



APP'S FOREST DESTRUCTION

The Indonesian government identifies the palm oil and pulp & paper sectors as the two chief industrial drivers of rainforest destruction.¹ The largest player in both these sectors in Indonesia is the Sinar Mas Group.

These two divisions within the Sinar Mas Group (SMG) are taking opposing approaches to deforestation emissions. For example, with regard to carbon-rich peatlands, the palm oil division (GAR) will protect all peatland regardless of depth, whereas the pulp and paper division (APP) is actively targeting peatlands for current and future supplies of rainforest timber.

- APP is clearing rainforest from areas of critical wildlife habitat and deep peatland, which is theoretically off limits to development under Indonesian law. Current company statements show it intends to continue forest clearance until 2015.
- A growing number of corporate consumers are seeking to protect their brands by avoiding trade links with companies involved in deforestation. Global corporations including Staples, Kraft and Nestlé have stopped purchases from APP.

APP TRADES PAPER FROM DEFORESTATION GLOBALLY

Within the Sinar Mas Group (SMG) are companies operating across a diverse range of sectors, and it describes itself as 'one of the world's largest natural resource based companies'.² Sectors in which SMG is actively expanding include pulp and paper, palm oil and coal.³

Asia Pulp & Paper (APP), Sinar Mas's pulp & paper division, claims to rank as one of the world's top three pulp and paper producers.⁴

APP's main pulp production base is Indonesia, and the division is responsible for around 40% of Indonesia's total pulp production.⁵ The APP Group is dependent upon clearance of natural rainforests by affiliate companies within SMG to meet its production needs.⁶ Logs from the clearance of Indonesia's rainforests, including peat swamp forests, accounted for about 20% of the fibre pulped in APP's mills between 2007 and 2009.⁷

China is now the main production base for APP paper, packaging and tissue products.⁸ APP's facilities in Indonesia and China produce packaging papers and products for many global brands across sectors, from food to electronics, cosmetics, footwear, cigarettes and toys.⁹

In July 2010 Greenpeace International released the report 'How Sinar Mas is pulping the planet'.¹⁰ On-the-ground investigations documented the impacts of SMG/APP operations in Bukit Tigapuluh and Kerumutan on the island of Sumatra. Actions included clearance of deep peat and tiger habitat. Report investigations revealed massive expansion ambitions in terms of areas for future clearing as well as aspirations for pulp mill capacity expansion in Indonesia.

A growing number of corporate consumers who were buying products produced by APP, many identified in Greenpeace investigations, have now introduced policies that will eliminate products from companies linked to deforestation in their supply chains. These companies include Kraft, Nestlé, Unilever, Carrefour, Tesco, Auchan, LeClerc, Corporate Express and Adidas.¹¹

Same family, same logo, different business development strategy

Led by Franky Widjaja, the Sinar Mas palm oil division, Golden Agri Resources (GAR), is introducing a new forest conservation policy 'to ensure that its palm oil operations have no deforestation footprint. Core to this is [...] no development on peat lands'¹² – in effect, this is a business development model that avoids deforestation.



By contrast, APP – led by Franky’s brother, Teguh Widjaja – is rapidly expanding its global empire through acquisition of pulp and paper mills,¹³ with the goal of becoming the world’s largest paper company.¹⁴ Company statements confirm that Indonesia will remain a key resource base for pulp production,¹⁵ and it will continue to use rainforest logs to feed its production¹⁶ – in effect, pursuing a deforestation-dependent business development model.

APP has hired Cohn and Wolfe,¹⁷ a subsidiary of the world’s largest PR group, WPP, to help portray it as a conservation-led company. Recent PR statements include support for the Indonesian President’s two-year moratorium on the issuance of new concessions on peatlands and in forests.¹⁸ However, the May 2011 moratorium announcement¹⁹ only covers areas of primary forest and peatland outside existing concessions.

Mapping analysis by Greenpeace²⁰ shows that millions of hectares of wildlife habitat and carbon-rich peatland remain threatened by pulp sector expansion. Rainforest areas targeted by APP remain unprotected by the moratorium. Forest clearance within these areas would drive climate change and push species such as the Sumatran tiger one step closer to extinction.

APP IS PULPING INDONESIA’S RAINFORESTS

APP has repeatedly promised over the past decade to become fully reliant on renewable plantation fibre – initially by 2007, subsequently revised to 2009²¹ – and to end its dependence on logs from rainforest clearance in Indonesia. In 2011, APP’s head of sustainability, Aida Greenbury, repeated the commitment to meet this target by the end of 2015²² – eight years after the initially promised date.

In 2010, APP stated that about 20% of the fibre going into its Indonesian pulp mills in the preceding year came from clearance of natural forest.²³ Currently, the majority of this clearance is taking place within concession areas in Riau and Jambi.²⁴

A 2007 confidential SMG/APP document²⁵ identified millions of hectares of concession areas the company was targeting to meet existing production needs and allow for potential expansion in Indonesian pulp mill production. Two million hectares were targeted in Kalimantan and Sumatra.

Greenpeace analysis of government and company-related documents confirms that as of December 2010, SMG/APP had increased its supply concession area by at least 800,000 hectares. The status of the remaining targeted area remains unclear. Mapping analysis shows that about 40% of the additional area now owned by SMG/APP or for which SMG/APP has been granted preliminary approval was still forested in 2006, including significant areas of wildlife habitat and peatland.²⁶

Within the Sumatran provinces of Riau and Jambi alone, SMG/APP was aiming to expand its concessions by 900,000 hectares between 2007 and 2009. In 2006, over half of this area was forested and a quarter of it was peatland.²⁷ By the end of 2007, over half of these targeted expansion concessions had either been approved by the Indonesian government or were in the process of being acquired by SMG/APP.²⁸

Two of the largest areas targeted by SMG/APP for expansion were the Bukit Tigapuluh Forest Landscape, stretching across Riau and Jambi provinces, and the Kerumutan Peat Swamp Forest in Riau.

Mapping analysis by Greenpeace published in July 2010 identified the areas of forest, peatland and wildlife habitat targeted for expansion.²⁹ The maps were accompanied by photographic evidence of recent or ongoing deforestation within newly acquired concessions.

Greenpeace 2011 investigations and analysis show that SMG/APP expansion continues in these areas in line with the 2007 plan.³⁰



GREENPEACE INVESTIGATIONS EXPOSE THE IMPACTS OF APP

Independent analysis of the impact of pulp and palm oil sector operations is hampered by lack of government and industry transparency; this includes difficulty in acquiring current or sufficiently detailed data. Such deficiencies in data quality and other evidence available from official sources mean that the analysis must be understood as an indicative risk assessment, and some elements need to be confirmed through field validation. On the regional scale, any margins of error within the source data even out, though any biases in assumptions behind values estimations – eg, a conservative estimate of peatland carbon stores – are amplified.

Despite these limitations, using best available official, government and expert sources, Greenpeace has employed several techniques to assess the risk SMG/APP operations and expansion plans pose to areas of forest, peatland and wildlife habitat and to monitor the impact of these operations.

Greenpeace assessment of landscape values is based on a number of sources including the Ministry of Forestry 2006 landcover map, United Nations Environment Program (UNEP) Bornean orang-utan habitat maps, WWF/WCS/Smithsonian and NFWF-STF priority tiger conservation landscapes, and Wetlands International peatland maps.

Concession data is compiled from various government sources. Data on industrial timber plantations (HTI) are available from the Ministry of Forestry. These do not identify companies controlling the concessions.

These methods are often used by governments, conservation groups and even companies holding concessions, including Sinar Mas, to assess risk and monitor change.

There are several tiers of analysis:

Risk mapping (spatial analysis)

- 1) Map company operations: this requires knowledge of concession boundaries. Sinar Mas does not make these publicly available, thereby hampering public scrutiny of its operations. While the Ministry of Forestry make available maps showing fully licensed pulpwood concessions, these are not always up to date and do not detail ownership beyond naming the concessionaires, which are different for almost every concession. Best available information for SMG/APP concessionaires must be compiled from a variety of sources including the Ministry of Forestry, internal company documents, district registry offices, conservation organisations and environmental assessors.
- 2) Map ecological values: using best available spatial mapping data (Geographic Information System, GIS) from the Ministry of Forestry, Wetlands International, United Nations Environment Program (UNEP), expert conservation groups and other authorities, GIS experts use these data layers to create an ecosystem vision. This shows, for instance, at a landscape level, quality of forest cover, expanse and depth of peatland, identified key biodiversity conservation areas and orang-utan and tiger habitat. A list of core data sets is provided below.
- 3) Risk analysis: identify where ecological values meriting protection fall within concession areas.

Impact mapping (temporal analysis)

- 1) Compare satellite imagery covering the relevant time frame: one method of determining the extent of forest clearance within a concession area is to analyse and compare satellite images from multiple dates. Unlike the Brazilian Amazon, which has one month

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of relatively cloud-free skies, Indonesia's land area is often obscured by thick cloud cover, rendering satellite images of limited use in assessing changes in land cover.

- 2) Overlay satellite analysis with ecological values maps and concession boundaries to determine changes in the quality or extent of values within a concession area.

Field investigations and aerial monitoring (ground truthing)

- 1) Determine priority areas for investigation based on ecological risk analysis, impact analyses and other intelligence suggestive of potential active clearance.
- 2) Conduct overflight surveillance of groups of concessions to verify and document active clearance and infrastructural development within areas identified by risk mapping as holding important ecological values.
- 3) Gain access to concession areas to obtain documentary evidence of ecological and social values impacted by company operations. Where possible logistically, this may include evidence of peat depth, the presence of orang-utans (eg nests) or tigers (eg footprints), quality of forest and legal compliance in operations. Further intelligence may be gathered through testimonies from workers and communities.

Core data sets used in mapping analysis

Land use zones:³¹

The Ministry of Forestry makes available landuse maps. However, these maps are outdated for the provinces of Riau and Central Kalimantan. For the purposes of analysis, Greenpeace uses the 2007 draft Riau provincial planning map.

Land cover:³²

The most recent year for which Ministry of Forestry land cover data are available is 2006.

Peatlands:³³

The best available landscape-level peatland maps of Indonesia were done by Wetlands International.

Forested habitat:

Bornean orang-utan habitat:³⁴ The best available landscape-level orang-utan habitat maps are made available by United Nations Environment Programme (UNEP), first published in 2004 and subsequently updated.

Sumatran tiger habitat: Priority Tiger Conservation Landscape maps were developed by a coalition including WWF, WCS, Smithsonian and NFWF-STF. These identify large areas able to support a substantial number of tigers. They do not include smaller habitat areas that are also important for tiger conservation. Thus, for the purposes of analysis, Greenpeace uses habitat maps made available by WWF.

Given rapid deforestation, Greenpeace overlays this with Ministry of Forestry land cover data. Thus, the data represent 'forested' habitat as of 2006.

Concessions:

1. **Coal**³⁶

Data on coal concessions are not available from the Indonesian government. Maps of coal concessions may be purchased from the [Indonesian Coal Mining association](#) (Asosiasi Pertambangan Batubara Indonesia). Greenpeace has digitised 2009 data for Sumatra and Kalimantan, the principal areas targeted for coal development. Additional data subsequently became available, in November 2010. Thus, the dataset used for



analysis must be understood as incomplete. Greenpeace would welcome coal concession data being centrally and freely available.

2. **Oil palm**

Data on oil palm concessions are not readily available centrally from the Indonesian government. The datasets used for analysis are based on 2006–2008 data compiled by several sources and partially updated by Greenpeace. The ultimate provenance is central and regional government agencies including the National Land Agency (BPN), the Agriculture Agency (DISBUN) and Regional Planning Agencies (Bappeda). Additionally, the Ministry of Forestry has made available partial data on concessions within the Forest Estate (this includes rubber as well as oil palm plantations). Given the lack of sector transparency, the dataset used for analysis must be understood as partial, best-available information. Greenpeace would welcome oil palm concession data being centrally and freely available.

3. **Pulp/HTI³⁷**

Industrial timber plantations (HTI) are largely pulpwood plantations. Data on industrial timber plantations are available from the Indonesian Ministry of Forestry, but these do not identify the companies controlling the concessions. Greenpeace would welcome more comprehensive HTI concession data being made available.

4. **Selective logging/ HPH³⁸**

Data on selective logging concessions are available from the Ministry of Forestry.

BUKIT TIGAPULUH

The Bukit Tigapuluh Forest Landscape in central Sumatra is one of the last refuges of endangered species including the Sumatran tiger, and is critical to the future of the Sumatran orang-utan. While a portion of the Landscape has been designated a national park, much of the habitat is slated for clearance and is under threat from SMG/APP.

- The Bukit Tigapuluh Forest Landscape is a vitally important habitat for several critically endangered species. It hosts the Sumatran Orang-utan Reintroduction Centre and is home to nearly 10% of all Sumatran tigers living in the wild.
- The Bukit Tigapuluh Forest Landscape is important to communities belonging to two indigenous forest peoples: the Orang Rimba and the Talang Mamak.
- SMG/APP is expanding its operations in the Bukit Tigapuluh Forest Landscape.

THE FORESTS OF BUKIT TIGAPULUH ARE A LAST REFUGE FOR TIGERS

Sumatran tigers are on the brink of extinction, in part due to loss of forest habitat. There are estimated to be about 400 Sumatran tigers left in the wild;³⁹ around 30 tigers are estimated to live within the Bukit Tigapuluh Forest Landscape.⁴⁰ So critical is the area for the survival of tigers in the wild, it has been designated one of twenty Global Priority Tiger Conservation Landscapes.⁴¹

The tigers share this habitat with more than 150 Sumatran elephants⁴² and 130 Sumatran orang-utans that have been reintroduced into the wild.⁴³ The Landscape is also home to communities from two indigenous forest peoples: the Orang Rimba and the Talang Mamak.⁴⁴

Less than one third of the Landscape has been designated by the government as a national park.⁴⁵ The national park principally encompasses the less accessible upland area. By contrast, elephants, tigers and other wildlife are generally found in the lowland forest outside the national



park. For example, in May 2011, WWF released video imagery from camera traps that showed 12 tigers including cubs in areas outside the national park boundaries.⁴⁶ Lowland forest outside the park was identified as excellent habitat for the reintroduction of Sumatran orang-utans to the wild, a programme that began in 2002.⁴⁷

However, the government has zoned much of this lowland forest for clearance for industrial plantations such as pulpwood.⁴⁸ As a result, companies including SMG/APP continue to target and actively clear some of Sumatra's most important forest for the survival of critically endangered wildlife.

Furthermore, since 2007, SMG/APP has developed a logging road through these forest areas to allow for the transport of logs from its concession areas to its pulp mills.⁴⁹ The road runs from northwest to southeast, directly adjacent to the boundary of the national park.

Wildlife poaching in the area surrounding the park has increased considerably since SMG/APP's logging road opened up access to the region, according to data collated by a coalition including the Frankfurt Zoological Society (FZS).⁵⁰ In some places, the logging road passes within a few kilometres of the park boundary, and the coalition has documented several poaching instances in the immediate vicinity of the park.⁵¹

APP IS PULPING WILDLIFE HABITAT

Confidential 2007 SMG/APP documents⁵² obtained by Greenpeace show that the group was targeting ten forested areas for expansion within the Bukit Tigapuluh Forest Landscape, adjacent to the National Park.

By 2011, SMG/APP suppliers owned or had preliminary licenses for at least four pulpwood concessions.⁵³

According to Greenpeace mapping analysis, between 2007 and 2011 SMG/APP has added 69,500 hectares inside the Bukit Tigapuluh Forest Landscape to its pulpwood supply areas.⁵⁴ Two thirds of the area was forested in 2006.⁵⁵

Greenpeace investigations document the extensive loss of rainforest and plantation establishment post-2006 within recently acquired SMG/APP concessions in the northwestern reaches of the Bukit Tigapuluh Forest Landscape.

In July 2010, Greenpeace released documentary evidence of active clearing in the northwestern section of the Bukit Tigapuluh Landscape by SMG/APP supplier PT Artelindo Wiratama.⁵⁶ The concession had been identified by SMG/APP as a target for expansion in the 2007 internal document,⁵⁷ and field investigations documented that logs were being transported to APP's Indah Kiat mill in Riau.⁵⁸ The concession was listed by official government documents as a pulpwood supplier to Indah Kiat in 2009.⁵⁹ In August 2010, Greenpeace aerial monitoring documented ongoing clearance within PT Artelindo Wiratama.

The nearby concession of PT Tebo Multiagro is another SMG/APP supplier.⁶⁰ In 2006, more than two thirds of the area was forested, according to Ministry of Forestry data.⁶¹ In August 2010, Greenpeace aerial monitoring shows extensive areas of recently established plantations, as well as ongoing clearance in the western areas of the concession.

GREENPEACE INVESTIGATIONS EXPOSE HOW APP IS TARGETING WILDLIFE HABITAT

Confidential 2007 SMG/APP documents⁶² obtained by Greenpeace show areas targeted by the group for expansion that lie adjacent to the Bukit Tigapuluh National Park.

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These include the 31,000 hectare former PT Dalek Hutani Esa selective logging concession, where – with support from the Indonesian Ministry of Forestry – FZS established a field station in 2002 and began a programme to reintroduce Sumatran orang-utans to the wild.⁶³ The lowland forest was identified as suitable habitat, giving reintroduced orang-utans the best possible opportunity to thrive and breed, establishing new family groups.⁶⁴ In 2010, a coalition of conservation organisations including FZS also mapped the presence of other endangered wildlife in the area, including tigers, elephants and tapirs.⁶⁵

According to Ministry of Forestry documents, by 2009 PT Rimba Hutani Mas – an SMG/APP supplier – had obtained a preliminary access license⁶⁶ for pulpwood expansion in the area of the Bukit Tigapuluh Landscape. The former PT Dalek Hutani Esa selective logging concession identified in a confidential 2007 company document⁶⁷ was one of the areas targeted. A Ministry of Forestry map shows that as of 2011 this concession area is now fully licensed for the development of pulpwood.⁶⁸

Mapping analysis by Greenpeace shows that in 2006 about half the concession was forested tiger habitat.⁶⁹ The forest within the concession area overlaps a region identified in 2009 and 2010 as supporting two indigenous hunter-gatherer populations, the Orang Rimba and Talang Mamak peoples.⁷⁰

In August 2010, Greenpeace aerial monitoring documented rainforest remaining within the PT Rimba Hutani Mas concession in the area near the FZS field station between the logging road and the National Park.

KERUMUTAN

The 1.3 million hectare Kerumutan Peat Swamp Forest is an important habitat for the critically endangered Sumatran tiger and one of the world's largest remaining areas of carbon-rich peatland. Much of the area is on deep (>3 metres) peat. SMG/APP is actively clearing and draining peatlands in the landscape.

- SMG/APP has been documented clearing and draining deep peatland (>3 metres) within the Kerumutan Peat Swamp Forest.
- In 2009, PT Bina Duta Laksana and PT Mutiara Sabuk Khatulistiwa together supplied over 170,000m³ of pulpwood from natural forest clearance to PT Indah Kiat.

PEATLANDS ARE CRITICAL FOR THE CLIMATE

The province of Riau in Sumatra holds 40% of Indonesia's peatland, perhaps the world's most critical carbon stores and a key defence against climate change. Covering 1.3 million hectares, the Kerumutan Peat Swamp Forest⁷¹ in Riau is one of Indonesia's last remaining areas of extensive peatland. The landscape has been designated a regional priority for the survival of tigers in the wild.⁷² Almost all of the area is zoned for clearance for industrial plantation development,⁷³ chiefly pulpwood and oil palm.⁷⁴ Much of it is mapped as on very deep peat.⁷⁵

Whilst APP confirms that 'peatlands deeper than three metres located upstream [...] should be protected against development' under Indonesian law,⁷⁶ within the SMG there are opposing approaches to peatland development.

The SMG palm oil division, GAR, has a policy to 'not develop on land with high carbon stock'.⁷⁷ 'Core to this is [...] no development on peat lands.'⁷⁸

By contrast, SMG/APP suppliers continue to clear and drain peatland, including development on deep peatlands. It claims to set aside only those areas that have been determined to be 'natural peat swamp forests of unique and special merit'.⁷⁹



APP IS PULPING PEAT SWAMP FORESTS

SMG/APP is supplied from six concessions in Kerumutan, totalling over 150,000 hectares.⁸⁰ Mapping analysis shows that these concessions cover significant areas of deep peat and forested tiger habitat.⁸¹

Greenpeace has investigated trade of rainforest logs from these concessions to APP's pulp mill PT Indah Kiat in Riau. According to an official Ministry of Forestry document, one of these concessions, PT Bina Duta Laksana, was expected to supply PT Indah Kiat with over 80,000m³ of pulpwood from natural forest clearance in 2009.⁸² An investigation by Greenpeace in September 2009 confirmed that rainforest logs from the concession went to PT Indah Kiat.⁸³

PT Mutiara Sabuk Khatulistiwa is the forested deep peat concession area to the north of PT Bina Duta Laksana concession. It was identified in confidential 2007 SMG/APP documents as a target supply area, with a size of 45,000ha.⁸⁴ Analysis reveals that 100% of the area is mapped as peatland >3 metres deep, and more than 90% of the area was forested tiger habitat in 2006.⁸⁵

According to Ministry of Forestry records published in 2010, the concession only has a permit for selective logging (HPH), not pulpwood plantation establishment (HTI).⁸⁶ Regardless of this, the five-year workplan (2006–2010) for this selective logging concession foresees the clearance of half the area (22,960 hectares), resulting in the production of 590,000m³ of pulpwood.⁸⁷ In 2009 the PT Indah Kiat pulp mill was due to receive almost 99,000m³ of rainforest logs from this concession, according to an official Ministry of Forestry document obtained by Greenpeace.⁸⁸

GREENPEACE INVESTIGATIONS EXPOSE HOW APP CONTINUES TO TARGET PEATLANDS

Analysis shows that SMG/APP supply concessions in the Kerumutan Peat Swamp Forest are primarily on areas mapped as >3 metres deep.⁸⁹

PT Bina Duta Laksana is mostly located on peatland mapped as >3 metres deep.⁹⁰ Analysis of satellite images⁹¹ of PT Bina Duta Laksana from 2005–2009 show that extensive clearance took place within the concession. The majority of the clearance was on areas mapped as peatland >3 metres deep.

In April 2010, aerial monitoring by Greenpeace documented ongoing peatland clearance of areas mapped as >3 metres deep in the southwest region of PT Bina Duta Laksana.⁹² In August 2010, aerial monitoring by Greenpeace documented peatland clearance on areas mapped as >3 metres in the last areas of forest within the western reaches of the concession.⁹³

A series of satellite images⁹⁴ over the 2005–2011 period reveal extensive clearance within PT Mutiara Sabuk Khatulistiwa, the forested deep peat concession area to the north of PT Bina Duta Laksana concession. The majority of these areas are mapped as peatland >3 metres deep.

In May 2011, aerial monitoring by Greenpeace documented evidence of extensive clearing of rainforest in frontier regions in the far west of the PT Mutiara Sabuk Khatulistiwa concession area. The areas are mapped as peatland >3 metres deep.

APP's most recent policy, delaying until the end of 2015 its commitment to only source plantation fibre,⁹⁵ shows its continued dependency on clearance of Indonesia's rainforests and peatlands, including deep peatland.⁹⁶

This contrasts markedly with the policy of SMG palm oil division GAR, which now considers all peatland areas off limits to development, regardless of depth.⁹⁷

ENDNOTES

¹ DNPI (2010)

² Petromindo (2010)

³ See Greenpeace (2010b)

⁴ Rushton (2009)

⁵ Harahap (2010)

⁶ Sinarmas Forestry claims to be APP's 'exclusive supplier' of pulpwood. The Sinarmas Forestry Group consists of numerous concessionaires largely controlled by two legal entities: PT Arara Abadi and PT Wirakarya Sakti. Source: APP (2009a): 24.

⁷ % in 2007, according to APP (2009a). Greenpeace calculations based on Indonesian government data likewise resulted in 20% for 2009. Source MoFor (2010a).

⁸ Various company sources, eg APP China www.app.com.cn/english/aboutus/xsdw/index.html

⁹ Greenpeace investigations 2010–2011

¹⁰ Greenpeace (2010a)

¹¹ Company correspondence with Greenpeace 2010–2011

¹² GAR (2011): 4

¹³ See eg: Reuters (2010), Donville (2010), Vancouver Sun (2010), CNW (2011), NGNews.ca (2011), Smith (2010)

¹⁴ Rushton et al (2010): 'Wijaya has proclaimed that it is the company's mission to be the "number one supplier of paper and board in the world", and its aggressive investment in Asia currently backs up this mission statement'.

¹⁵ Greenbury (2010b)

¹⁶ Greenbury (2010a): 3

¹⁷ Mattinson (2010)

¹⁸ Greenbury (2010a): 1–2

¹⁹ Government of Indonesia (2011)

²⁰ Greenpeace mapping analysis 2011. Here and throughout, data sets include MoFor (2010d), MoFor (2009a), Wahyunto et al (2003, 2004, 2006), Meijaard et al (2004), Dinerstein et al (2006), APBI-ICMA (2009) and MoFor (2010c), updated using MoFor (2010b), MoFor (2010f) and MoFor (2011).

²¹ APP (2004): ii and APP (2007): 58

²² Source: Greenbury (2011). 'By the end of 2015, we will source 100 percent of our pulpwood supply from sustainable plantation stock and require our suppliers to meet Indonesia's mandatory sustainable forest management standards.'

²³ Source: Rushton (2010). 'In 2009, the pulp mills consumption proportion is around 80% sustainable plantation wood and 20% mixed wood residues from plantation development.' This is consistent with earlier figures: 20% in 2007, according to APP (2009a). Greenpeace

calculations based on Indonesian government data likewise resulted in 20% for 2009. Source: MoFor (2010a).

²⁴ MoFor (2010a)

²⁵ Sinarmas Forestry (2007)

²⁶ Greenpeace mapping analysis 2011

²⁷ Greenpeace mapping analysis 2011. Confidential Sinar Mas maps (copies held by Greenpeace) overlaid MoFor (2009a).

²⁸ 75,000 hectares had already been fully acquired or taken over from other companies and approved by the Indonesian government. The remaining 385,000 hectares of concessions were in acquisition. Source: Confidential Sinar Mas document (copy held by Greenpeace).

²⁹ Greenpeace (2010a)

³⁰ Greenpeace mapping analysis 2011

³¹ MoFor (2010d)

³² MoFor (2009a)

³³ Wahyunto et al (2003, 2004, 2006)

³⁴ Meijaard et al (2004)

³⁵ Dinerstein et al (2006) and WWF, SaveSumatra.org

³⁶ APBI-ICMA (2009)

³⁷ MoFor (2010c), updated using 1) MoFor (2010b) (note: concession boundaries taken from maps supporting this report, which can be downloaded from www.dephut.go.id/files/peta_pemanfaatan_2010/) and 2) MoFor (2011).

³⁸ MoFor (2010f)

³⁹ WWF (2011)

⁴⁰ KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 8 citing Balai Taman Nasional Bukit Tigapuluh, Kabupaten Tebo, Kabupaten Tanjabar, Kabupaten INHIL, Kabupaten INHU, Frankfurt Zoological Society, WWF, Warsi, ZSL, PKHS (2009)

⁴¹ Global Priority Tiger Conservation Landscapes are habitats that can support at least 100 tigers and where there is evidence of breeding. Source: Dinerstein et al (2006).

⁴² KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 8 citing MoFor (2007a); Moßbrucker (2009)

⁴³ KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 8, as of 1 September 2010

⁴⁴ eg KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 12

⁴⁵ The Bukit Tigapuluh Forest Landscape consists of nearly 508,000 hectares of contiguous dry lowland and mountain forests. Source: WWF Save Sumatra website, Bukit Tigapuluh www.savesumatra.org/index.php/wherewework/detail_location/8. 144,000 hectares are designated as the Bukit Tigapuluh National Park. Source: MoFor website, Bukit Tiga Puluh National Park www.dephut.go.id/INFORMASI/TN%20INDO-ENGLISH/bukit30_NP.htm.

⁴⁶ WWF (2011). See <http://gvn.panda.org/?r=3138&k=d4fe799aad>.

⁴⁷ Perth Zoo website: www.perthzoo.wa.gov.au/Conservation--Research/Projects-in-the-Wild/Sumatran-Orangutan-Pilot-Project/. The re-established orang-utan population now inhabits large parts of the Bukit Tigapuluh landscape, especially in the southern buffer zone. Source: GRASP (2009).

⁴⁸ Based on Greenpeace Mapping Unit analysis of Ministry of Forestry Landuse maps. Source: MoFor (2010d).

⁴⁹ APP (2009b): 4, see also KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 26 and Greenpeace investigations 2010

⁵⁰ KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 27 Map 14

⁵¹ KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 27 Map 14

⁵² Sinarmas Forestry (2007)

⁵³ PT Artelindo Wiratama, PT Rimba Hutani Mas PT Tebo Multi Agro and PT Wirakarya Sakti. Three more existing concessions have been targeted by SMF for expansion, but whether takeover has been completed remains unknown (these are PT Arangan Lestari, PT Wana Mukti Wisesa and PT Wana Teladan). APP (2009b); see also Chundawat et al (2008).

⁵⁴ PT Artelindo Wiratama (10,470ha) + PT Rimba Hutani Mas (total size 52,000ha, with 39,300ha inside the BTP landscape) + PT Tebo Multi Agro (19,770ha) = 69,531ha.

⁵⁵ Greenpeace mapping analysis 2011

⁵⁶ More detailed information on APP's sourcing from this area can be found in Greenpeace (2010): 16-17

⁵⁷ Sinarmas Forestry (2007)

⁵⁸ Greenpeace investigations, March 2010

⁵⁹ MoFor (2009b)

⁶⁰ Sinarmas Forestry (2007) and WWF (2008): 8 (see photograph)

⁶¹ MoFor (2009a)

⁶² Sinarmas Forestry (2007)

⁶³ eg KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 16

⁶⁴ Prietje et al (2009)

⁶⁵ See KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 9 Map 2

⁶⁶ Forestry Minister Decree No. 777/Menhut-IV/2008

⁶⁷ Sinarmas Forestry (2007)

⁶⁸ MoFor (2011)

⁶⁹ [Greenpeace](#) mapping analysis 2011

⁷⁰ The way of life of these communities depends upon the ongoing health of Bukit Tigapuluh's lowland rainforest and the biodiversity it supports; deforestation undermines the interests of these forest communities.

A survey by the Frankfurt Zoological Society in 2009 found 42 Talang Mamak families (with 165

individuals) living inside the concession of APP/SMG affiliate PT Rimba Hutani Mas (the former selective logging concession of PT Dalek Hutani Esa), which is adjacent to PT Lestari Asri Jaya. Source: KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010) citing Presentation 'Aliansi NGO untuk Ekosistem B30' by KKI Warsi, FZS, PKHS, ZSL and WWF, 2009. The population of Orang Rimba in the Bukit Tigapuluh ecosystem numbers 551 people, divided into 15 groups scattered throughout the Production Forests to the south of the national park, namely in the concession areas of former PT IFA and former PT Dalek Hutani Esa. Source: KKI Warsi / Frankfurt Zoological Society / Eyes on the Forest / WWF-Indonesia (2010): 12 citing KKI WARSI survey, April-June 2010.

⁷¹ IUCN (2010)

⁷² Global Priority Tiger Conservation Landscapes are habitats that can support at least 100 tigers and where there is evidence of breeding. Source: Dinerstein et al (2006).

⁷³ HTI concessions: MoFor (2010b); Oil palm concessions: MoFor (2010e)

⁷⁴ HTI concessions: MoFor (2010b); Oil palm concessions: MoFor (2010e)

⁷⁵ Wahyunto et al (2003)

⁷⁶ Greenbury (2010b), Government of Indonesia (1990)

⁷⁷ GAR (2010): 39

⁷⁸ GAR (2011): 4

- APP (2009a): 104

⁸⁰ PT Arara Abadi (28.143ha), PT Satria Perkasa Agung (KTH Sinar Merawang) (9,859ha), PT Riau Indo Agropalma (9,682ha), PT Bina Duta Laksana (29,132ha), PT Mutiara Sabuk Khatulistiwa (44.595ha)

⁸¹ Greenpeace mapping analysis 2011

⁸² MoFor (2009b)

⁸³ Greenpeace investigations, September 2009

⁸⁴ Sinarmas Forestry (2007)

⁸⁵ Greenpeace mapping analysis 2011

⁸⁶ MoFor (2010b)

⁸⁷ MoFor (2006)

⁸⁸ MoFor (2009b)

⁸⁹ Greenpeace mapping analysis 2011

⁹⁰ Wahyunto et al (2003)

⁹¹ Landsat 7 TM Path/Row 126/060, Composite band 542, image courtesy of the US Geological Survey.

⁹² Greenpeace investigations 2010–2011

⁹³ Greenpeace investigations 2010–2011. Satellite images from 18 June 2010, 20 July 2010, 8 October 2010 and 13 February 2011 confirm that the major clearance activities were concentrated in these western areas. Source: Landsat 7 TM Path/Row 126/060 Composite band 542, image courtesy of the US Geological Survey.

⁹⁴ Landsat satellite images as of 11 November 2005, 30 May 2006, 1 May 2007, 22 January 2009, 18 June 2010, 20 July 2010, 8 October 2010 and 13 February 2011. Source: Landsat 7 TM Path/Row 126/060 Composite band 542, image courtesy of the US Geological Survey.

⁹⁵ Source: Greenbury (2011). 'By the end of 2015, we will source 100 percent of our pulpwood supply from sustainable plantation stock and require our suppliers to meet Indonesia's mandatory sustainable forest management standards.'

⁹⁶ Greenbury (2010b): 'Peatlands deeper than three metres located upstream and in the swamp should be protected against development' under Indonesian law. In Kerumutan, APP has publically stated that such 'critical peatland exists in [APP's] Kerumutan pulpwood supply areas, but they have been protected, not developed'. Peatland law source: Government of Indonesia (1990).

⁹⁷ GAR (2010): 39 and GAR (2011): 4

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