



The truth behind APP's greenwash



Investigative Report Eyes on the Forest

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Eyes on the Forest (EoF) is a coalition of environmental NGOs in Riau, Sumatra:
Friends of the Earth "Walhi" Riau Office, Jikalahari "Riau Forest Rescue Network" and WWF-Indonesia, Riau Program.
EoF monitors the status of the remaining natural forests in Sumatra's Province of Riau and disseminates the information worldwide.

More news on Eyes on the Forest, go to: <http://www.eyesontheforest.or.id>
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1. Background

In 1984, the Sinar Mas Group's Asia Pulp & Paper (SMG/APP), headquartered in Shanghai, China, started to operate its first pulp mill in Riau Province in Sumatra¹. The mill, Indah Kiat Pulp & Paper, was Indonesia's first 'mega pulp mill' with a 105,000 tons-per-year production capacity. In 1994, APP opened its second pulp mill, Lontar Papyrus Pulp & Paper Industry, in neighboring Jambi Province. **Both mills exclusively pulped mixed tropical hardwood (MTH) from clearance of natural forests. Both mills continued to expand.**

That is why since 1999, customers, creditors, scientists, and civil society have been calling on SMG/APP to not use wood from natural forests to produce its pulp and paper^{2, 3, 4, 5, 6, 7} and implement two main policies:

1. Operation according to the Forest Stewardship Council's "*Principle 9. Maintenance of High Conservation Value Forests (HCVFs) defined as environmental and social values that are considered to be of outstanding significance or critical importance*"^{8" 1}.
2. No expansion of pulp production capacities or building of new pulp mills until sufficient responsible and sustainable plantations have been established in already-deforested areas.

SMG/APP has refused to commit to these requests and is continuing to expand its pulp capacity, to pulp natural tropical forests, and to drain peat soils as documented in detail by Eyes on the Forest and many other organizations. By 2010, SMG/APP's total pulp production capacity in Sumatra had grown to at least 2.7 million tons per year. In addition, SMG/APP had added an additional 1 million ton per year pulp mill in China in 2005⁹. **SMG/APP does not have a sufficient plantation supply to feed any of its mills, but is planning to build at least two new pulp mills in Indonesia soon.**

While SMG/APP has been operating in Riau and Jambi provinces, the provinces' and Sumatra's natural forest cover has shrunk to less than 30% of the island's land mass; the island's tigers, elephants and orangutans have come ever closer to extinction through intensifying human-wildlife conflicts and poaching pressure brought about by their increasing loss of natural forest habitat; and more and more deep peatlands have been drained, emitting the carbon stocks they had stored over thousands of years¹⁰. With Sumatra's accessible natural forest almost finished APP has now begun targeting the natural forests and peatlands of Kalimantan and Papua.

The devastation caused by the Sinar Mas Group's paper company has led to intense global critique by civil society and customers. SMG/APP's response has been classic, it continued business as usual but put vast resources into a global green-washing campaign - financed by the deforestation of Sumatra.

In 2006, SMG/APP published a full page advertisement "*APP's Commitment: Conservation Beyond Compliance*" in the New York and London Times – its first big global PR action – falsely portraying itself as a responsible forest and wildlife protection company. A WWF Indonesia point by point rebuttal detailed the company's misstatements¹¹.

Today, five years later, APP continues repeating the same false statements together with some new twists, all trying to hide the ultimate foundation of the Sinar Mas Group/APP's operations: the continuing destruction of natural tropical forest and drainage of peat soils. APP's PR effort today is bigger and with more aggressive use of the media than ever before. APP has recruited a wide variety of publicists, individuals and supposedly independent NGOs to flack its allegedly green practices, including, Cohn & Wolfe¹², Environmental Resource Management¹³, Alan Oxley and his World Growth and ITS Global^{14, 15, 16}, Mazars¹⁷, Carbon Conservation¹⁸, Patrick Moore and his Greenspirit Strategies¹⁹, Bastoni and his Sumatran

¹ In practice, this is to commission prior to any clearing of natural forest an independent and transparent assessment with the "*HCVF Toolkit for Indonesia*"¹ to identify High Conservation Value Forests, and to protect and maintain all of them.

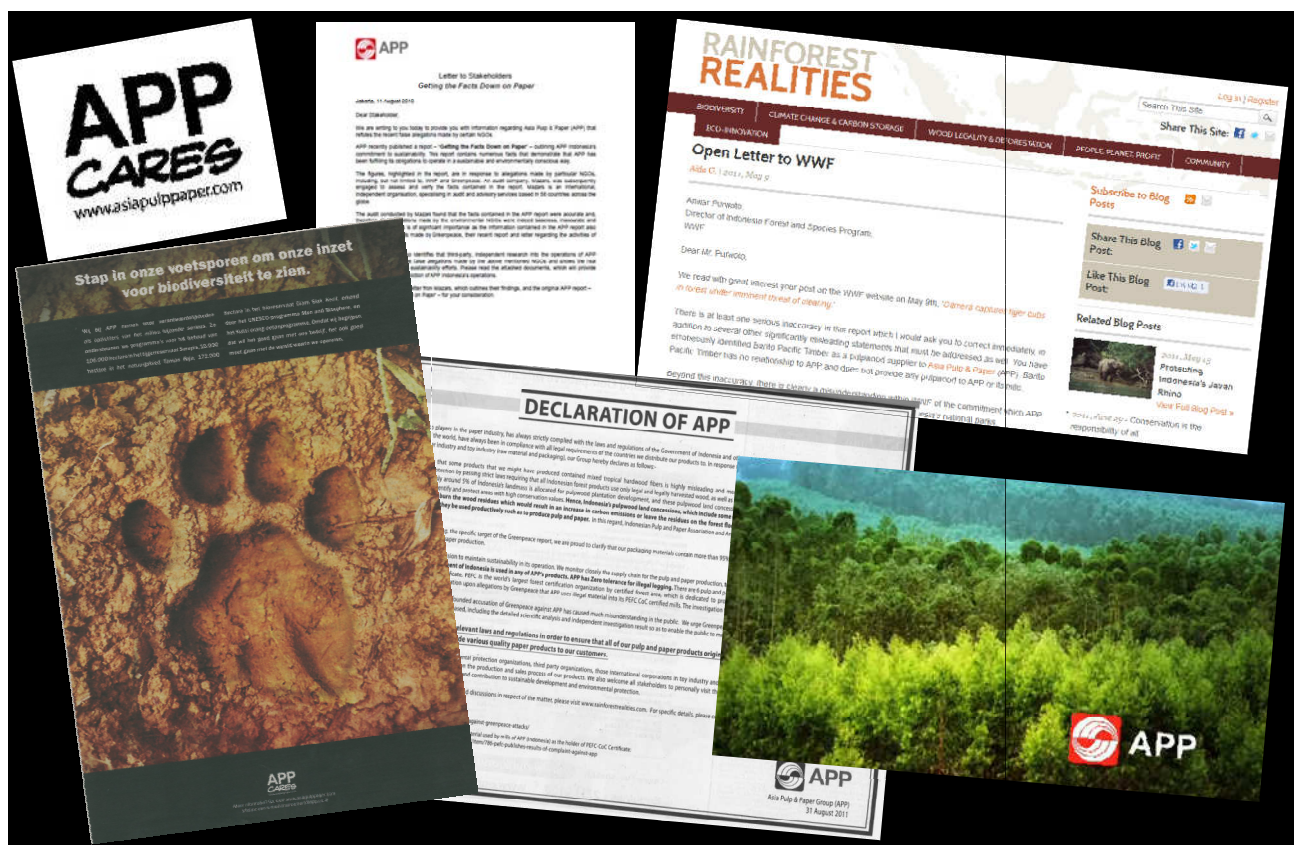
Tiger Conservation Foundation (YPHS)²⁰, the Indonesian Pulp & Paper Association (APKI)²¹ and Allyn Media²². It runs its commercials globally on CNN, Sky TV and other international broadcasting channels.

In this report, Eyes on the Forest investigates APP's PR claims. Has there been any improvement of SMG/APP's practices on the ground? Has there been a reduction of the company's impact on the world's most diverse natural tropical forests, wildlife, and the world's climate?

The answer is a straightforward: No. **SMG/APP continues draining deep peat soils and clearing natural forests and its negative impact is increasing with the scale of its operations.**

We hope the report will help governments, companies and consumers understand some of the on-the-ground realities that contradict APP's PR messaging, and join the many responsible companies who have chosen to disengage from SMG/APP to not become a part of the problem and contribute to the demise of some of the world's most diverse natural tropical forests, the extinction of their wildlife, and the dramatic impact on climate change.

The facts are there, in the open, for everybody to see and for everyone to check. Come and visit Sumatra – and if you decide to go up in one of SMG/APP's helicopters make sure you are the one to tell the pilot where to go...



Collection of recent APP advertisements published online, on TV, and as hard copy in various countries in 2011. Clockwise from top left, "APP CARES www.asiapulppaper.com" trademark registered in the US in 2010²³; APP's "Letter to Stakeholders: Getting the Facts Down on Paper" in 2010²⁴; "Open Letter to WWF" posted at APP's "Rainforest Realities" website on 9 May 2011²⁵; "APP - Reforestation" TV commercial²⁶ aired on TV in countries such as Germany, France, the Netherlands this year; one of APP's "Letter to Stakeholders"; "Declaration of APP" published on the South China Morning Post on 31 August 2011; and APP advertisement published in a newspaper in the Netherlands on 31 March 2011 (the same ad was published in Italy, France, the US, etc.).

2. What Customers Should Know about SMG/APP

2.1. SMG/APP continues its large-scale natural forest destruction unabated

In 2011, SMG/APP pledged to its customers "to source 100 percent of its pulpwood supply from sustainable plantation stock by the end of 2015"^{27, 28}.

With this pledge, the SMG/APP confirmed the undeniable fact that the company continues its indiscriminate, large scale natural tropical forest clearance in Sumatra. Civil society has been documenting the many resulting problems, including serious biodiversity loss and vast greenhouse gas emissions, over the years, among others at <http://www.eyesontheForest.or.id>²⁹.

Eyes on the Forest estimates that by 2010, SMG/APP had caused the loss of two million hectares of natural forest in Riau and in Jambi. Eyes of the Forest based this estimate on SMG/APP's own data³⁰, reports by researchers³¹ and NGOs (see Appendix 1).

2.2. SMG/APP has repeatedly demonstrated that its "commitments" to sustainability cannot be trusted

In the 1990s, APP's Indah Kiat mill repeatedly stated that plantations would supply "substantially all" of the mill's wood requirements by 2004³².

After defaulting on its commitment in early 2004, APP advanced its "100% plantation" deadline to 2007³³.

After defaulting yet again in 2007, APP further advanced its "100% plantation" deadline to 2009³⁴.

By 2009, APP once again had broken its promise to its buyers. This year, 2011, the company once again advanced its "100% plantation" deadline to 2015³⁵.

Eyes on the Forest does not believe that SMG/APP will meet its 2015 deadline. The company will have to continue clearing natural forest because it needs to supply not only its existing but also the at least two new pulp mills it has been advertising.

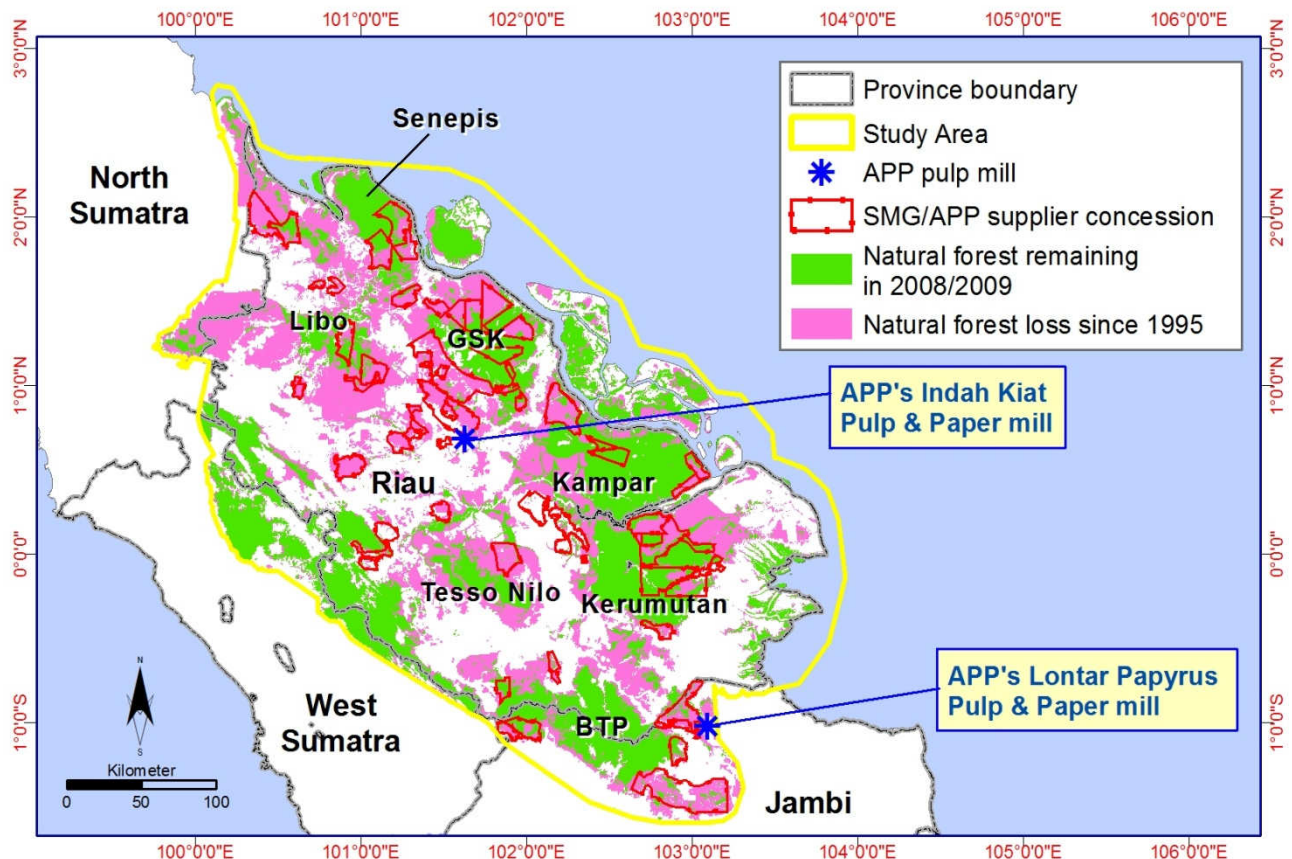
SMG/APP does not have a sustainable plantation wood supply for its existing pulp mills due to historically poor plantation development and too high a reliance on plantations located on peat soils and in community conflict areas^{36, 37, 38}. Scientists have pointed out that plantation development on peat is considered highly unsustainable^{39, 40, 41}: the continuing drainage of the peat will lead to its collapse after only a few rotations and – if the peat is located near the coast as in Sumatra – the concessions will flood with seawater. Eyes on the Forest calculates that 77% (almost 760,000 ha) of all of SMG/APP wood suppliers' concession areas in Riau alone are on peat. SMG/APP wood suppliers have many more concessions on peat outside of Riau. All of them, not too long into the future, will stop supplying wood to the company.

In early 2011, Bisnis Indonesia reported that SMG/APP will develop 500,000 hectares of pulpwood plantations in Papua and two new pulp mills in South Sumatra and East Kalimantan with an annual pulp production capacity of 2 million tons each by 2017^{42, 43}. Yet, SMG/APP has not demonstrated the existence of sustainable plantation wood supplies for the new mills. More and more natural forests will be cut to operate them.

2.3. SMG/APP causes devastating loss of biodiversity

Eyes of the Forest analyzed government concession data and EoF's own remote sensing analysis and field investigations of almost 1.2 million hectares of SMG/APP associated concessions in its mostly Riau study area (Map 1) covering

- close to 940,000 hectares of HTI (industrial timber plantation) concessions and around 45,000 hectares of a HPH selective logging concession that allows clear-cutting (PT. Mutiara Sabuk Khatulistiwa) in Riau which supplied or may supply MTH to APP's Indah Kiat pulp mill; and
- almost 200,000 hectares of HTI concessions in the Bukit Tigapuluh landscape in Jambi⁴⁴ which supplied or may supply MTH to APP's Lontar Papyrus pulp mill.



Map 1. SMG/APP associated concessions, natural forest remaining in 2008/2009 and natural forest lost since 1995 in the Eyes on the Forest study area.

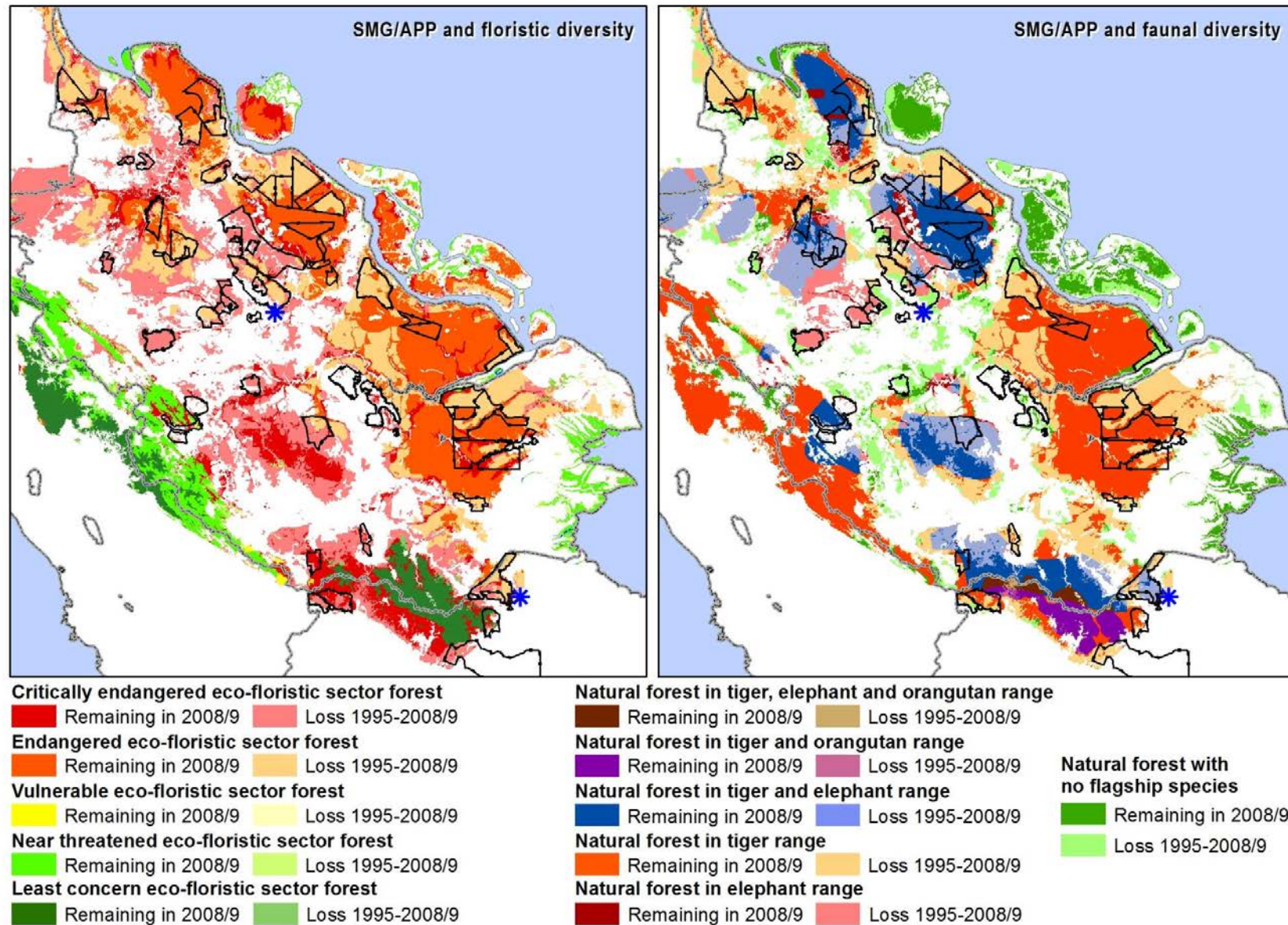
Between 1995, when SMG/APP wood suppliers started to obtain concession licenses, and 2008/2009, the last year for which Eyes on the Forest analyzed these data (Map 2, Appendix 2)⁴⁵, SMG/APP wood suppliers

- caused the destruction of around 320,000 ha and 355,000 ha of critically endangered and endangered forest types, respectively.
- caused the destruction of around 550,000 ha of tiger, 240,000 ha of elephant and 1,500 ha of orangutan range forests. IUCN lists all three species as critically endangered⁴⁶.

SMG/APP operations in its known concessions in the study area still threaten

- around 100,000 ha critically endangered and 210,000 ha endangered forest types, and
- around 320,000 ha tiger, 120,000 ha elephant and 2,000 ha orangutan range forest.

Yet this is only part of the story. APP states that "APP's pulpwood suppliers manage 2.5 million hectares of gross land"⁴⁷. That is more than double the area Eyes on the Forest analyzed for this report. In addition, SMG/APP has been pulping MTH from outside the land they manage. **The impact of this company and its destruction of natural tropical forests is thus much higher than reported here based on a limited study area.**



Map 2. SMG/APP concessions and natural forest loss between the mid-1990s and 2008/2009 shown with area's distinct sectors of eco-floristic diversity and their respective extinction risk⁴⁸ (left) and ranges of Sumatran tigers, elephants and orangutans (right).

SMG/APP wood suppliers have been clearcutting seven out of the existing eight natural forest landscapes in Riau province (Map 1 & 2).

Tesso Nilo is the last remaining block of a critically endangered dry lowland forest type, which lost more than 90% of its original coverage on the island since 1985⁴⁹. It has one of the world's highest levels of vascular plant diversity⁵⁰ and is home to Sumatra's endangered tigers and elephants and many other species⁵¹. SMG/APP has been sourcing tropical timber from its own concession and third parties including illegal loggers (in 2003⁵²) operating in this area. Despite the highly threatened status of this natural forest and its wildlife SMG/APP is continuing to clear even the last available natural forest in their Tesso Nilo concessions, threatening their critically endangered resident tigers⁵³.

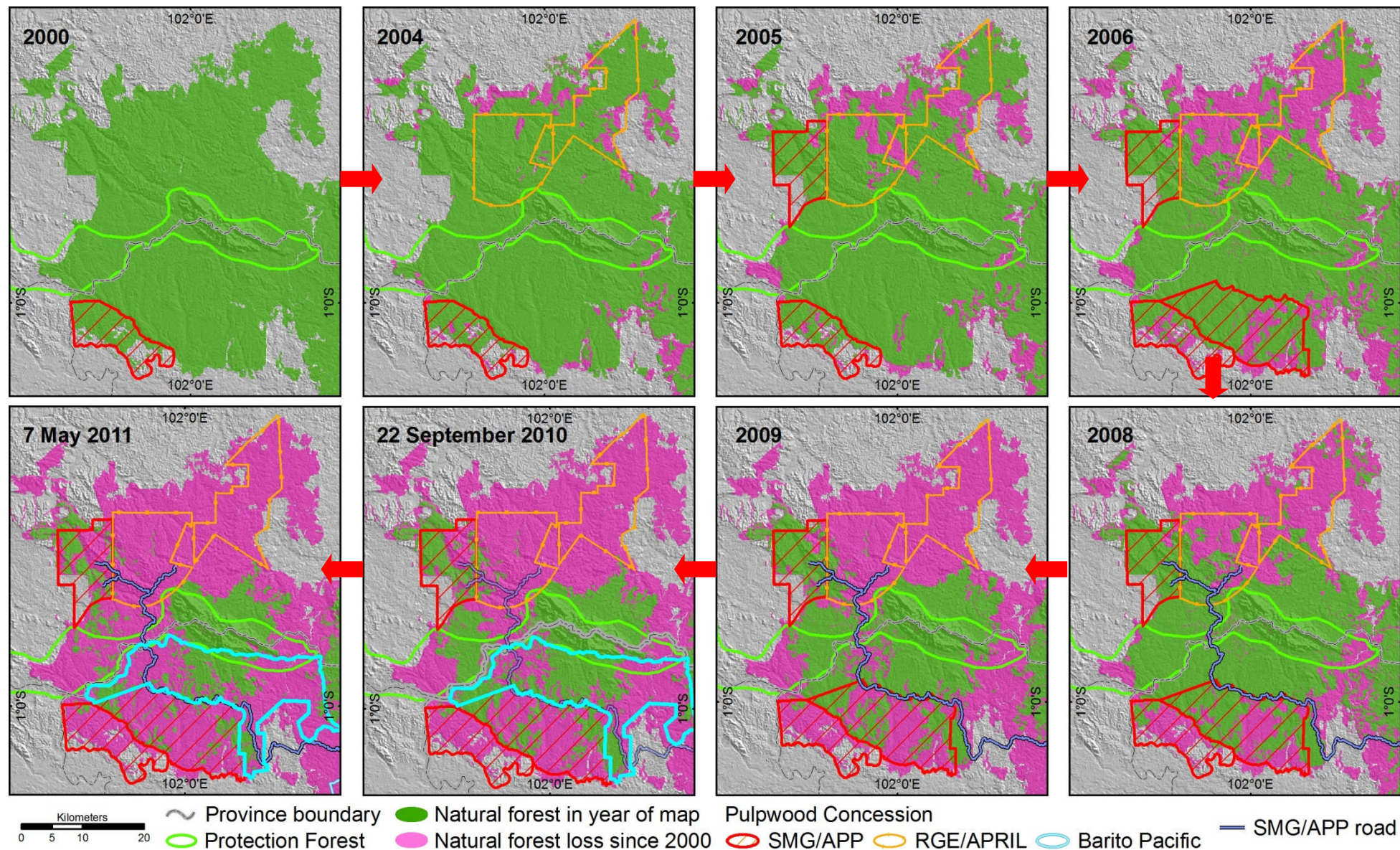
Libo includes a critically endangered fresh water swamp and endangered peat swamp forest, now highly fragmented due to rampant natural forest clearance by SMG/APP, APRIL and oil palm plantation developers. It is habitat of Sumatran tigers and elephants, both highly threatened by human-wildlife conflicts⁵⁴.

Senepis, Giam Siak Kecil, Kampar and Kerumutan are critically endangered fresh water swamp and endangered peat swamp forest blocks that have been devastated by SMG/APP peat soil drainage and natural forest clearance⁵⁵. They are habitat of Sumatran tigers and contain the CITES protected ramin and other endangered fauna and flora. In 2011, SMG/APP continued to source MTH from Senepis, Kerumutan and Kampar (see Chapter 3).

Bukit Tigapuluh includes a critically endangered dry lowland forest type which has lost around 80% of its original cover on the island since 1985⁵⁶. International scientists consider it one of the world's top 20 landscapes essential for the survival of the tiger⁵⁷, and the Government of Indonesia considers it a top tiger conservation priority⁵⁸. The forests are habitat of two of the largest remaining herds of the Sumatran elephant and of the only successfully reintroduced population of the Sumatran orangutan. From February to April 2011, motion-triggered cameras set up by the Ministry of Forestry and WWF in a 20,000-hectare forest block in this landscape recorded 12 individual tigers, including two mothers with at least four cubs⁵⁹. SMG/APP has been systematically targeting the good natural forests of this area for pulp production^{60, 61, 62}. A historical analysis of deforestation around this "12-Tiger Forest" between 2000 and 7 May 2011 reveals the rapid shrinking of available forest habitat due to natural forest clearance by SMG/APP and their competitor APRIL. Huge encroachment was caused by SMG/APP's massive logging highway cut through the landscapes' standing forests (Map 3). Both of which have compressed the area's tiger population into the remaining small patches of natural forest (see Chapter 3).



Photos 1 & 2. Two tiger cubs playing with a dry leaf (left) and a mother tiger with two cubs (right)⁶³.



Map 3. Deforestation in Bukit Tigapuluh's "12-Tiger Forest" area between 2000 and 2011 based on Landsat and SPOT satellite images, shown with concessions of SMG/APP and APRIL and SMG/APP's logging road.

2.4. SMG/APP releases huge amounts of carbon into the atmosphere and reports the opposite

Between the mid-1990s and 2008/2009 (Map 4), SMG/APP wood suppliers in the study area

- caused destruction of around 370,000 ha of natural tropical forests with rather closed canopy (canopy closure of 70-100%) and 210,000 ha with medium open canopy (40-70%), together comprising 85% of all forest loss in their concessions (Map 4, left).
- caused destruction of around 80,000 ha and 170,000 ha of natural tropical forests on 2-4 meter deep peat and on more than 4 meter deep peat, respectively, draining peat soils at least in these areas and maybe more (Map 4, right). Clearance of natural forest on peat more than 3 meters deep violates several Government regulations (see Chapter 3, Example 3).

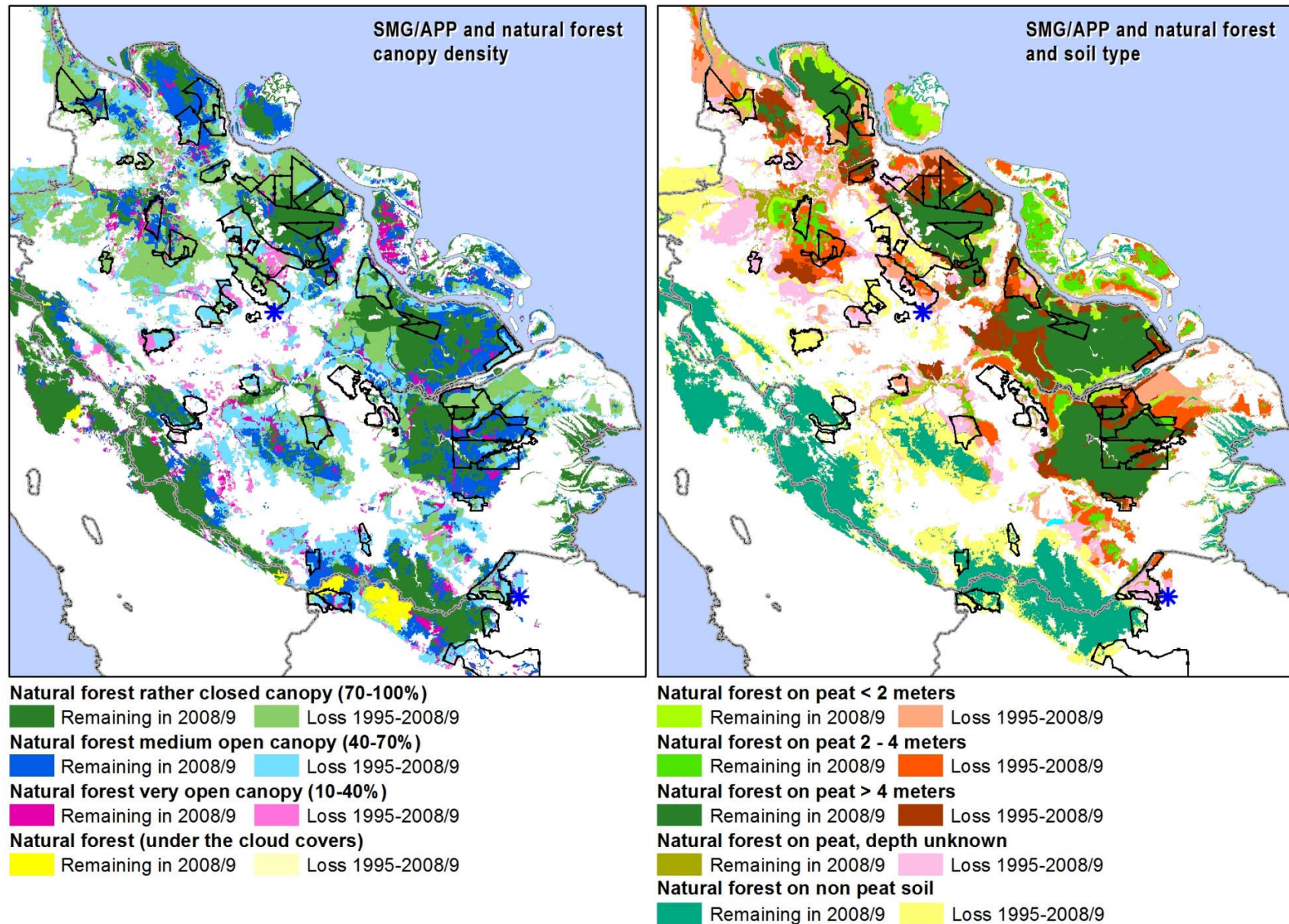
Full product lifecycle carbon emission calculations of SMG/APP products, including emissions from natural forest loss and peat drainage, found **the carbon footprint of APP's paper production in Sumatra to be in the range of 16 – 21 tons of CO_{2e} per ton of paper⁶⁴, 550 – 700 times higher than the 0.03 tons published by APP paid consultant Environmental Resource Management⁶⁵ and about 10 times the carbon footprint of the pulp & paper sector in North America⁶⁶**. The study further concluded that **the total emissions of APP's Indonesian pulp and paper mills and forest concessions was 67 – 86 million tons of CO_{2e}, ranking the Sinar Mas Group's APP company ahead of the 2006 emissions of 165 countries around the world⁶⁷**.

Since 2000, SMG/APP's wood supply has come mainly from natural forest clearance in peat areas⁶⁸, such as the Senepis, Libo, Giam Siak Kecil, Kampar and Kerumutan landscapes, containing very deep peat with more than 5,000 tons per hectare of carbon. The rapid draining of Riau's peat lands by the paper industry to enable clearance of their natural forests causes the peat soil to oxidize and emit the carbon it has stored over thousands of years. SMG/APP's draining of Riau's deep peat and its pulping of Riau's natural forests are the two most significant reasons for this province's position as the number one carbon emitter in Indonesia⁶⁹.

Sumatra island is the absolute leader in LULUCF (Land Use, Land Use Change and Forestry) associated CO₂ emissions in Indonesia with 1.22 gigatons per year⁷⁰, of which Riau accounts for around 60 percent⁷¹. Much of the emissions are generated by SMG/APP and its competitor APRIL's "Mega Pulp Project" which has steadily and quietly invaded the island's peat lands, mainly in Riau but also in other provinces since the 2000s. Already totaling 2.2 million hectares of concessions today, on much deeper peat, with faster drainage and continuously expanding, Sumatra's "Mega Pulp Project" is an ongoing climate disaster, far worse than Central Kalimantan's infamous and long defunct, "ex Mega Rice Project"⁷².

Between 1990 and 2007, Riau lost more than 4 million hectares of natural forest, 44% on peat. Riau's average annual CO₂ emissions from natural forest loss and peat drainage were estimated at 0.22 gigatons, one quarter (24 percent) of the collective annual greenhouse gas emissions reduction target of all Annex I countries in the Kyoto commitment period of 2008-2012⁷³.

Eyes on the Forest⁷⁴ estimated that SMG/APP and APRIL had up to 800,000 hectares (31%) of Riau's last remaining natural forests standing in their concessions in 2008/2009, mostly on deep peat. If they clear these forests and drain their carbon-rich peat soils to develop pulpwood plantations, they might increase Riau's annual emissions by 15 percent (compared with historical levels⁷⁵) to almost 0.5 gigatons/year⁷⁶ - at a time when President Yudhoyono has pledged to reduce Indonesia's emissions by 26 percent (0.75 gigatons) and the National Strategy for REDD+ targets 0.4 gigatons reduction from the whole forestry sector⁷⁷.



Map 4. SMG/APP wood suppliers' concessions and natural forest loss between mid-1990s and 2008/2009, in relation to canopy density⁷⁸ (left) and soil type – non peat soil or peat soil of different depth⁷⁹.

3. APP cares?

APP's rosy advertisements, press releases and blogs are flooding the global market place. APP tells you:

- *"We at APP take our responsibilities as overseers of the environment very seriously⁸⁰".*
- *"APP has always adopted as its mission to maintain sustainability in its operation⁸¹".*
- *"APP cares⁸²".*

As this PR campaign is being rolled out across the globe, SMG/APP has been busy establishing strong marketing networks in many countries and new markets. The company is preparing to flood the world with ever more climate-changing deforestation products.

What does APP really care about? Keep pulping as much natural forest as possible and have as many customers as possible pay for it through their fake conservation commitments, advertisements and partnerships.

WWF-Indonesia⁸³, the Forest Stewardship Council⁸⁴, the Rainforest Alliance⁸⁵, and many former customers stopped their businesses with APP when they concluded that constructive engagement of APP to save natural forest is impossible and that any continuing engagement would provide the company with an excuse to continue pulping Indonesia forests and destroying its peatlands (Box 1).

Box 1. Companies who have cut off business ties with APP.

Increasing numbers of corporate customers have concluded that SMG/APP's environmentally destructive practices, especially the deforestation it causes, are incompatible with their own corporate values and have made public commitments to cease business ties with APP: Office Depot⁸⁶, Staples⁸⁷, Kraft⁸⁸, United Stationers⁸⁹, Target⁹⁰, Mattel⁹¹ and Hasbro⁹² (USA); Idisa Papel (Spain)⁹³; Metro Group⁹⁴, KiK⁹⁵, Adidas⁹⁶, Montblanc⁹⁷ and Tchibo⁹⁸ (Germany); Woolworths⁹⁹ and Metcash¹⁰⁰ (Australia); The Warehouse¹⁰¹ (New Zealand); Tesco¹⁰², Sainsbury¹⁰³ and Marks & Spencer¹⁰⁴ (UK); Nestlé¹⁰⁵ (Switzerland); Unilever¹⁰⁶ (Netherlands); Ricoh and Fuji Xerox¹⁰⁷ (Japan); Zhejiang Hotels Association¹⁰⁸ (China); Gucci Group¹⁰⁹, Cartamundi¹¹⁰ (Italy); Lego¹¹¹ (Denmark); Leclerc¹¹² (France). Carrefour¹¹³ (France) has recently confirmed that they will stop buying paper from APP for their own brand products.

Until SMG/APP's owners not only commit, but have proven through independent verification by civil society groups, that they have stopped all clearing of natural forest within their entire range of operations, Eyes on the Forest recommends consumers to never believe the greenwashing of SMG/APP and their marketing partners who are simply trying to befog and confuse with simple tactics:

1. They exploit your credulity, lack of knowledge or inexperience on Indonesia to mislead you to think that the issues raised by civil society are untrue.
2. They highlight irrelevant commitments, achievements, efforts and merits to switch your attention from the crucial information which would influence your purchasing decision: that SMG/APP continues to cause indiscriminate and large scale peat clearance and natural forest clearance in Sumatra and is now beginning to do the same in Borneo and Papua.

On 28 October 2011, the Dutch Advertising Code Commission ruled that APP's TV and paper adverts that attempt to position APP as a company that cares about the environment are misleading the public¹¹⁴. They are shown in the Background Chapter above.

Example 1. APP misleads you to think that they are a tiger protection company.

APP writes:

"we support programs for the preservation of the 106,000 hectares Senepis tiger reserve, the 10,000 hectares Taman Raja park, the 172,000 hectares Giam Siak Kecil reserve, recognized by UNESCO Man and Biosphere Programme, and the Kutai orangutan program."¹¹⁵

"You only saved one tiger, people told me. It's not true. Since I joined this company in 2004, we have succeeded to secure several Sumatran Tiger conservation habitats. First was the Senepis tiger sanctuary in Dumai, Riau. Second was the UNESCO approved Giam Siak Kecil Biosphere Reserve. Third was the Taman Raja Nature Reserve in Jambi. Fourth was the Kampar conservation area. Next? You just need to wait and see."¹¹⁶

Fact is:

Most of the project areas they claim to protect had already been protected by law or managed by somebody else, therefore SMG/APP adds no additional conservation benefit for tiger. APP has pulped more tiger habitat EVERY year than the combined acreage of its actual, legally-required set-asides in these concessions. Their wood suppliers have cleared much of the forest of the originally government proposed Senepis National Park for tiger conservation, have begun clearing even the tiny forest block SMG/APP committed to protect inside its own proposed "Senepis Tiger Sanctuary", and have drained and clearcut peatland forest inside the UNESCO Reserve.

For years, APP has been highlighting the same "projects" to divert attention from its large-scale tiger forest destruction in Sumatra, in the landscapes in which these "projects" are located and even in the "project" areas themselves.

NGOs have shown that SMG/APP does not care about tigers and the "projects" they advertise.

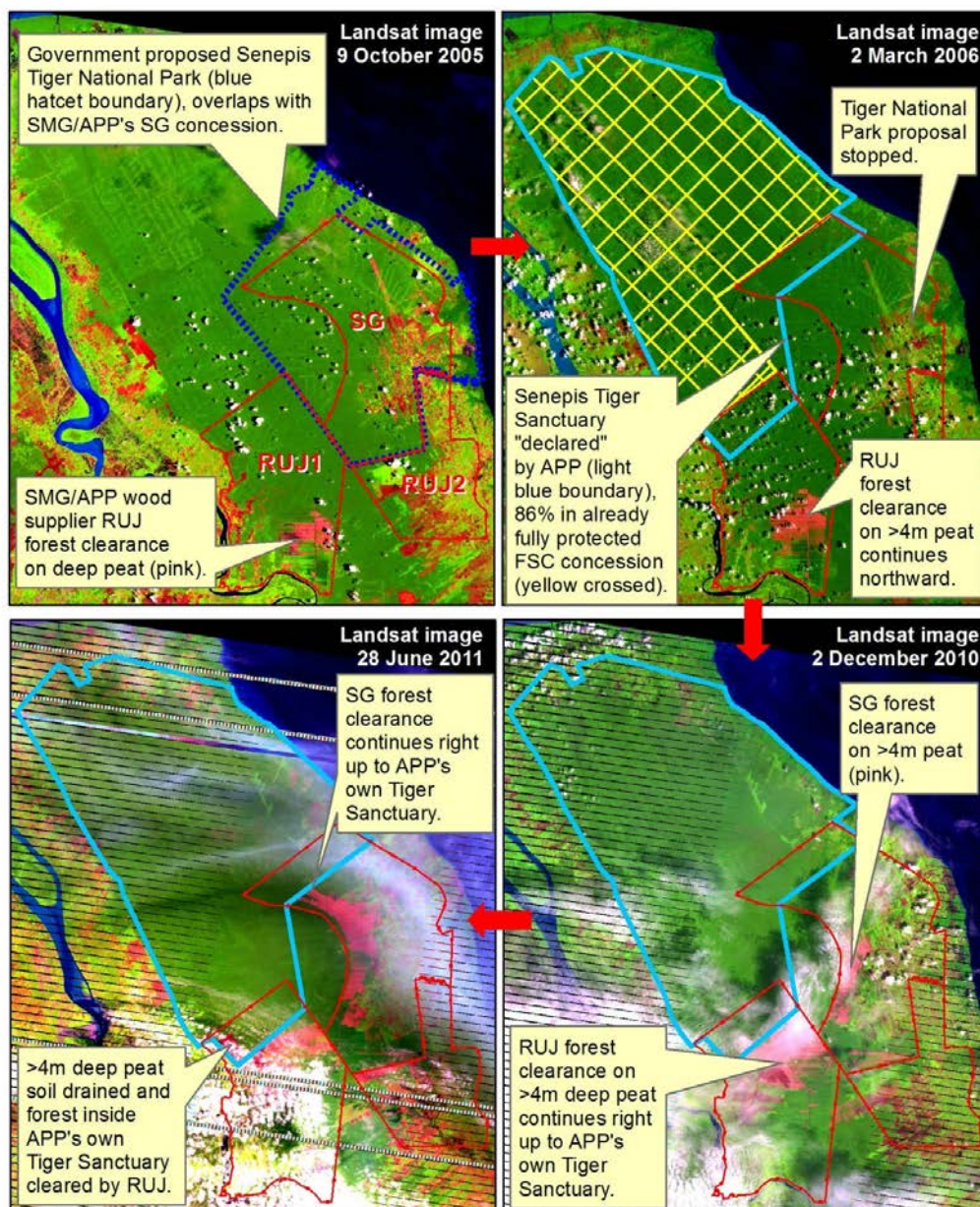
- APP's real contribution to the "projects" and the value of the "projects" themselves for conservation are seriously questionable since most of these areas are either already legally protected or managed by other companies.
- SMG/APP wood suppliers have been clearing so much natural forest in Senepis, Giam Siak Kecil, Kampar and Bukit Tigapuluh (where Taman Raja is located) that it threatens the viability of these entire ecosystems and their biodiversity, as well as their own projects inside them and tigers they claim to protect.

In Riau and Jambi, Government-required macro/micro-delineation documents and work plans of 31 wood suppliers of APP and APRIL covering 1.52 million hectares showed that only 50,709 hectares were zoned as government-required "Wildlife Protection Zones", and of that forest, only 3,850 hectares were designated by APP specifically for tiger conservation in Senepis¹¹⁷. In contrast, our study found that SMG/APP wood suppliers have destroyed 550,000 hectares of tiger forests between 1995 and 2008/2009 in our study area only and likely caused more tiger forest loss outside these areas.

SMG/APP promotes tiger translocations as one of its conservation achievements^{118 119}. In reality, APP does nothing more than financing of the removal of tigers after the company's destruction of their habitat has pushed them into conflict with people, none of which would have happened if the company had conserved these tiger forests¹²⁰.

In Senepis (Map 5), SMG/APP has been sourcing natural forest wood from five

concessions¹²¹. In 2004, Riau's Forestry Agency supported by Riau's Governor proposed a National Park for tiger conservation in Senepis that included a concession of SMG/APP's wood supplier PT. Suntura Gajapati (SG)¹²². A WWF¹²³ investigation revealed how SMG/APP appears to have prevented tiger habitat from being protected in the proposed Senepis National Park. The national park concept suddenly disappeared. Instead, APP began advertising its own alternate 106,081-hectare "Senepis Tiger Sanctuary"¹²⁴. Mysteriously, the area to be protected had largely moved out of the PT. Suntura Gajapati concession into the concession of an unrelated company, PT. Diamond Raya Timber, whose FSC-certified operations already fully protected this tiger forest. In 2011, a Greenomics¹²⁵ investigation showed that the government-required macro/micro delineation and work plan of SMG/APP's PT. Suntura Gajapati had actually only allocated 3,850 hectares, less than 4%, to APP's tiger sanctuary. Rather than contributing to tiger habitat protection by having its SG concession declared a tiger national park, APP's wood suppliers systematically eradicated the Senepis tiger habitat in SG and another supplier PT. Ruas Utama Jaya (RUJ) concessions by clearing natural forest on contiguous deep peat of more than 4 meters. **By June 2011, RUJ had even begun clearing the tiny block of natural forest (less than 5,000 ha) APP had set aside for its own "Senepis Tiger Sanctuary"** (Map 5 and 6).



Map 5. APP's self-declared Senepis tiger sanctuary and SMG/APP history of clearing natural forest on deep peat.



In 2009, Eyes on the Forest reported that most violent incidents between people and tigers in Riau Province since 1997 had occurred near forested areas being cleared by SMG/APP. The analysis, based on published human-tiger conflict data, found that at least 147 of 245 or 60% of all conflicts in Riau, resulting in 27 human deaths (49%) and 8 tiger deaths (53%), occurred in the Senepis area alone¹²⁶. But not only tigers suffered from SMG/APP's relentless destruction of their habitat. All of SMG/APP's forest clearance was preceded by draining of the peat these forests stood on, putting the viability and sustainability of this entire peat ecosystem in question and releasing vast amounts of greenhouse gas emissions.

Bukit Tigapuluh – KKI Warsi, Eyes on the Forest and other local NGOs working in this landscape showed how SMG/APP has been systematically targeting the good natural forests of this Global Priority Tiger Conservation Landscape^{127, 128, 129, 130} and estimated that APP has caused the loss of more than 75,000 hectares of its natural forest since 2004¹³¹. In 2009, APP announced its "Taman Raja Nature Reserve" covering less than 7,000 hectares of forest¹³². NGOs showed that most of the forest in the "Taman Raja Nature Reserve" could not have been cleared anyway according to Indonesian law^{133, 134} and that the reserve cannot function as "wildlife corridor" as APP claims because the company has pulped the natural forest around most of it.

UNESCO **Giam Siak Kecil** Biosphere Reserve, which SMG/APP portrays as its "conservation flagship program"¹³⁵, had already been protected before APP's announcement with no permission to drain its deep peat soils and clear its forests by local land use plan and various regulations. SMG/APP's partner companies started to illegally clear natural peatland forest in what today is the reserve's buffer zone before 2000 without proper licenses from the Ministry of Forestry¹³⁶. Based on extensive on-the-ground investigations and satellite analysis, Eyes on the Forest¹³⁷ summarized how APP continued to destroy the Giam Siak Kecil ecosystem even after the UNESCO Biosphere Reserve was declared in 2009, by draining its deep peat soils and clearing its forests and contributing to huge, ever-increasing carbon emissions in the process. Some of the forest clearance has been conducted without proper licenses and as a result of corruption, as evidenced by the local officials who went to jail for issuing illegal licenses¹³⁸. Greenomics¹³⁹ states *"the said Biosphere Reserve is nothing more than a landscape in the midst of massive forest clearance by APP's pulpwood plantation suppliers"*.

In Kampar, SMG/APP has drained deep peat soils and cleared natural forest in this landscape since the late 1990s. In 2010, APP and their partner Carbon Conservation began "selling" their tiny "Kampar Carbon Reserve" project¹⁴⁰, marketing it also as a tiger conservation project. Eyes on the Forest and Greenomics reported that the project should not earn any carbon credits since the area has already been protected by law because of its very deep peat soils (no additionality) and that SMG/APP is clearing forest and draining peat in this contiguous ecosystem (huge leakage), emitting large amounts of carbon¹⁴¹.

Example 2. APP misleads you to think that APP does not use wood from natural forest with High Conservation Values to make its products.

APP writes¹:

"APP's fibre suppliers operate pulpwood plantations according to legal concessions granted by the Government of Indonesia on land identified as being the lowest-value forested areas in the country, comprised largely of what it categorises as degraded or wasteland."¹⁴²

"Rather than burn the wood residues which would result in an increase in carbon emissions or leave the residues on the forest floor potentially risking disease outbreaks in the forests,

¹ Underlines in APP quotes are by Eyes on the Forest.

the Government requires that they be used productively such as to produce pulp and paper.¹⁴³

"Prior to plantation development the land is subjected to several ecological and social assessments to ensure that any areas of high conservation values are identified and protected.¹⁴⁴"

"We monitor closely the supply chain for the pulp and paper production, to ensure no pulpwood from high conservation value areas (HCV) as defined by the Government of Indonesia is used in any of APP's products."¹⁴⁵

Fact is:

APP uses wood from clearance of good, dense tropical forest in Sumatra, with High Conservation Values as defined by Forest Stewardship Council, such as critically endangered Sumatran tiger and endangered dry lowland and peatland forests, and identified by independent assessors based on the multi-stakeholder endorsed *Indonesia HCV Toolkit*.

APP never defines what it means by "lowest-value forest areas", "degraded" or "wasteland". The company wants customers to imagine that their wood suppliers are only harvesting what they call "wood residues" in very open areas with very few trees or with the "wood residues" already lying on the ground when their wood suppliers arrive there.

In reality, our satellite image and field investigations have consistently shown that SMG/APP wood suppliers are clearing good, dense natural forests with HCVs (Map 2, 3 and 4)^{146, 147, 148, 149, 150, 151, 152}. Even SMG/APP wood suppliers' own annual cutting plans (called RKT), based on company data submitted to Government, show high tree densities with an average official timber volume of 82 m³/hectare in 2009 (between 31 and 152 m³/ha) and 95 m³/ha in 2010 (between 31 and 164 m³/ha)¹⁵³.

To set the record straight: SMG/APP's so-called "wood residues" were tropical forests before the company's wood suppliers flattened them.

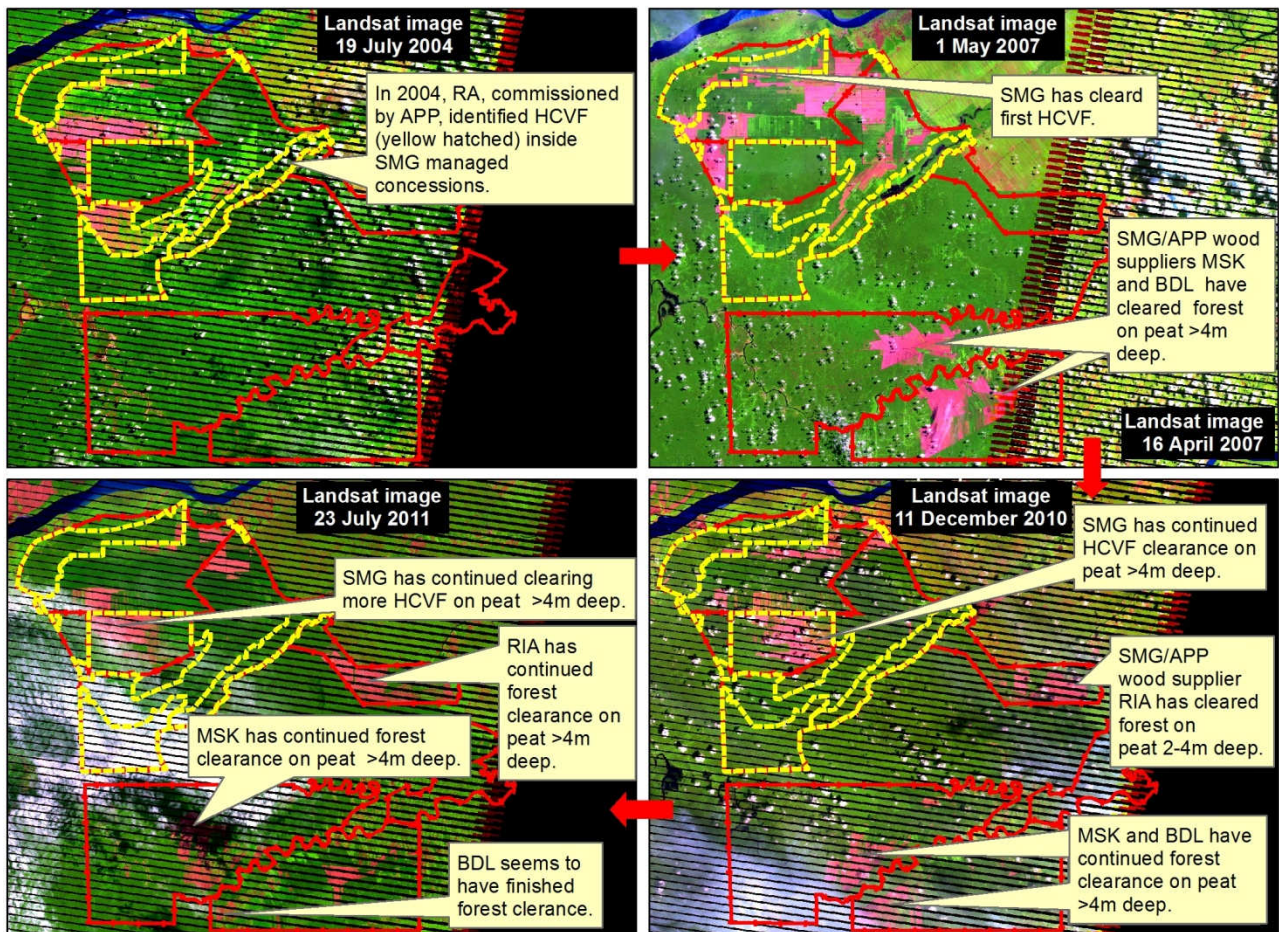
What APP does not tell you is that the Indonesian government recognizes only very few areas as "primary forest" in its official map of Sumatra and most are inside conservation areas and areas with steep slopes. Majority of the natural forest that has once been zoned as a selective logging concession is called "secondary forest", "degraded forest" or "logged over forests" without any strict definition. These are all mostly unprotected dry natural lowland and peatland forests with often dense canopies where only some large-diameter trees had selectively been harvested in the past. They are still very rich in biodiversity and carbon¹⁵⁴ yet but under the current laws and regulations the Government can issue pulpwood concession licenses and allow them to be cleared.

To set the record straight: the Government of Indonesia allows the clearing of dense tropical forests with high biodiversity values for conversion to pulpwood plantations. To operate sustainably companies have to voluntarily protect High Conservation Value Forests.

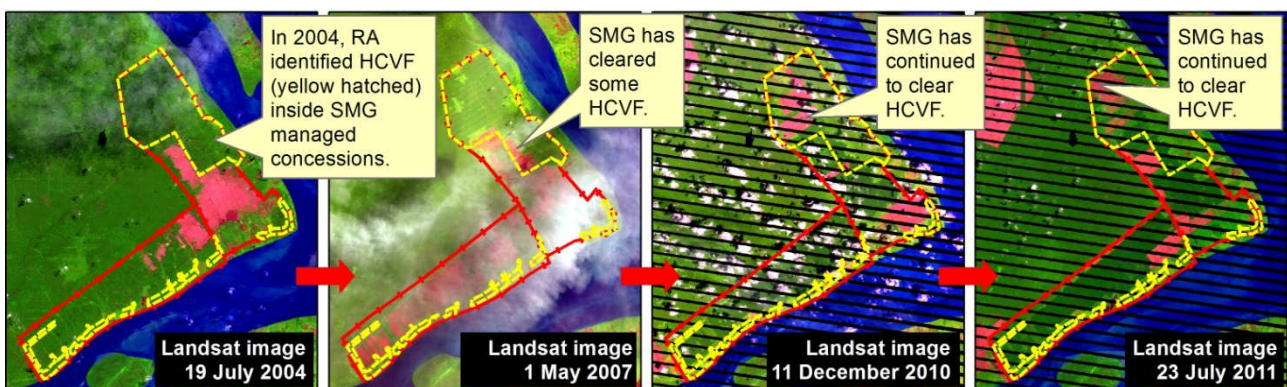
What APP does not tell you is that the company refuses to have its natural forests independently and transparently assessed using the globally adopted definition of HCVF by the Forest Stewardship Council through the application of the Indonesia HCV Toolkit. APP uses the much the same words such as "high conservation value areas (HCV) as defined by the Government of Indonesia" and application of legally required "ecological and social assessments". But these simply mean forest assessments based on government required called AMDAL and macro-micro delineation whose applications on the ground have failed time and again to protect High Conservation Value Forests.

In 2004, after urging by customers and NGOs, SMG/APP commissioned the Rainforest Alliance's SmartWood Program (RA) to identify HCVFs in three of its Forest Management Units based on the Indonesia HCV Toolkit. When identified, SMG/APP committed to protect and maintain all the HCVs. Yet, a time series analysis of historical satellite images revealed that the company has been clearing these independently and transparently identified HCVFs (yellow hatchet outlined areas in Map 7 and 8). All are forests standing on peat soils deeper than 4 meters, protected by law.

To set the record straight: SMG/APP is not protecting transparently and independently identified HCVF but has been destroying them to produce its paper^{155, 156}.



Map 7. Clearance of Rainforest Alliance identified HCVF and other natural forest on deep peat in Kerumutan.



Map 8. Clearance of Rainforest Alliance identified HCVF and other natural forest on deep peat in Kampar.

Example 3. APP misleads you to think that APP follows all relevant laws and regulations and that ensures them to be sustainable and pro conservation.

APP writes:

"APP has always strictly complied with relevant laws and regulations in order to ensure that all of our pulp and paper products originated from legal and sustainably managed forests.¹⁵⁷"

"For the Indonesian pulp and paper industry, sustainable forest management and conservation begins with strictly adhering to government of Indonesia spatial planning and plantation development regulations as well as Sustainable Forestry Management certification requirements. These standards define requirements for preserving High Conservation Value Forest, restrictions for development on peatland, and community engagement in the plantation development process.¹⁵⁸"

"APP has a policy to embrace all credible certification standards which are relevant to and in support of Indonesia's policies, law and regulations and we will always strive to meet the highest standards that are expected by our customers and partners worldwide. We will continue to apply standards and principles from other globally recognized certifications, including international TLTV, ecolabelling and PEFC¹⁵⁹."

Fact is:

Numerous field investigations and analysis indicate that SMG/APP does not comply with all relevant laws and regulations and that clearance of natural forest is a legal option in Indonesia which SMG/APP continues to employ.

Legality is a minimum requirement for all customers. Many customers require more than legal compliance, for example, insisting on sustainability, conservation and zero deforestation. Yet even APP's claim that it has "always strictly complied with relevant laws and regulations" is not true.

What APP does not tell you is that:

- Many of SMG/APP's concessions have violated Government "restrictions for development on peatland" by clearing natural forest on deep peat of more than 3 meters¹⁶⁰, in violation of Presidential Decree Number 32/1990 on Management of Protected Area, Act Number 5 of 1990 on Conservation of Living Resources and Their Ecosystems¹⁶¹, Law Number 26/2007 on Spatial Planning¹⁶², the currently active national spatial plan enacted by Government Regulation Number 26/2008 on National Spatial Planning¹⁶³.
- A 2009 audit report by the Indonesian State Audit Board (BPK-RI) concluded that SMG/APP wood suppliers cleared natural forest based on pulpwood plantation licenses and annual cutting licenses issued in violation of regulations¹⁶⁴.
- The Government of Indonesia jailed two government officials (Tengku Azmun Jaafar and Asral Rachman) for corruption when issuing licenses to APP's wood suppliers¹⁶⁵, two more were detained (Arwin A.S and Syuhada Tasman)¹⁶⁶ and another one is currently under investigation by Indonesia's Corruption Eradication Commission (Burhanudin Husein)¹⁶⁷. With these licenses obtained through corrupt practices, SMG/APP cleared natural forest to supply its pulp mills and produce the paper it sells around the world^{168, 169, 170, 171, 172}.
- Recent changes in forestry laws and regulations allow clearance of any natural forest, in contradiction of pro-sustainability and pro-conservation laws and regulations such as those related to peat development and that their suppliers are exploiting these contradictions to cut as much natural forest as possible¹⁷³. A truly responsible and sustainable and pro-conservation company would rather respect the aspirations and intentions of these laws and regulations and protect these forests. Under such

circumstance, legality does not constitute sustainability or conservation.

APP highlights its commitment to legality by implementing the "Timber Legality & Traceability Verification (TLTV)" service developed by SGS and by adopting "Sistem Verifikasi Legalitas Kayu (SVLK, Indonesia's national timber legality and verification system)" ^{174, 175}. However, as "legality" in practice does not guarantee "sustainable forest management" nor "conservation", APP has no basis to say: *"foreign countries importing wood-based products from Indonesia should have complete confidence that Indonesian products certified under SVLK guidelines adhere to the highest standards for wood legality and support SFM principles. These standards should be accepted and considered equal to those legal requirements created by countries with the intention to protect their own natural forests and mandate sustainable plantation forestry practices"*¹⁷⁶.

What APP does not tell you is that the world's most credible forestry certification standard, the Forest Stewardship Council (FSC), dissociated itself from Asia Pulp & Paper in 2007. The FSC Board of Directors stated *"The FSC Board of Directors decided that association with APP would threaten the good will and faith invested in the name Forest Stewardship Council. [...] There is substantial publicly available information that suggests that APP, a Sinar Mas subsidiary, is associated with destructive forestry practices. Reports from WWF, Greenpeace, Eyes on the Forest and many other independent sources suggest that APP is actively conducting forestry practices contrary to FSC Principles and Criteria."*¹⁷⁷

As a result, today, APP has no independent, credible third party certification to demonstrate their sustainability.

Certification bodies frequently quoted by APP -- the Indonesian Ecolabel Institute (LEI), the Program for the Endorsement of Forest Certification (PEFC), EU Ecolabel and the Indonesian government's Sustainable Production Forest Management (Pengelolaan Hutan Produksi Lestari/PHPL) standards^{178, 179} -- do not ensure sustainability. Neither of them have standards comprehensive enough to validate^{180, 181, 182}:

1. whether SMG/APP is/was involved in HCVF and peat destruction in the concessions in question, and
2. Whether the overall sustainability, environmental record and the large-scale environmental and social problems the whole SMG/APP corporate group cause beyond the few small concessions they certify.

Example 4. APP misleads you to think that APP cares about the world's climate.

APP writes:

*"We also must recognize that private industry is equally responsible for using the moratorium period to assess and advance internal sustainable forestry management practices and programs."*¹⁸³

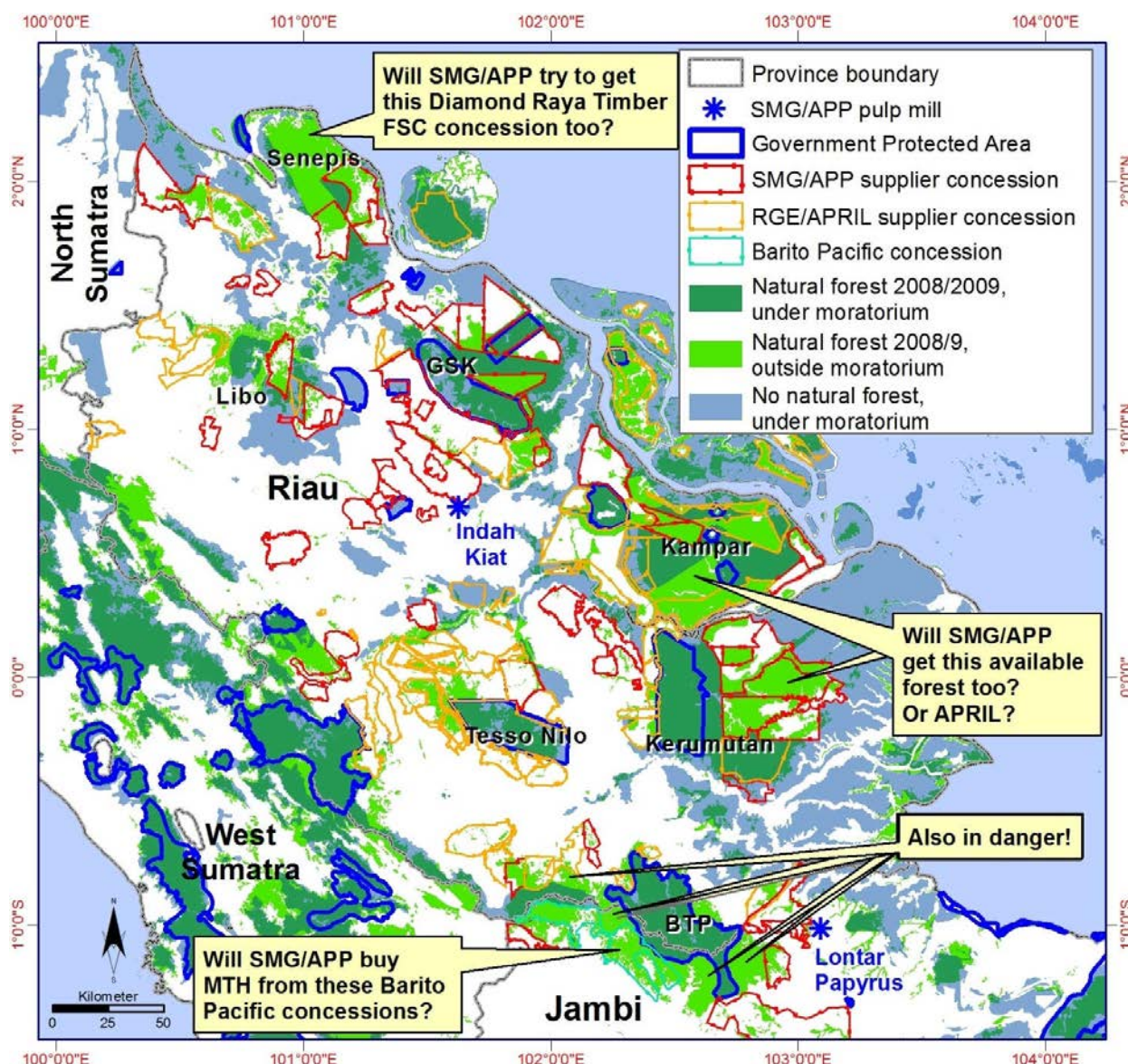
*"Bottom line is that it's not enough to just say we support the moratorium. What matters most are actions. [...] While Asia Pulp & Paper will take action to emerge from the moratorium a healthier business with a clear and definitive vision for the future of our sustainable forestry management, manufacturing, conservation and social investment programs."*¹⁸⁴

*"Much of Indonesia consists of unimproved land. Afforestation is a possibility that makes wild land into de facto CO₂ capture and storage areas. Indonesia is a fantastic place to plant trees. APP pulp suppliers plant more than 200 million trees per year."*¹⁸⁵

Fact is:

APP first destroys millions of old trees of hundreds of different species to plant young trees of one species and then cuts every planted tree 5-7 years later. Net out: big emissions - no sequestration. Even more devastating for the climate, SMG/APP continuously drains very carbon rich peat soils to destroy their forests and plant its monocultures, releasing millions of tons of carbon into the atmosphere that affect the world's climate (See also Chapter 2.3.).

The Indonesian moratorium on deforestation is in fact only a moratorium of the issuance of new licenses in so-called primary forests and peatlands for which no permit has ever been issued^{186, 187, 188, 189}. This means only very few forests in Sumatra are protected by the moratorium with basically no impact on SMG/APP (Map 9). With very few exceptions, the group will continue its destruction of natural forest and draining of peat soils in their existing concessions. APP can even obtain licenses to cut down natural forests that are still available and not covered by the moratorium (Map 9).



Map 9. SMG/APP and RGE/APRIL wood supplier concessions and Barito Pacific concessions, natural forest remaining in 2008/2009 and moratorium areas (where new permits would not be issued during the moratorium) based on the Ministry of Forestry SK. 323/Menhut-II/2011 on 17 June 2011¹⁹⁰. No natural forest inside known SMG/APP affiliated concessions in the study area is protected by the moratorium.

In fact, none of the activities APP has been advertising (afforestation, research, etc.) as "responsible for using the moratorium period" includes a stoppage of the drainage of peat soils, of the clearance of natural forest and of pulping MTH in its mills. Yet these are the most crucial activities needed for valid REDD efforts to have any meaning in Indonesia at all.

APP has dramatically misled the public to think the company's operations are carbon neutral. A contractor, Environmental Resources Management (ERM) in the UK helped APP advertise a "near zero carbon footprint" based on an incomplete set of assumptions that omitted the company's most crucial greenhouse gas releases^{191, 192}.

ERM and APP intentionally ignored the huge emissions caused by SMG/APP's clearance of natural forests for its pulp production and, most of all, the vast emissions the company's continuing drainage of the peat soils for their plantations cause every year. Instead, mocking customers, investors and the Government agencies who issued the licenses, APP even added the carbon sequestration of the very plantations which cause all these huge emissions to improve its carbon foot print calculation¹⁹³ (see also Chapter 2.3). Replacing tropical forests with monocultures in five- to seven- year rotations to produce pulp & paper which are soon discarded to emit their sequestered carbon is far from any valid definition of what "afforestation" projects are for climate change mitigation.

4. Eyes on the Forest Calls on SMG/APP

In April 2011, APP announced that, in partnership with Carbon Conservation, it is crafting *"Vision 2020, a roadmap to guide sustainability principles, goals and program execution across all aspects of the company's Indonesian operations from today to the year 2020."*¹⁹⁴ SMG/APP has invited civil society to contribute. Eyes on the Forest offers this report as its contribution to the effort with a simple conclusion:

SMG/APP's Vision 2020 will be executed in landscapes free of forests and full of collapsed peat domes unless the company immediately stops all deforestation, peat drainage and expansion of pulping capacity without existing sustainably built plantations.

The announcement of yet another sustainability plan is nothing new for SMG/APP. Announcements like this have come and gone, designed and disseminated with the simple objective of keeping its customers and investors happy while giving the company ever more time to drain peat soils and clear forests.

In 2003, SMG/APP commissioned a "sustainable wood supply assessment & planning" from two consultancy companies¹⁹⁵, signed a Letter of Intent with WWF¹⁹⁶, and eventually produced a "sustainability action plan" in 2004. After reviewing the document, WWF ended its engagement with SMG/APP. The assumptions were beyond belief, to a point where even the consulting firm could not stand by them and APP had to publish its own analysis. It insisted on having to cut an additional 180,000 hectares of natural forest "to become sustainable" while failing to commit to protect High Conservation Value Forests¹⁹⁷. As predicted, the company never implemented its own plan and has cleared much more than the announced 180,000 hectares of forest since. And it will continue doing so, because the brand new self-imposed deadline for MTH-free operations is a convenient four years away.

Can any business partner really afford to take APP's announcement of a sustainability contract with "Carbon Conservation" serious?

Eyes on the Forest calls on the Sinar Mas Group's Asia Pulp & Paper company to stop clearing natural forest in Sumatra, all other Indonesian islands and throughout the world today and commit to the calls by NGOs listed in Box 1.

Eyes on the Forest calls on customers and other business partners to not trust SMG/APP's public relations claims. Sumatra's forests and species are at the 11th hour. Responsible paper and pulp purchasers should not contribute to their demise. Join the growing list of other responsible companies that have stopped sourcing from APP.

Box 2. Calls to Indonesian pulp and paper companies, endorsed by more than 400 Indonesian NGOs in 2010^{198, 199}

1. An immediate halt on all further logging, clearing and conversion of natural forests across all operations in Indonesia and a halt on all sourcing of mixed tropical hardwood fiber until areas of High Conservation Value and high carbon value have been identified and protected, and areas suitable for fiber production have been agreed upon by government, industry, civil society organizations, and affected indigenous peoples and forest dependent communities.
2. A timebound plan for the restoration of peat lands and key ecological areas affected by roads, canals, logging, wood transportation and plantations is agreed by government, industry, civil society and affected communities, and is

being implemented.

3. Negotiated agreements with indigenous communities affected by planned or existing pulp operations based on the right of indigenous peoples to give or withhold their free, prior and informed consent to developments that may affect their customary territories are established. Negotiated settlements and fair compensation for lands with non indigenous communities must also be established. Safeguards for pulpwood plantation and pulp and paper mill workers' rights including for example, adequate wages, healthy working conditions, training, and insurance, are also established.
4. A commitment that any new or expanded pulp and paper mill capacity is totally mercury-free and chlorine-free.
5. A halt on any additional pulp or paper production capacity or expansion and an audit of existing fiber production capacity to verify that additional natural forest fiber (MTH) is not required for existing or expanded operation and is consistent with the above conditions.
6. The employment of an independent third party, acceptable to independent civil society groups in Indonesia, to monitor implementation and continued adherence to the above conditions and report regularly to the public on its findings.

END

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Appendix 1. Area estimate of natural forest cleared to supply IKPP and LPPP.

1. Parameters used to calculate size of forest needed for production of known amounts of pulp

Parameter	Value
1. From air dry ton (adt) pulp to green metric ton (gmt) mixed tropical hardwood (MTH, obtained by clearance of natural forest) wood weight (Jaakko Poyry 1998, quoted by Barr 2001)	4.83
2. From MTH wood weight (gmt) to MTH wood volume (m ³) at pulp mill gate (APP 2004)	1.142
3. From MTH wood volume at pulp mill gate to MTH standing wood volume in natural forest (taking into account harvest, transport and chipping losses) (AMEC, quoted in APP 2004)	1.235
4. Average MTH standing wood volume harvestable per hectare of natural forest (m ³ /ha) as the average volumes listed in RKT 2009 and 2010 issued to SMG/APP wood suppliers (Eyes on the Forest July 2010 and November 2010).	89

2. Estimate of deforestation caused by operation of SMG/APP's Indah Kiat Pulp & Paper (IKPP) mill in Riau Province, Sumatra

Comment: Forest clearance for which the IKPP mill was responsible is likely higher than calculated here. We only calculated forest clearance based on data for Riau province, yet the mill also received fiber from other provinces. None of the data taken from APP publications could be verified and may thus not be correct.

Production Year	[A] Natural forest pulped (ha)	[B] Pulp production capacity or actual production (bold)	[C] % MTH in mill fiber supply	[D] Reference and notes
1984-1987	32,329	105,000	100%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] Pirard & Cossalter (2006) [C] SMG/APP began operations in 1984 and did not have plantations ready for harvest by 1987.
1988	7,436	105,000	92%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] "Since 1989, Indah Kiat has expanded its pulp production capacity from 120,000 tonnes to 1.7 million tonnes per annum" (PT Indah Kiat 1999, quoted by Barr 2000). "Between 1991 and 1999, the group's pulp processing capacity grew from 410,000 tonnes to 2.3 million tonnes per annum" (Ausnewz 1999, quoted by Barr 2000). "the original market pulp line has been modernized, new lines were added in 1989, 1995 and 1997" (AMEC 2001) 1997 data was taken from U.S. & Foreign Commercial Service and U.S. Department of State (1999). [C] "Of the 100 million m ³ of wood estimated to have been consumed by the pulp industry during 1988-1999, only eight percent was harvested from plantations" (Indonesian Pulp and Paper Association 1997 and Jaakko Poyry 1998, quoted by Barr 2000) "The acacia wood harvested in 1999 accounted for 20 percent of the fiber consumed by Indah Kiat that year." (Barr 2000)
1989-1990	16,996	120,000	92%	
1991-1996	174,205	410,000	92%	
1997-1998	203,239	1,435,000	92%	
1999	104,683	1,700,000	80%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] APP (2004) - not verified company information that may not be correct! [C] "Asia Pulp & Paper Company Ltd. (APP), the holding company of IKPP recently reported that plantation-grown wood accounted for 20 percent of the overall mill supply in 2003 and 2004 and 35 percent in 2005."
2000 - 2004	569,598	1,850,000	80%	
2005	89,052	1,866,006	62%	
2006	87,351	1,907,282	60%	
2007	11,347	1,842,755	8%	[A] For 2005-2007, we used average number of MTH content for each year found in literature. APP (2009) wrote 59% for 2005, 49% for 2006 and 8% for 2007. Cossalter (2006) wrote 65% in 2005. WWF Indonesia (June 2006) wrote 70% for 2006. The MTH figure given by APP for 2007 is low and we estimate zero percent for 2008 because APP could only use MTH on its log yard, could not transport MTH, and had to rely on plantation fibre brought in by boat from other provinces during 2007 and 2008 while APP wood suppliers were being investigated by the police for illegal logging and all MTH transport was prohibited. However, reports exist that many barges with MTH landed at the SMG/APP dock during the police investigation.
2008	-	2,000,000	0%	
2009	56,659	2,000,000	37%	[A] Government permits allowed SMG/APP wood suppliers to clear 56,659 hectares of natural forest in Riau (Eyes on the Forest July 2010). Forest clearance this year is likely higher as permits issued for other provinces to supply IKPP were not considered. [B] APP (2008) - not verified company information that may not be correct! [C] MTH calculated based on forest clearance and pulp production using above parameter values. MTH content is likely higher because forest clearance is likely higher.
2010	46,151	2,000,000	30%	[A] Government permits allowed SMG/APP wood suppliers to clear 41,789 hectares of natural forest in Riau (Eyes on the Forest November 2010). In addition, SMG/APP were allowed to clear 4,362 hectares based on "self approved RKT" in Riau. Forest clearance this year is likely higher as permits issued for other provinces were not considered. [B] APP (2008) - not verified company information that may not be correct! [C] MTH calculated based on forest clearance and pulp production using above parameter values. MTH content is likely higher because forest clearance is likely higher.
TOTAL	1,399,044			

3. Estimate of deforestation caused by operation of SMG/APP's Lontar Papyrus Pulp & Paper pulp mill in Jambi Province, Sumatra

Comment: None of the data taken from APP publications could be verified and may thus not be correct.

Production Year	[A] Natural forest pulped (ha)	[B] Pulp production capacity or actual production (blue) (ton/year)	[C] % MTH in mill fiber supply	[D] Reference and notes
1994-1999	307,121	665,000	100%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] This mill started its pulp production in 1994. Production figure is based on P.T. Data Consult (May 25, 2005). [C] Eyes on the Forest assumes SMG/APP did not have plantations ready for harvest by until 1999.
2000 - 2004	221,681	720,000	80%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] APP (2004) - not verified company information that may not be correct! [C] Cossalter (2006) as for IKPP in 2003 and 2004.
2005	30,674	642,753	62%	[A] Forest clearance calculated based on pulp production and average 62% MTH content using above parameter values [B] APP (2009) - not verified company information that may not be correct! [C] We used average of 59% by APP (2009) and 65% by Cossalter (2006).
2006	28,168	677,682	54%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values [B] [C] APP (2009) - not verified company information that may not be correct!
2007	51,886	674,081	100%	[A] Forest clearance calculated based on pulp production and 100% MTH content using above parameter values. [B] APP (2009) - not verified company information that may not be correct! [C] APP (2009) writes " <i>The percentage of plantation pulpwood used at Lontar decreased in 2007 due to the need to meet increased demand for plantation pulpwood at the Indah Kiat Perawang mill in Riau</i> ", but also writes that Lontar Papyrus' Mixed Tropical Hardwood Pulpwood was 58% . Eyes on the Forest suspects that all plantation wood from Jambi concessions were used to supply Indah Kiat mill in Jambi during the police embargo on all MTH transport there, hence estimates 100% MTH supply for LPPP. Not verified company information that may not be correct!
2008	55,420	720,000	100%	[A] Forest clearance calculated based on pulp production and MTH content using above parameter values. [B] APP (2004) - not verified company information that may not be correct! [C] Eyes on the Forest believes that all plantation wood from Jambi concessions were used to supply Indah Kiat mill in Jambi, hence estimates 100% MTH supply for LPPP.
2009	?	720,000	?	[B] APP (2004) - not verified company information that may not be correct!
2010	?	720,000	?	[B] APP (2004) - not verified company information that may not be correct!
TOTAL PULPED	694,951			

Appendix 2. Data used for the analysis in Chapter 2

The "study area" analysed for this report included Riau province and the part of Jambi province that surrounds Bukit Tigapuluh national park. Our analysis in Chapter 2 used the following data sets.

1. Concessions

Data on pulpwood (HTI) concessions and selective logging (HPH) concessions were obtained from the Ministry of Forestry (2011) and Riau Forestry Agency (2006, 2011).

2. Natural forest cover

Natural forest was defined as original natural (as opposed to anthropogenic) vegetation dominated by trees with a crown cover of more than 10%. Plantations were not considered forests. Forests were defined exclusively as "natural forests" as it is those who have generated and still represent the country's wealth of biodiversity, provide many of its environmental services and social values, and host its huge carbon stocks. Natural forest areas were delineated by visual interpretation of Landsat and other optical remote sensing data. Time series analysis of natural forest cover used the following data:

- Natural forest delineated by Setiabudi, WWF Indonesia (see WWF Indonesia 2008) for 1995
- Natural forest delineated by Laumonier, Setiabudi, WWF Indonesia *et al.* (see WWF Indonesia 2010) for 2008/9.

3. Floristic diversity: eco-floristic sectors

Analysis of natural forest cover in eco-floristic sectors in 1995 and 2008/9 and their extinction risk category was based on Laumonier (1983)²⁰⁰, Laumonier *et al.* (1986)²⁰¹, Laumonier *et al.* (1987)²⁰², Laumonier (1990)²⁰³, Laumonier (1997)²⁰⁴, Laumonier *et al.* (2010)²⁰⁵ and WWF Indonesia (2010).

4. Faunal diversity: Tiger, Elephant and Orangutan ranges

- Sumatran tiger distribution 1996/2005 was based on Wikramanayake *et al.* (1998, labeled Tiger Conservation Units)²⁰⁶ and Sanderson *et al.* (2006, labeled Tiger Conservation Landscapes)²⁰⁷.
- Sumatran elephant distribution 1985 was based on Blouch & Symbolon (1985)²⁰⁸.
- Sumatran orangutan distribution 2005-2010 was mapped by Frankfurt Zoological Society²⁰⁹.

5. Peat soil

Peat soil area and depth 2002 was based on Wahyunto *et al.* (2003)²¹⁰ and the three peat-related eco-floristic sectors "Peat Swamp Forest", "Mixed Peat Swamps" and "Peat Swamps" (see above under data set 2).

6. Natural forest canopy density

Three classes of forest canopy density were distinguished by visual interpretation of Landsat images based on WWF Indonesia (2008).

7. Basic data

- Sumatra's provincial boundary data follow Government of Indonesia's Bakosurtanal (2008).

- Presidential Moratorium Map was based on the Ministry of Forestry SK. 323/Menhut-II/2011 dated 17 June 2011 (for the text, see http://appgis.dephut.go.id/appgis/moratorium/SK_323_MENHUT.pdf; for the Ministry of Forestry map, see <http://appgis.dephut.go.id/appgis/petamoratorium.html>). The shape file was published by Presidential Working Unit of Supervision and Control of Development (Unit Kerja Presiden Bidang Pengawasan & Pengendalian Pembangunan) at: http://dev.ukp.go.id/web/informasi-publik/cat_view/20-geospasial (downloaded on 29 September 2011).

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