 'upstream swamp and peatlands deeper than 3 metres should be protected'.
- 106 Greenpeace investigations
- 107 Credit Suisse (2006)
- 108 Greenpeace investigations June-October 2007
- 109 Duta Palma, 'Dutapalma Nusantara and Subsidiaries' www.dutapalma.co.id/plant.htm accessed 29/10/07
- 110 Sizes of concessions listed are based on spatial analysis of the maps attached to the permits of the respective concessions.
- 111 Until February 2007, the relevant legislation was Ministry of Agriculture Decree "Guidance for Plantation Permits (Pedoman Perizinan Usaha Perkebunan)" No 357/Kpts/HK.350/5/2002 of 23 May 2002, article 7 sentence 1a "For 1 company or company group, maximum total area is 20,000 ha in one province or 100,000 ha for the whole of Indonesia (nationality)" The regulation was revised in February 2007: Ministry of Agricultural Decree "Guidance for Plantation Permits (Pedoman Perizinan Usaha Perkebunan)" No 26/Permentan/OT.140/2/2007 of 28 February 2007, article 12 sentence 1 "maximum total area for 1 company is 100,000 ha", article 12 sentence 3 "maximum total area for 1 company in Papua is 2 x 100,000 ha"
- 112 PT Kencana Amal Tani (8,766ha), PT Banyu Bening Utama (5,477ha), PT Bertuah Aneka Yasa (9,960ha), PT Mekar Sari Alam Lestari (15,416ha), PT Palma Satu (15,505ha)
- 113 Decree no 376/1998 issued by the Ministry of Forestry and Plantations, 8 April 1998, gives criteria for choosing areas for oil palm plantations: 'plantation developments on peat soils deeper than two metres are not allowed'; Presidential decree no 32/1990 on 'Management of Protected Areas' 25 July 1990: Article 10 specifies that 'upstream swamp and peatlands deeper than 3 metres should be protected'.
- 114 Greenpeace has obtained a document – an environmental impact assessment (EIA), part of the initial stages of applying for a concession title – including a map, for an area adjacent to Duta Palma's known existing operations. The new company filing this EIA, PT Palma Satu, has the same logo as Duta Palma and is owned by Cheryl Darmadi, the daughter of Duta Palma owner Surya Darmadi. In 2007 (after much clearing had already taken place), the company obtained an in principle agreement from the local district head to establish a palm oil plantation on this area. However, no concession rights have been granted for conversion of this 14,000 hectare area.
- 115 Wahyunto et al (2003); large parts of PT BBU, PT Palma Satu and PT BAY are marked as being on 2-4 metre deep peat, while PT KAT is on mineral soil.
- 116 'Kawasan lindung'
- 117 Wahyunto et al (2003); these concessions cover 30,942ha
- 118 Friends of the Earth (2002)
- 119 Greenpeace investigation June-October 2007
- 120 Greenpeace investigation June-October 2007
- 121 Greenpeace investigation June-October 2007
- 122 IUCN (2007)
- 123 RSPO (2007b)
- 124 Adam Harrison, WWF, letter to Greenpeace, 19 October 2007
- 125 Unilever, 'Growing the Future – Unilever and sustainable agriculture': 23 www.unilever.com/Images/es_Growing_for_the_Future_3rd_Ed_tcm13-27805.pdf accessed 15/10/07
- 126 Unilever, 'Annual report 2005' www.unilever.com/Images/ir_2005_About_Unilever_tcm13-35723.pdf
- 127 Unilever 'About Unilever' www.unilever.co.uk/ourcompany/aboutunilever/introducing_unilever/?linkid=navigation accessed 1/11/07
- 128 Stern (2006)
- 129 Eg CalorieLab <http://calorielab.com/restaurants/ben-and-jerrys/marsha-marsha-marshmallow/255/21259>; Flora www.florapro-activ.com.au/245_250.htm; Ocado, Product Information, Knorr Stock Cubes www.ocado.co.uk/webshop/getProductDetails.do?parentContainer=RECIP&sku=11115011; Unilever Product Information www.unilever.com/PIOTI/EN/p3.asp?selectCountry=UK&language=EN&brandid=DOVE; Unilever Product Information www.unilever.com/PIOTI/EN/p3.asp?select

- Country=UK&language=EN&brandid=VAS
ELINE; Beauté Test [www.beaute-test.com/
shampooing_aux_extraits_de_coton_timotei.
php](http://www.beaute-test.com/shampooing_aux_extraits_de_coton_timotei.php) accessed 18/10/07
- 130 Gavin Neath, CBE, Unilever letter to Greenpeace, 2 October 2007
- 131 Unilever, 'Our Programmes' [http://www.unilever.com/ourvalues/environment-society/
sus-dev-report/integrating-sustainability/
sustainable-agriculture/our-programmes.
asp?linkid=navigation](http://www.unilever.com/ourvalues/environment-society/sus-dev-report/integrating-sustainability/sustainable-agriculture/our-programmes.asp?linkid=navigation) accessed 1/11/07
- 132 Unilever, 'Our Programmes' [http://www.unilever.com/ourvalues/environment-society/
sus-dev-report/integrating-sustainability/
sustainable-agriculture/our-programmes.
asp?linkid=navigation](http://www.unilever.com/ourvalues/environment-society/sus-dev-report/integrating-sustainability/sustainable-agriculture/our-programmes.asp?linkid=navigation) accessed 1/11/07
- 133 Clay (2005)
- 134 Clay (2005)
- 135 Greenpeace investigation 2006-2007
- 136 Cargill, 'Cargill News, September-October 2007' [www.cargill.com/files/cn_palm_
sourcing.pdf](http://www.cargill.com/files/cn_palm_sourcing.pdf) accessed 31/10/07
- 137 Cargill, 'Cargill and Palm Oil Production' www.cargill.com/news/issues/palm_roundtable.htm accessed 29/10/07
- 138 Forbes, 'The largest private companies in 2005: 1: Cargill' [www.forbes.com/lists/2005/
21/5ZUZ.html](http://www.forbes.com/lists/2005/21/5ZUZ.html) accessed 29/10/07
- 139 Cargill, 'Cargill History and Current Status' [www.cargill.com/news/issues/palm_current.
htm#TopOfPage](http://www.cargill.com/news/issues/palm_current.htm#TopOfPage) accessed 29/10/07; Greenpeace investigation 2006-2007
- 140 Evidence held by Greenpeace
- 141 Evidence held by Greenpeace
- 142 Evidence held by Greenpeace
- 143 Cargill, 'Palm Products in Malaysia' www.cargill.com.my/products/wtu_intro.html, accessed 15/10/07
- 144 Evidence held by Greenpeace
- 145 Polish Information and Foreign Investment Agency (2006); see also Unilever Poland [www.unilever.pl/ourcompany/Kariera/Praca_w_
Unilever/Nasze_fabryki/Poznan.asp](http://www.unilever.pl/ourcompany/Kariera/Praca_w_Unilever/Nasze_fabryki/Poznan.asp) accessed 4/11/07
- 146 Greenpeace investigations June-October 2007
- 147 US Patent No. 20060141102 is evidence of this. Free Patents Online 'Frozen confection and process for manufacturing such' www.freepatentsonline.com/20060141102.html accessed 15 October 2007
- 148 Wilmar International '2007 Second Quarter results briefing' 14 August 2007 [www.wilmar-international.com/investor/Wilmar_2QFY07_
Presentation_Slides.pdf](http://www.wilmar-international.com/investor/Wilmar_2QFY07_Presentation_Slides.pdf)
- 149 ADM claims to hold a 6.7% interest in Wilmar, however through its 19.6% holdings in Wilmar Holdings Pte Ltd, ADM has an effective interest of 16.2% shares. Wilmar, 'Corporate Presentation 14 December 2006' [www.wilmar.co.id/investor/
WilmarMergerPresentation14.12.06.pdf](http://www.wilmar.co.id/investor/WilmarMergerPresentation14.12.06.pdf)
- 150 The Kuok group has a 31% stake in Wilmar International. Additionally, Wilmar is substantially owned by Wilmar Holdings Pte Ltd which is, in turn, substantially owned by Messrs Kuok Khoo Hong and ADM. Wilmar, 'Corporate Presentation 14 December 2006' [www.wilmar.co.id/investor/
WilmarMergerPresentation14.12.06.pdf](http://www.wilmar.co.id/investor/WilmarMergerPresentation14.12.06.pdf), Wilmar, 'Wilmar's compliance placement receives overwhelming response from local and global institutional investors' News Release 7 August 2006 [www.wilmar-international.
com/news/press_releases/Placement%20Ne
ws%20Release%20Final%202007.08.06.pdf](http://www.wilmar-international.com/news/press_releases/Placement%20News%20Release%20Final%202007.08.06.pdf)
- 151 Wilmar, 'Wilmar Embarks on Rapid Expansion Plans' Press release 28 August 2006; Wilmar International, 'Wilmar secures all approvals for US\$4.3 billion merger and acquisitions' News release 22 June 2007
- 152 Wilmar International, 'Annual Report 2006': 56 [www.wilmar-international.com/investor/
Annual%20Report%202006.pdf](http://www.wilmar-international.com/investor/Annual%20Report%202006.pdf)
- 153 Wilmar International, 'Annual Report 2006': 21 [www.wilmar-international.com/investor/
Annual%20Report%202006.pdf](http://www.wilmar-international.com/investor/Annual%20Report%202006.pdf)
- 154 Forbes, 'Southeast Asia's 40 richest' [www.forbes.com/lists/2005/09/07/southeast-asia-
richest-cz_05sealand.html](http://www.forbes.com/lists/2005/09/07/southeast-asia-richest-cz_05sealand.html) accessed 31/10/07
- 155 ADM 'ADM Media FAQs' www.admworld.com/naen/pressroom/media.asp accessed 29/10/07
- 156 ADM 'Crude Palm Oil Futures' www.e-adm.com/futr/futr_display.asp accessed 29/10/07
- 157 Evidence held by Greenpeace
- 158 Wilmar, 'Wilmar's compliance placement receives overwhelming response from local and global institutional investors' News Release 7 August 2006 [www.wilmar-international.
com/news/press_releases/Placement%20Ne
ws%20Release%20Final%202007.08.06.pdf](http://www.wilmar-international.com/news/press_releases/Placement%20News%20Release%20Final%202007.08.06.pdf)
- 159 Port of London Authority (2007)
- 160 Stern (2006)
- 161 Unilever 'Our Brands' [www.unilever.co.uk/
ourbrands/](http://www.unilever.co.uk/ourbrands/) accessed 26/10/07
- 162 Golden Hope (2006): 54
- 163 RSPO (2007b)
- 164 Golden Hope (2006)
- 165 Bloomberg (2007)
- 166 The companies are controlled by government-managed fund manager Permodalan Nasional Bhd. Unimills, '3 Malaysian government-linked palm oil entities to fuse, creating world's largest producer' 9 January 2007 [www.unimills.com/
searchnews_en.html?id=49&articleType=2](http://www.unimills.com/searchnews_en.html?id=49&articleType=2)
- 167 Unimills, '3 Malaysian government-linked palm oil entities to fuse, creating world's largest producer' 9 January 2007 [www.unimills.com/
searchnews_en.html?id=49&articleType=2](http://www.unimills.com/searchnews_en.html?id=49&articleType=2)
- 168 Unimills, '3 Malaysian government-linked palm oil entities to fuse, creating world's largest producer' 9 January 2007 [www.unimills.com/
searchnews_en.html?id=49&articleType=2](http://www.unimills.com/searchnews_en.html?id=49&articleType=2)
- 169 Golden Hope (2006): 77
- 170 Guthrie (2006): 231, 56
- 171 Guthrie (2007)
- 172 Bloomberg (2007)
- 173 OECD-FAO (2007): 60
- 174 Evidence held by Greenpeace
- 175 Golden Hope, 'Corporate Profile' www.goldenhope.com.my/corporate.html accessed 31/10/07
- 176 Unimills, 'History of Unimills' www.unimills.com/historyofunimills.html accessed 20/10/07
- 177 RSPO (2007b)
- 178 1.89Mt out of 17.9Mt. Golden Agri-Resources (2007)
- 179 Golden Agri-Resources (2007)
- 180 Copy held by Greenpeace
- 181 Ministry of Agriculture Decree 'Guidance for Plantation Permits (Pedoman Perizinan Usaha Perkebunan)' No 26/Permentan/OT.140/2/2007, 28 February 2007, article 12 sentence 1 'maximum total area for 1 company is 100,000 ha', article 12 sentence 3 'maximum total area for 1 company in Papua is 2 x 100,000 ha'
- 182 Copies of maps held by Greenpeace
- 183 Golden-Agri Resources (1999)
- 184 Sinar Mas (2004) and Sinar Mas (2006) The Group's products consist of refined palm products such as cooking oil, fat and margarine, and crude palm oil (CPO), palm kernel (PK) and palm kernel oil (PKO)
- 185 Sinar Mas (2004) and Sinar Mas (2006)
- 186 RSPO member, letter to Greenpeace, 12 October 2007
- 187 Evidence held by Greenpeace
- 188 RSPO member, letter to Greenpeace, 17 October 2007
- 189 RSPO member, letter to customer, 17 September 2007
- 190 RSPO member, letter to Greenpeace, 17 October 2007
- 191 RSPO member, letter to Greenpeace, 17 October 2007
- 192 RSPO (2007b)
- 193 Golden Agri Resources (2007)
- 194 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 195 PT Buana Wira Lestari (10,465ha, 12,395 ha); PT Ivo Mas Tunggal (9,860ha, 2,383ha); PT Bumi Plasma Lestari (10,554ha); PT Mega Nusa Inti Sawit (624ha, 8,389ha)
- 196 PT Ivo Mas Tunggal (14,864ha; 9,860ha,

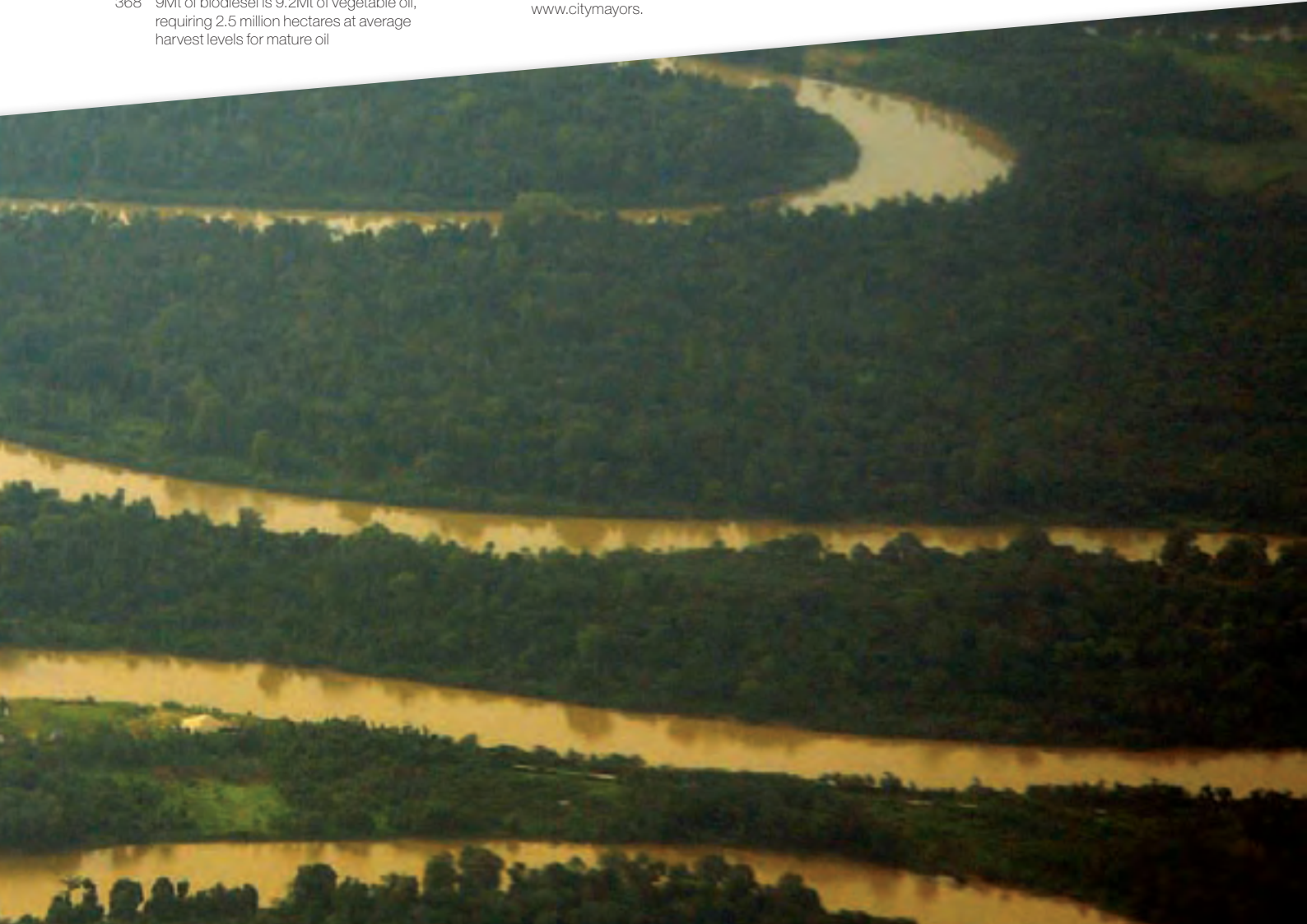
- 12,789ha, 2,384ha, 12,195ha); PT Bumi Plasma Lestari (10,555ha); PT Mega Nusa Inti Sawit (5,926ha, 8,389ha)
- 197 PT Ivo Mas Tunggal (14,864ha; 9,860ha, 12,789ha, 2,384ha); PT Bumi Plasma Lestari (10,555ha); PT Mega Nusa Inti Sawit (5,926ha)
- 198 PT Buana Wira Lestari (10,465ha) – 2005; PT Ramajaya Pramukti (8,785 ha) – 2005; PT Bumi Plasma Lestari (10,554ha) – 2005, 2006, 2007; PT Mega Nusa Inti Sawit (8,389ha) – 2006, 2007 – and (5,925ha) – 2006, 2007
- 199 RSPO (2007b)
- 200 Wilmar (2006): 9, PPB, 'PPB Plantations overview' www.ppbgroup.com/ppb/2_business/2_2_1_palm.htm accessed 22/10/07
- 201 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 202 PT Murini Samsam (3,726ha); PT Jatim Jaya Perkasa (21,212ha), PT Darma Wungu Guna (4,374ha)
- 203 PT Jatim Jaya Perkasa (21,212ha), PT Citri Riau Sarana (20,395ha), PT Darma Wungu Guna (4,374 ha)
- 204 PT Murini Samsam (3,726ha, 1,463); PT Jatim Jaya Perkasa (21,212ha), PT Citri Riau Sarana (20,395ha)
- 205 PT Jatim Jaya Perkasa (21,212ha) – 2005, 2006, 2007; PT Citri Riau Sarana (20,395ha) - 2005, PT Murini Samsam (3,726ha) - 2005, 2006, 2007, PT Darma Wungu Guna (4,374ha) - 2005, 2006, 2007
- 206 van Gelder (2004)
- 207 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 208 PT Kimia Tirta Utama (8,670ha), PT Ekadura Indonesia (12,035ha)
- 209 PT Ekadura Indonesia (70,796ha), Sari Lembah Subur (20,504ha), PT Tunggal Perkasa (17,398ha), PT Sawit Asahan Indah (7,724ha)
- 210 PT Kimia Tirta Utama (8,670ha), PT Ekadura Indonesia (12,035ha), Sari Lembah Subur (20,504ha), PT Tunggal Perkasa (17,398ha)
- 211 Fires on the mineral soils were in PT Ekadura Indonesia (10,796ha) – 2005, 2007; PT Sari Lembah Subur (20,504 ha) – 2006, 2007; PT Sawit Asahan Indah (7,724 ha) – 2005, 2006; fires in peatlands on PT Kimia Tirta Utama (8,670ha) – 2005, 2006 and PT Ekadura Indonesia (12,035ha) – 2005, 2006, 2007
- 212 van Gelder (2004)
- 213 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 214 PT Gunung Mas Raya (8569 ha)
- 215 PT Gunung Mas Raya (8,569 ha, 5,446 ha), PT Indri Plant (1,482 ha)
- 216 PT Gunung Mas Raya (8569 ha, 5446 ha), PT Indri Plant (1482 ha)
- 217 PT Gunung Mas Raya (5446ha – 2005-2007), PT Indri Plant (1,482ha – 2006); Peat: PT Gunung Mas Raya (8,569ha – 2005-2007)
- 218 Wilmar, 'Locations map: Singapore' www.wilmar-international.com/business_locations.htm accessed 22/10/07
- 219 RSPO (2007b)
- 220 Greenpeace investigation
- 221 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 222 PT Kencana Amal Tani (8,766ha), PT Banyu Bening Utama (5,477ha), PT Bertuah Aneka Yasa (9,960ha), PT Mekar Sari Alam Lestari (15,416ha), PT Palma Satu (15,505ha)
- 223 PT Kencana Amal Tani (8,766ha), PT Eluan Mahkota (7,575ha), PT Wana Jingga Timur (4,883ha), PT Cerenti Subur (8,106ha), PT Duta Palma Nusantara (11,063ha)
- 224 PT Aditya Palma Nusantara (7,584ha), PT Kencana Amal Tani (8,766ha), PT Banyu Bening Utama (5,477ha), PT Mekar Sari Alam Lestari (15,416 ha), PT Bertuah Aneka Yasa (9,960ha), PT Palma Satu (15,505ha), PT Eluan Mahkota (7,575ha)
- 225 PT Aditya Palma Nusantara (7,584ha – 2005-2007), PT Cerenti Subur (8,106ha – 2006), PT Duta Palma Nusantara (3,040ha – 2005-2007 & 11,063 - 2006), PT Kencana Amal Tani (8,766ha – 2005-2007), PT Banyu Bening Utama (5,477ha – 2005-2007), PT Mekar Sari Alam Lestari (15,416 ha), PT Bertuah Aneka Yasa (9,960 ha – 2005-2007), PT Palma Satu (15,505ha – 2005-2007), PT Eluan Mahkota (7,575ha – 2005-2007), PT Johan Sentosa (6,222ha – 2005-2007), PT Wana Jingga Timur (4,883ha – 2005, 2006)
- 226 PT Eluan Mahkota, PT Kencana Amal Tani, PT Darmex Oil & Fats, PT Cerenti Subur and PT Taluk Kuantan Perkasa
- 227 RSPO (2007b)
- 228 Musim Mas, 'Biodiesel' www.musimmas.com/biodiesel.html accessed 26/10/07
- 229 Sizes of concessions listed are those based on spatial analysis of the maps attached to the permits of the respective concessions.
- 230 PT Musim Mas (30,696ha)
- 231 PT Musim Mas (30,696ha)
- 232 PT Musim Mas (30,696ha – 2005-2007)
- 233 Unimills, 'History of Unimills' www.unimills.com/historyofunimills.html accessed 20/10/07
- 234 The letter claims that the company sacked 701 union members, refuse to renew the contracts of an additional 300 contract union workers and, then in December 2005, the company forcibly evicting 700 workers and their families from their housing and expelling their children from school. UEWC (2006)
- 235 Gain, 'Products' www.gainlaundry.com/static/products.asp accessed 31/10/07
- 236 Fortune (2007)
- 237 Procter & Gamble (2007)
- 238 Procter & Gamble (2007)
- 239 Procter and Gamble website Scienceinthebox, www.scienceinthebox.com/cgi-bin/info-pg/showproduct.pl?lang=sk_SK&id=937-3 accessed 28 October 2007
- 240 Eg 'Olay Normal Skin Body Wash - Ingredients', www.olay.co.uk/olayproducts/norm-body-wash.jsp?7&pagesection=ing accessed 31/10/07
- 241 Eg Pringles 'Fat Free Original Nutrition Facts' www.pringles.com/pages/products/nutrition_ff_orig.html accessed 31/10/07
- 242 Procter & Gamble (2007)
- 243 Procter & Gamble (2007)
- 244 Procter & Gamble (2007) 'P&G ANNOUNCES NEW FIVE YEAR SUSTAINABILITY GOALS' 25 October 2007 Procter & Gamble (2007)
- 245 Procter and Gamble, 'P&G Chemicals announces agreement for a new fatty acid plant in Malaysia. Press Release 28 March 2007 www.pgchemicals.com/resources/pr/kua_acid_announcement_3-28-05.pdf; Procter & Gamble, 'Procter & Gamble Chemicals announces oleochemical supply agreement with Sawit Mas of Indonesia' Press Release 26 May 2005. www.pginvestor.com/phoenix.zhtml?c=104574&p=irol-newsArticle&ID=714946&highlight=
- 246 World Production in 2006 was 37.1 million tonnes. Mielke Oil World (2007)
- 247 FPG Oleochemicals, 'Introduction' www.fpg.com.my/introduction_introduction_1.html accessed 28/10/07
- 248 Procter and Gamble, 'P&G Chemicals announces agreement for a new fatty acid plant in Malaysia. Press Release 28 March 2007 www.pgchemicals.com/resources/pr/kua_acid_announcement_3-28-05.pdf
- 249 Procter & Gamble, 'Procter & Gamble Chemicals announces oleochemical supply agreement with Sawit Mas of Indonesia' Press Release 26 May 2005. www.pginvestor.com/phoenix.zhtml?c=104574&p=irol-newsArticle&ID=714946&highlight=
- 250 200,000 tonnes a year of oleochemicals and 160,000 tonnes of fatty alcohols.
- 251 Procter & Gamble, 'Procter & Gamble Chemicals announces oleochemical supply agreement with Sawit Mas of Indonesia' Press Release 26 May 2005. www.pginvestor.com/phoenix.zhtml?c=104574&p=irol-newsArticle&ID=714946&highlight=
- 252 RSPO (2007b); Coordinating Ministry for Economic Affairs (2004)
- 253 PT Flora Wanaha Tirta (3,606ha), PT Kaswari Unggul (size unknown)
- 254 Greenpeace investigations 2006-2007
- 255 RSPO (2007b)

- 256 USDA FAS (2007a): 4 'Table 3: Major Vegetable Oils: World Supply and Distribution' gives world production of palm oil for 2006/7 as 36.4 million tonnes, so 170,000 tonnes is 0.47% of world production. Mielke Oil World (2007) gives world production in 2006 as 37.1 million tonnes.
- 257 Letter from Nestlé 11 October 2007
- 258 Greenpeace investigations June–October 2007
- 259 Nestlé UK, 'KitKat' www.nestle.co.uk/OurBrands/AboutOurBrands/ConfectioneryAndCakes/KitKat.htm accessed 26/10/07
- 260 Greenpeace investigations June–October 2007
- 261 Nestlé Canada 'KitKat chunky' www.nestle.ca/en/products/brands/KitKat/chunky.htm accessed 26/10/07
- 262 Sugarstand 'Kit kat ingredients' www.sugarstand.com/sc/sc0023-hershey-kit-kat.htm and www.sugarstand.com/sc/sc0021-kit-kat-extra-crispy.htm accessed 26 October 2007
- 263 RSPO (2007b)
- 264 Letter from Kraft Foods 12 October 2007
- 265 Letter from Kraft Foods 12 October 2007
- 266 eg Vitamin A Palmitate used in Kraft Fat Free Singles (USA). Kraft, 'Product Info – Fat-free Singles' www.kraftfoods.com/main.aspx?s=product&m=product/Product_display&Site=1&Product=2100061961 accessed 31/10/07
- 267 eg Vitamin A Palmitate used in Philadelphia Cream Cheese Fat-Free (USA). Kraft, 'Product info – Philadelphia Fat-free' www.kraftfoods.com/main.aspx?s=product&m=product/Product_display&Site=1&Product=2100061239 accessed 31/10/07
- 268 eg palm oil used in Oreo Sandwich Cookies (USA). Kraft, 'Product info – Oreo Sandwich Cookies' www.kraftfoods.com/main.aspx?s=product&m=product/Product_display&Site=1&Product=4400000820
- 269 RSPO (2007b)
- 270 McCain (2007). McCain website. Accessed 30 October 2007 www.mccain.com
- 271 John Young, McCain, letter to Greenpeace, 15 October 2007
- 272 McCain, 'Beer batter ridge-cut chips' www.mccain.co.uk/our-food/chips/beer-batter-ridge-cut-chips/ingredients.aspx accessed 30/10/07
- 273 John Young, McCain, letter to Greenpeace, 15 October 2007
- 274 Eg McCain Smiles Regular (ascorbyl palmitate); McCain Delite Vanilla/Chocolate/Marble Cake (hydrogenated palm kernel oil, palm oil shortening); Crimini Mushroom Microwave Pizza (soya and/or palm oil). McCain Canada 'Consumer Products' www.mccain.ca/
- framework/builder.aspx?page=Category&lang=en&partition=1&category=1&selected=1&marker=CMF_LEVEL_TWO_MARKER:Nutritional accessed 30/10/07
- 275 RSPO (2007b)
- 276 Pizza Hut, 'How we began' www.pizzahut.co.uk/restaurant/history.html accessed 30/10/07
- 277 eg in the UK. Pizza Hut, 'UK Ingredients List – Desserts – September 2007' www.pizzahut.co.uk/restaurant/assets/files/Ingredients_List_Desserts.pdf
- 278 RSPO (2007b).
- 279 Eg Reuters, 'Burger King grills up second Japan serving' 6 June 2007 uk.reuters.com/article/ousiv/idUKT151020070606
- 280 eg in the UK. Burger King, 'Ingredients May 2007' www.burgerking.co.uk/pdfs/ingredients.pdf
- 281 RSPO (2007b)
- 282 Cadbury Schweppes, 'About us' www.cadburyschweppes.com/EN/AboutUs/ accessed 30/10/07
- 283 Cadbury's 'More about me' www.cadbury.co.uk/NR/rdonlyres/0B7A80AD-F21C-4CD6-A607-615FFCF9F12A/0/FlakeFactsandFigures.pdf accesses 2/11/07
- 284 David Croft, Cadbury Schweppes, letter to Greenpeace, 11 September 2007
- 285 RSPO (2007b)
- 286 RSPO (2007b)
- 287 Danisco, 'Danisco in brief' www.danisco.com/cms/connect/corporate/about%20danisco/danisco%20in%20brief/danisco_in_brief_en.htm accessed 30/10/07
- 288 Danisco 'Roundtable on Sustainable Palm Oil' www.danisco.com/cms/connect/corporate/about%20danisco/sustainability/sustainability%20reports/2005%20performance/supply%20chain%20management/rsपो/rsपो_en.htm accessed 30/10/07
- 289 Wilmar (2006): 26
- 290 Wilmar (2006): 26
- 291 Pioch and Vaitilingom (2005) 'Table 4: Properties of petroleum diesel fuel, RBD palm oil and palm oil esters' According to this source, diesel has a heat value of 42MJ/kg and palm oil has heat value of 38MJ/kg
- 292 Average yield per hectare 2003–2007. Mielke Oil World (2007)
- 293 Therefore, 1 tonne of diesel requires 0.3 hectares mature oil palm plantation.
- 294 based on an average specific gravity of diesel fuel of 0.89. Simetric.co.uk, 'Specific gravity of liquids' www.simetric.co.uk/si_liquids.htm accessed 31/10/07
- 295 Oxera (2007): 2
- 296 OECD/IEA (2007)
- 297 USDA FAS (2007a): 4 'Table 3: Major Vegetable Oils: World Supply and Distribution'
- 298 USDA FAS (2007a): 4 'Table 3: Major Vegetable Oils: World Supply and Distribution'
- 299 10% of global mineral diesel used in 2005 = 60.1 million tonnes. Given the energy content of 1 tonne of diesel is equivalent to 1.1 tonnes of vegetable oil, 66.1 million tonnes of vegetable oil would be needed to replace 60.1 million tonnes of mineral diesel. Therefore, 66.1 million tonnes of vegetable oil would be the equivalent of 76% of global production of soya, palm and rapeseed oil production in 2005/6.
- 300 Pioch and Vaitilingom (2005): 'Table 4: Properties of petroleum diesel fuel, RBD palm oil and palm oil esters'. According to this source, diesel has a heat value of 42MJ/kg and palm oil has heat value of 38MJ/kg
- 301 Council of the European Union (2007)
- 302 Council of the European Union (2007)
- 303 Council of the European Union (2007)
- 304 10% of Europe's mineral diesel used in 2005 = 17.3 million tonnes. Given the energy content of 1 tonne of diesel is equivalent to 1.1 tonnes of vegetable oil, 19 million tonnes of vegetable oil would be needed to replace 17.3 million tonnes of mineral diesel. Therefore, 19 million tonnes of vegetable oil would be the equivalent of 22% of global production of soya, palm and rapeseed oil production in 2005/6.
- 305 OECD/IEA (2007)
- 306 Oxera (2007): 2
- 307 Unilever 'Unilever's position statement on renewable energy and biofuels.' www.unilever.com/ourvalues/environment-society/sus-dev-report/climate-change/renewable-energy-biofuels.asp accessed 31/10/07
- 308 with yields of 3–6 tonnes of oil per hectare, ten times that of soya and six times that of rapeseed (canola) USDA FAS (2007b), citing Department of Energy and Mineral Resources, Republic of Indonesia (2006), and Fulton et al (2004)
- 309 Neste Oil (2007) 'Investor presentation' 62 27 September 2007. www.nesteoil.com/binary.asp?GUID=2927CB90-33F5-4CDA-A1B5-E29FF5F0AE01%20- . accessed 30/10/07
- 310 Neste Oil, 'Neste Oil view on palm oil as a biofuel feedstock' Press release 17 October 2007 www.nesteoil.com/default.asp?path=1;41;540;1259;1260;7439;9204
- 311 Neste Oil (2007) 'Investor presentation' 54 27 September 2007: 2005 sees biodiesel production at about 3Mt rising to 55Mt in 2030. www.nesteoil.com/binary.asp?GUID=2927CB90-33F5-4CDA-A1B5-E29FF5F0AE01%20- . accessed 30/10/07
- 312 52Mt of biodiesel requires 57Mt of vegetable oil. Average harvest from mature oil palm plantations in Indonesia is 3.7 tonne/hectare. Mielke Oil World (2007)
- 313 OECD-FAO (2007b)

- 314 USDA FAS (2007): 4 'Table 3: Major Vegetable Oils: World Supply and Distribution' - as opposed to 29% for soya
- 315 according to the FAO production is set to double from 2000 levels by 2030, from 25.6Mt to 54.2Mt, rising to 77.2Mt by 2050. FAO (2006): 56; the OECD predicts a doubling of production on 2000 levels by 2015. OECD Statistics (2007)'World palm oil production' accessed 15/10/07
- 316 Vegetables oils, here defined as rapeseed oil, soyabean oil, sunflower seed oil and palm oil, except in Japan where it excludes sunflower seed oil, will rise by 31.7Mt; palm oil by 14.9Mt. OECD-FAO (2007b)
- 317 Unimills (2007a)
- 318 See for instance Greenpeace (2006a)
- 319 Wilmar (2006) 'Wilmar Embarks on Rapid Expansion Plans' Press release 28 August 2006
- 320 Wilmar (2006): 26
- 321 Wilmar (2006): 26
- 322 From 100,000 ha in the first half of 2006. Wilmar, 'Wilmar Embarks on Rapid Expansion Plans' Press release 28 August 2006; Wilmar; 'Wilmar secures all approvals for US\$4.3 billion merger and acquisitions' Press release 22 June 2007
- 323 Wilmar, 'Wilmar's CSR policies and practices' Announcement at the Singapore Stock Exchange, 4 July 2007 www.wilmar-international.com/investor/Wilmar-CSR_Policies_Practices.pdf
- 324 Field investigation by Cockroach documented impacts at PT Kerry Sawit Indonesia, PT Mustika Sembuluh, PT Serana Titian Permata (formerly PT Rungau Alam Subur) as well as other concessions in the Sembuluh area.
- 325 Wilmar (2006): 26
- 326 Petrol 108Mt + diesel 173Mt = 281Mt. OECD/IEA (2007)
- 327 OECD/IEA (2007)
- 328 The energy content of 1.01Mt of biodiesel is equivalent to 0.9Mt of mineral diesel.
- 329 Average harvest from mature oil palm plantations in Indonesia is 3.7 tonne/hectare. Mielke Oil World (2007)
- 330 Letter from RSPO member, 9 October 2007
- 331 In 2006 Cargill took a 25% stake in Greenergy Biofuels Ltd. Greenergy, 'Biodiesel production' www.greenergy.com/company/history.html accessed 24/10/07
- 332 Greenergy, 'Biodiesel, B50, B30, B20 and B5' www.greenergy.com/Products/biodiesel.html accessed 24/10/07
- 333 Greenergy, 'Palm oil in biodiesel – A Greenergy perspective' www.greenergy.com/perspectives/Palm.pdf accessed 24/10/07
- 334 Greenergy, 'Biodiesel sourcing' www.greenergy.com/feedstock_sourcing/index.html accessed 24/10/07
- 335 Greenergy (2007). Biodiesel production. Accessed 24 October 2007 www.greenergy.com/company/history.html
- 336 Letter from Tesco, 23 October 2007
- 337 Greenergy, 'Biodiesel production' www.greenergy.com/company/history.html accessed 24/10/07
- 338 Vopak Vlaardingen, Rotterdam
- 339 Greenergy, 'Biodiesel production' www.greenergy.com/company/history.html accessed 24/10/07
- 340 Greenergy, 'Palm oil in biodiesel – A Greenergy perspective' www.greenergy.com/perspectives/Palm.pdf accessed 24/10/07
- 341 House of Lords (2006): 20
- 342 European Commission (2007a)
- 343 Righelato and Spracklen (2007)
- 344 In the period 2000- 2020, energy demand in the EU-25 road transport sector is projected to grow from 296Mtoe in 2000 to 331Mtoe in 2020 (an increase of 35Mtoe). Under this business-as-usual scenario, meeting the biofuel target of 10% in 2020 equates to 33Mtoe – less than projected growth of 35Mtoe. Mantzos and Capros (2006): 75
- 345 European Commission (2006): 142
- 346 Righelato and Spracklen (2007)
- 347 King (2007): 34
- 348 NDRC (National Development and Reform Commission of China) April 2007; initially reported by Xinhua Net (2006) 28 April 2006, http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/fortune/2006-04/28/content_4484430.htm. also King (2007): 11
- 349 King (2007): 11
- 350 USDA (2007a) 'Table 11: Palm Oil: World Supply and Distribution'
- 351 King (2007): 11
- 352 Goldman Sachs (2004)
- 353 In July 2007, CNOOC announced it had taken a controlling 51% stake in the phased development of this project. Source: Ministry for Economic Affairs (2007)
- 354 McBeth (2007) and Sinar Mas (2006): 88
- 355 Forbes (2007)
- 356 RSPO (2007b)
- 357 HSBC (2004)



- 358 HKC (2006) 3
- 359 HSBC (Singapore) nominees PTE Ltd held 23.47% shares in Golden Agri Resources as of 12 March 2007. Source: Golden Agri Resources (2007b)
- 360 Copy held by Greenpeace
- 361 Ministry of Agriculture Decree 'Guidance for Plantation Permits (Pedoman Perizinan Usaha Perkebunan)' No 26/Permentan/OT.140/2/2007, 28 February 2007, article 12 sentence 1 'maximum total area for 1 company is 100,000 ha', article 12 sentence 3 'maximum total area for 1 company in Papua is 2 x 100,000 ha'
- 362 Greenpeace investigations June-October 2007
- 363 Greenpeace investigations June-October 2007
- 364 McBeth (2007)
- 365 Legowo (2007): 18
- 366 estimated investment value of \$12.4 billion. USDA FAS (2007b): 4
- 367 based on data from Bundesagentur für Aussenwirtschaft Deutschland (2007); APROBI (2007); German-Indonesian Chamber of Commerce (2007); Golden Agri-Resources (2007); Wilmar, 'Wilmar Embarks on Rapid Expansion Plans' Press release 28 August 2006; Reuters (2007) 'Indonesia's Sinar Mas, Fulcrum to build biofuel plant' 4 May 2007 <http://uk.reuters.com/article/governmentFilingsNews/idUKJAK20571520070504>
- 368 9Mt of biodiesel is 9.2Mt of vegetable oil, requiring 2.5 million hectares at average harvest levels for mature oil palm plantations.
- 369 Indonesia Ministry of Forestry, Riau land-use plan 2006. Digital version held by Greenpeace
- 370 Golden Agri-Resources (2007): 11
- 371 Righelato and Spracklen (2007)
- 372 Credit Suisse (2006)
- 373 As of 22 February 2007, the company Darmex Biofuels was registered with headquarters at the same address as Darmex Oil and Fats, a Duta Palma subsidiary.
- 374 German-Indonesian Chamber of Commerce (2007), APROBI (2007)
- 375 Peat extent and peat thickness data, collected in field surveys over 1990-2002, were provided by Wetlands International – see Hooijer et al (2006)
- 376 one cubic metre of peat contains about 60kg of carbon, according to Hooijer et al (2006):1 – this represents 600 tonnes per hectare per metre depth; 14,190 hectares at an estimated average of 3 metres deep therefore holds 25.5 million tonnes of carbon, equivalent to 94 million tonnes CO₂.
- 377 In 2004, emissions from road transport amounted to 4.62Gt. IPCC WGIII (2007): 104. Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector).
- 378 Emissions for 2006. WWF (2007a): 2
- 379 CIA (2007) gives global land area as 15 billion hectares.
- 380 City Mayors, 'The largest cities in the world by land area, population and density' www.citymayors.com/statistics/largest-cities-area-125.html accessed 30/10/07
- 381 Wikipedia, 'Manhattan' <http://en.wikipedia.org/wiki/Manhattan> accessed 31/10/07
- 382 Hansen, J et al (2007)
- 383 UNFCCC (1992) Article 4.1(d)
- 384 Hansen, J et al (2007)
- 385 World Bank (2007)
- 386 IPCC, Working Group III, 2007: 15, 21. Potential reduction in CO₂e emissions for <\$100/tonne from forestry sector is 1.3-4.2Gt CO₂e per year. 'About 50% of this could be achieved by reducing emissions from deforestation'.
- 387 IPCC WG III (2007): 631
- 388 Madgwick (2007): 13-14 : 500,000 (this equates to 0.15/tonne); see also Wetlands International (2006a)
- 389 International Peat Society (2007)
- 390 Successful implementation will require: a) a national approach to accounting for RED, not a project-based approach which suffers from the problem of 'leakage' (ie destruction shifting from one area of the country to another); b) no trading of RED credits in an international carbon market, to avoid these reductions being used as an excuse for developed countries doing nothing at home; c) full participation of indigenous peoples and local communities to ensure that their rights and livelihoods are respected and the benefits of forest protection are equitably shared; and d) independent monitoring and verification,





REFERENCES

APROBI (Asosiasi Produsen Biofuel Indonesia) (2007) 'Palm oil biodiesel production sustainability' Presentation by APROBI in Jakarta -15 May 2007

Bangun, T (1996) 'Elephant poisoning in Sumatra' *WWF Features* WWF International, Switzerland cited in WWF (2000)

Bloomberg (2007) 'At the end, a gain for Malaysian palm grower' *International Herald Tribune* 17 October 2007 www.ihf.com/articles/2007/10/17/bloomberg/sxsime.php

Bundesagentur für Aussenwirtschaft Deutschland (2007) 'Biotreibstoffe sorgen in Indonesien weiter für Gesprächsstoff', 31 July 2007, www.bfai.de/fdb-SE,MKT2007070308008,Google.html;

Cadbury-Schweppes websites: www.cadburyschweppes.com, www.cadbury.co.uk

Cargill website: www.cargill.com

CIA (2007) *The World Factbook* Central Intelligence Agency, USA. www.cia.gov/library/publications/the-world-factbook/geos/uk.html accessed 23/10/07

Clay, Jason (2005) 'Exploring the links between international business and poverty reduction: a case study of Unilever in Indonesia' Oxfam GB, Novib, Unilever, and Unilever Indonesia joint research project

Colchester et al. (2006) *Promised Land. Palm Oil and Land Acquisition in Indonesia: Implications for Local Communities and Indigenous Peoples* Forest Peoples Programme, Perkumpulan Sawit Watch, HuMA and World Agroforestry Centre.

Council of the European Union (2001) 'Directive 2001/77/EC Of The European Parliament And Of The Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity

market', Official Journal of the European Union, Brussels, 27 October 2001

Council of the European Union (2003) 'Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport', Official Journal of the European Union, Brussels, 17 May 2003

Council of the European Union (2007) 'Presidency Conclusions of the Brussels European Council (8/9 March 2007)' Brussels, 2 May 2007, 7224/1/07 REV 1 www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf

Credit Suisse (2006) 'Biofuel sector - Global comparisons of a fastgrowing sector', Credit Suisse, 30 August 2006

Danisco website: www.danisco.com

DEFRA (Department for the Environment, Food and Rural Affairs, UK) (2007) 'UK Emissions of Greenhouse Gases' www.defra.gov.uk/environment/statistics/globalatmos/gagccukem.htm accessed 1/11/07

Department of Energy and Mineral Resources (Indonesia) (2006), National Seminar on Biofuel, 5 May 2006

Duta Palma website: www.dutapalma.co.id

Ernsting, Almuth (2007) 'Factsheet 1: South-East Asia's peat fires and global warming' Biofuelwatch 6 June 2007 www.biofuelwatch.org.uk/background.php

Ernsting, Almuth (2007) 'The global blueprint for a biomass economy' Biofuelwatch 20 January 2007 www.biofuelwatch.org.uk/background.php

European Commission (2006) 'An EU Strategy for Biofuels, Impact Assessment' Commission Staff Working Document, Commission of the European Communities, Brussels

European Commission (2007a) 'Biofuels Progress Report: Report on the progress made in the use of biofuels and other renewable fuels in the Member States of the European Union' Communication from the Commission to the Council and the European Parliament. Commission of the European Communities. Brussels, 10.1.2007 www.eurlex.europa.eu/LexUriServ/site/en/com/2006/com2006_0845en01.pdf

European Commission (2007b) 'Renewable Energy Road Map' Communication from the Commission to the Council and the European Parliament, Brussels, 10.1.2007

Eyes on the Forest (2007a) 'Investigative Report February 2007 released - APP Still Destroys Forest' News release 25 June 2007. Full report available at: eyesontheforest.or.id/index.php?option=com_docman&task=cat_view&gid=14&Itemid=20

Eyes on the Forest (2007b), 'Police chief warns Riau forest to be gone,' 18 September 2007 eyesontheforest.or.id/index.php?option=com_content&task=view&id=139&Itemid=6

FAO (2005) 'Global Forest Resources Assessment 2005' <http://www.fao.org/forestry/site/fra2005/en/>

FAO (2006) 'World agriculture: towards 2030/2050' Interim report, Rome, June 2006 [ftp://ftp.fao.org/docrep/fao/009/a0607e/a0607e00.pdf](http://ftp.fao.org/docrep/fao/009/a0607e/a0607e00.pdf)

Forbes (2005) 'Southeast Asia's 40 richest' www.forbes.com/lists/2005/09/07/southeast-asia-richest-cz_05sealand.html

Forest Peoples' Programme and Sawit Watch (2006) *Ghosts on our own land: oil palm smallholders in Indonesia and the Roundtable on Sustainable Palm Oil*, Bogor

Fortune (2007) 'America's most

admired companies' money.cnn.com/galleries/2007/fortune/0703/gallery.mostadmired_top20.fortune/10.html accessed 29/10/07

Friends of the Earth UK (2002) 'Paper tiger, hidden dragons 2: APRIL fools' Friends of the Earth, February 2002

Fulton, Lew et al (2004) *Biofuels for transport: an international perspective* IEA-OECD www.iea.org/textbase/nppdf/free/2004/biofuels2004.pdf

FWI/GFW (Forest Watch Indonesia/Global Forest Watch) (2002) *The State of the Forest: Indonesia*. Bogor, Indonesia: Forest Watch Indonesia, and Washington DC: Global Forest Watch

German-Indonesian Chamber of Commerce (2007) 'Die Entwicklung des Biokraftstoffsektors in Indonesien: Politik, Potenziale und Perspektiven' Jakarta, 31 August 2007

Germer J and J Sauerborn (2007) 'Estimation of the impact of oil palm plantation establishment on greenhouse gas balance' *Environ Dev Sustain* DOI 10.1007/s10668-006-9080-1

Global Carbon Project, Global Environment Centre, ICIFOR (2006), 'RIAU DECLARATION ON PEATLANDS AND CLIMATE CHANGE' Pekanbaru, 26 January 2006 <http://www.globalcarbonproject.org/global/pdf/riau%20Declaration%20Revised%203%20Feb%202006.pdf>

Goldammer, J.G. & Hoffmann, A.A. (2001) 'The forest fire situation in Indonesia' *Int. Forest Fire News* 26 FAO Corporate Document Repository www.fao.org/DOCREP/006/AD653E/ad653e45.htm viewed 18/10/07

Golden Agri-Resources (2007) 'Interim performance presentation: half year ending 30 June 2007' accessed 15/8/07

Golden Hope (2006) 'Annual Report 2006' announcements.bursamalaysia.com/EDMS%5Csubweb.nsf/LsvAllByID/C3EAE1F72C441354482571F50034BC07?OpenDocument

Golden Hope website: www.goldenhope.com

Goldman Sachs (2004). 'The BRICs and global markets: crude, cars and capital, Goldman Sachs' Global Economics Paper No. 118, 2004 www.new-frontiers.org/classicdocs/thebricsreport.pdf

Greenenergy website: www.greenenergy.com

Greenpeace (2006) *Eating up the Amazon* April 2006 www.greenpeace.org/raw/content/international/press/reports/eating-up-the-amazon.pdf

Guthrie website: www.guthrie.com

Guthrie (2006) 'Annual Report 2006' ir.wallstraits.net/guthrie/pdf_files/KumpulanGuthrie_AR_FY2006.pdf accessed 20/10/07

Hansen, J et al (2007) 'Dangerous human-made interference with climate: a GISS modelE study' *Atmos. Chem. Phys.*, 7, 2287–2312, 2007

Hooijer, A, M Silvius, H Wösten, H and S Page (2006) *PEAT-CO2, Assessment of CO2 emissions from drained peatlands in SE Asia* Delft Hydraulics report Q3943 7 December 2006 www.wetlands.org/ckpp/publication.aspx?ID=f84f160f-d851-45c6-acc4-d67e78b39699

House of Lords (2006) European Union Committee, 'The EU strategy on Biofuels: from field to fuel' www.publications.parliament.uk/pa/ld200506/ldselect/ldeducm/267/267ii.pdf

IFC (2007) 'Biodiversity and agricultural commodities program (BACP): Program Appraisal Document' International Finance Corporation. 12 April 2007 www.gefweb.org/uploadedFiles/Documents/Project_Proposals_For_Endorsement/Global_BACP.pdf

International Peat Society (2007) 'Statement: Carbon - climate - human interactions - carbon pools, fire, mitigation, restoration and wise use' Yogyakarta, Indonesia, 27 - 31 August 2007 www.peatsociety.org/user_files/files/Yogyakarta%20Statement.pdf

IPCC (2000) 'Land use, land-use change, and forestry: Special report of the Intergovernmental Panel on Climate Change' Robert T. Watson, Ian R. Noble, Bert Bolin, N. H. Ravindranath, David

J. Verardo and David J. Dokken (Eds.) Cambridge University Press, UK

IPCC Working Group I (2007) *Climate Change 2007: The physical science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>

IPCC, Working Group II, 2007: *Climate Change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK.

IPCC, Working Group III, 2007: *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IPOC (Indonesian Palm Oil Commission) (2006) *Indonesian Palm Oil Directory 2006* Area and Production of Palm Oil by Province and Condition of Crops in Indonesia 2005 citing BPS-Statistics Indonesia and Directorate General of Estate Crops

IUCN (World Conservation Union) (2007) *2007 IUCN Red List of Threatened Species*. www.iucnredlist.org/search/details.php/15966/all viewed 26/10/07

King, Julia (2007) *The King Review of low-carbon cars Part I: the potential for CO2 reduction* UK Government, HM Treasury October 2007 www.hm-treasury.gov.uk/king

Kraft website: www.kraftfoods.com

Legowo, Evita H. (2007) 'Blue print of biofuel development' Presentation on behalf of the Ministry of Energy and Mineral Resources, Republic of Indonesia,

at the Forum on palm oil biodiesel and sustainability. Jakarta, 15 May 2007

Madgwick, Jane (2007) 'Clearing the smoke in South East Asia – on the way to COP-13' Presentation given on behalf of Wetlands International at World Water Week 12-18 August 2007 www.wetlands.org/getfilefromdb.aspx?ID=89ddb4ff-cba6-4998-99d5-897c48792bd8

Mantzios, L and Prof. P. Capros (2006). 'European Energy and Transport: Trends to 2030 – 2005 update' European Commission 22 May 2006 www.eurosfair.prd.fr/7pc/doc/1155895735_energy_transport_trends_2030_update_2005_en.pdf

McBeth, John (2007) 'Tussle for Papua's forests' *The Straits Times* (Singapore) 21 August 2007

McCain websites: www.mccain.co.uk, www.mccain.ca

Mielke Oil World (2007) 'Oil World Statistics Update 21 September 2007' www.oilworld.biz

Ministry for Economic Affairs (Indonesia) website: www.ekon.go.id

Musim Mas website: www.musimmas.com

Nellemann, C, L Miles, BP Kaltenborn, M Virtue, and H Ahlenius (Eds) (2007) *The last stand of the orangutan – State of emergency: Illegal logging, fire and palm oil in Indonesia's national parks* United Nations Environment Programme www.unep.org/grasp/docs/2007Jan-LastStand-of-Orangutan-report.pdf

Neste Oil website: www.nesteoil.com

Nestlé websites: www.nestle.co.uk, www.nestle.ca, www.sugarstand.com

OECD Statistics website <http://stats.oecd.org/wbos/>

OECD/IEA (2007). 'Energy Statistics of Countries 2007' Online Data Services <http://www.iea.org/Textbase/stats/index.asp>

OECD-FAO (2007a) 'Growing

bio-fuel demand underpinning higher agriculture prices' News release 07/08e Paris/Rome, 4 July 2007

OECD-FAO (2007b) *OECD-FAO Agricultural Outlook 2007-2016* July 2007 www.oecd.org/dataoecd/6/10/38893266.pdf

Oxera (2007) 'Coming clean: the challenges of the EU's renewable energy target' September 2007 www.oxera.com/main.aspx?id=6451

Page, S, F Siegert, J O Rieley, H D V Boehm, A Java, S Limin, (2002) 'The amount of carbon released from peat and forest fires in Indonesia during 1997' *Nature* 420 (6911): 61-65

PEACE (2007) *Indonesia and Climate Change: Current Status and Policies* World Bank/ UK Department for International Development sponsored report http://siteresources.worldbank.org/INTINDONESIA/Resources/Environment/ClimateChange_Full_EN.pdf

Pioch, D and G Vaitilingom (2005) 'Palm oil and derivatives: fuels or potential fuels?' OCL vol.12 no 2 March-April 2005

Pizza Hut website: www.pizzahut.co.uk

Polish Information and Foreign Investment Agency (2006) 'More Unilever production lines in Pozna' 17 May 2006 www.paiz.gov.pl/nowosci/?id_news=1011&lang_id=1

Port of London Authority (2007) 'Cargo types' www.portoflondon.co.uk/display_fixedpage.cfm/id/254 viewed October 15, 2007

PPB website: www.ppbgroup.com

Procter & Gamble (2007) 'P&G announces new five year sustainability goals' News release 25 October 2007 www.pg.com/company/our_commitment/pdfs/Sustainability%20release.pdf;jsessionid=IP5XVFM4AEVZDQFIAJ1XKYWAVABHM3MK

Procter & Gamble websites: www.pg.com, www.pgchemicals.com, www.pginvestor.com

Reinhardt, Guido, N Rettenmaier, S

Gärtner, A Pastowski, (2007) *Rain forest for biodiesel? Ecological effects of using palm oil as a source of energy* WWF Germany April 2007 http://assets.panda.org/downloads/wwf_palmoil_study.pdf

Reuters websites: uk.reuters.com, www.planetark.org, www.enn.com

Righelato, Renton and Dominick V Spracklen (2007) 'Carbon Mitigation by Biofuels or by Saving and Restoring Forests?' *Science* vol 317: 902 17 August 2007 www.sciencemag.org

RSPO (2007) 'RSPO members' www.rspo.org/profile.htm and www.rspo.org/member_search.aspx?catid=37&ddlID=161 accessed 29/10/07

Santilli et al (2005) 'Tropical Deforestation and the Kyoto Protocol: An editorial essay'. Woods Hole Institute. whrc.org/policy/COP/Brazil/Santilli%20et%20al%202005%20Climatic%20Change%20-%20Chapter%208.pdf

Sargeant, Howard J (2001) 'Vegetation fires in Sumatra Indonesia. Oil palm agriculture in the wetlands of Sumatra: destruction or development?' *European Union and Indonesia Ministry of Forestry* February 2001

Simetric.co.uk website: www.simetric.co.uk

Sinar Mas (2004). 'PT SMART Annual Report 2004' http://www.smart-tbk.com/investor_annualreport.php

Sinar Mas (2006). 'PT SMART Annual Report 2006' http://www.smart-tbk.com/investor_annualreport.php

Stern, Stefan (2006) 'Unproductive fixation with productivity' *Financial Times* 10 April 2006 http://us.ft.com/ftgateway/superpage.ft?news_id=fto041020061435324031

Suharto, Rosediana (2007) 'Palm Biodiesel and Sustainability', Ketua PLH Komisi Minyak Sawit Indonesia (KMSI) Presentation given on 15 May 2007 http://www.rspo.org/resource_centre/KMSI_RSPO%20Forum%20on%20Biofuels_15Mei07.pdf

UEWC (2006). Unilever European Works Council, letter to Patrick Cescau, CEO Unilever NV. 26 March 2006. www.iufdocuments.org/www/documents/UnileverEWC-e.pdf

UNEP (2002) *Integrated management of peatlands for biodiversity and climate change: the potential of managing peatlands for carbon accumulation while protecting biodiversity*. UNEP Proposal to GEF Fund. (Revised Final Version June 2002)

UNFCCC (1992) 'United Nations Framework Convention on Climate Change' <http://unfccc.int/resource/docs/convkp/conveng.pdf>

UNFCCC (2007) 'Synthesis of information relevant to the determination of the mitigation potential and to the identification of possible ranges of emission reduction objectives of Annex I Parties' Technical Paper FCCC/TP/2007/1. 26 July 2007

Unilever websites: www.unilever.co.uk, www.unilever.com, www.unilever.pl

Unimills website: www.unimills.com

Uryu, Yumiko and Arif Budiman (2007) 'Can ALOS help save Sumatra's peatlands and reduce carbon emissions in the process?' ALOS Kyoto & Carbon Initiative 7th Science Team Meeting, Tsukuba, Japan, 18 January 2007 www.eorc.jaxa.jp/ALOS/kyoto/jan2007/pdf/3-08_Uryu-WWF_KC7.pdf

USDA FAS (United States Department of Agriculture Foreign Agricultural Service) (2007a), Circular Series FOP 08-07 August 2007, 'Oilseeds, World Markets and Trade'

USDA FAS (United States Department of Agriculture Foreign Agricultural Service) (2007b) 'Indonesia Biofuels Annual 2007 GAIN Report Number: ID7019' 13 June 2007

van Gelder, Jan Willem, Profundo (2004)

'Greasy Palms: European buyers of Indonesian palm oil' March 2004, Friends of the Earth UK, www.foe.co.uk/resource/reports/greasy_palms_buyers.pdf

Wahyunto et al (2003) 'Maps of area of peatland distribution and carbon content in Sumatera, 1990 – 2002' Wetlands International – Indonesia Programme and Wildlife Habitat Canada (WHC)

Wahyunto et al (2004) 'Maps of area of peatland distribution and carbon content in Central Kalimantan, 1990 – 2002' Wetlands International – Indonesia Programme and Wildlife Habitat Canada (WHC)

Wahyunto et al (2006) 'Maps of peatland distribution, area and carbon content in Papua, 2000 – 2001' Wetlands International – Indonesia Programme and Wildlife Habitat Canada (WHC)

Wakker, Eric (2004) 'Greasy palms: The social and ecological impacts of large-scale oil palm development in Southeast Asia' March 2004, Friends of the Earth UK www.foe.co.uk/resource/reports/greasy_palms_impacts.pdf

Walhi, Jikalahari and WWF (2006b) 'Eyes on the Forest. July 2006 Investigative Report' Walhi, Jikalahari and WWF http://eyesontheforest.or.id/index.php?option=com_docman&task=cat_view&gid=14&Itemid=20

Wetlands International (2006a) 'Peatland degradation fuels climate change: an unrecognized and alarming source of greenhouse gases' November 2006 www.wetlands.org/ckpp/publication.aspx?ID=1f64f9b5-debc-43f5-8c79-b1280f0d4b9a

Wetlands International (2006b) 'Shocking climate impact of wetland destruction in Indonesia' Press release 2 November 2006 www.wetlands.org/news.aspx?ID=2817de3d-7f6a-4eec-8fc4-7f9eb9d58828

Wetlands International (2007) 'Factsheet on palm oil and tropical peatlands' 8 March 2007 www.wetlands.org/ckpp/publication.aspx?ID=eab45485-8cf4-457f-8843-40a8d9e2bcd3

Wikipedia: <http://en.wikipedia.org>

Wilmar (2006) 'Annual Report 2006' <http://www.wilmar-international.com/investor/Annual%20Report%202006.pdf>

Wilmar website: www.wilmar-international.com

World Bank (2007) 'Climate change threatens food security, health and coastal communities in Indonesia, says report' Press Release 4 June 2007 <http://go.worldbank.org/5BZ6ZJU9T0>

WRI (2007) 'Climate Analysis Indicators Tool vs 4.0' <http://cait.wri.org>

WWF (2001) 'Terrestrial eco-regions: Sumatran peat swamp forests' www.worldwildlife.org/wildworld/profiles/terrestrial/im/im0160_full.html

WWF (2006b) 'APP fails to protect high conservation value forests' Press release 11 July 2006 www.wwf.or.id/index.php?fuseaction=press.detail&language=e&id=PRS1152588911

WWF (2007a) 'Dirty Thirty: ranking of the most polluting power stations in Europe' May 2007 http://assets.panda.org/downloads/european_dirty_thirty_may_2007.pdf

WWF (2007b) 'Rainforests for Biodiesel?' News 23 April 2007 www.panda.org/about_wwf/what_we_do/forests/news/index.cfm?uNewsID=99600

Xinhua Net website: www.xinhuanet.com





ACRONYMS, TECHNICAL TERMS ETC.

\$ – Dollars (US)

Annex I Parties – Parties include the industrialised countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

bn – Billion

Carbon, CO₂ and CO₂ equivalent (CO₂e)
– Climate change potential may be measured in three sets of units depending on context: weights of carbon, of CO₂ and of CO₂ equivalent. In this report, weight of carbon is used when referring to stored carbon (eg tonnes of carbon per hectare in peatlands) and weight of CO₂ when referring to emissions. 1kg of carbon converts to 3.67kg CO₂ (this is directly equivalent to the difference in weight per carbon atom: carbon has an atomic weight of 12, CO₂ a molecular weight of 44 – one carbon atom plus two oxygen atoms). CO₂ equivalent (CO₂e) is an expression of global warming potential which includes the effects of other greenhouse gases (such as methane and nitrous oxides) in terms of the weight of CO₂ required to produce the same effect.

CO₂ – Carbon dioxide

CPO – Crude Palm Oil

EU – European Union

EU15 – Fifteen member states of the European Union
(all members who joined prior to 2004)

EU25 – Twenty-five member states of the EU 2004-2007

EU27 – Twenty seven member states of the European Union (including Bulgaria and Romania from 2007)

EU – RES-E directive – European Union Renewable Energy Sources for Electricity production directive

FAO – Food and Agriculture Organisation of the United Nations

GHG – Greenhouse gas

Gt – Gigatonnes (billion tonnes)

ha – Hectare(s)

IEA – International Energy Agency

Kyoto Protocol – The Kyoto Protocol, an international and legally binding agreement to reduce GHG emissions world wide, entered into force on 16 February 2005. This international agreement, which builds on the UNFCCC, sets legally binding targets and timetables for cutting the GHG emissions of industrialized countries.

Mt – Megatonnes (million tonnes)

NGO Non-governmental organisation

OECD – Organisation for Economic Cooperation and Development

PKO – Palm Kernel Oil

t – Tonnes

t/ha – Tonnes/hectare

UN – United Nations

UNFCCC – United Nations Framework Convention on Climate Change

USDA – United States Department of Agriculture

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'Activities in forestry are the largest contributor to emissions of greenhouse gases in Indonesia. It is time we put together all of our resources to prevent forest fires and irresponsible deforestation. We need to be united in this effort because the potential dangers of climate change are too great to ignore.'

World Bank/ UK Government funded report, 2007





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We investigate, expose and confront the trade in products causing forest destruction and climate change.

We challenge governments and industry to end their role in forest destruction and climate change.

We support rights of forest peoples.

