



Two Asia Pulp & Paper / Sinar Mas Group associated companies continue clearcutting of deep peatland forest of Kerumutan in Riau Province, Sumatra, threatening peatland forest ecosystems, Sumatra tiger and global climate

**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 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.

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Executive Summary

An Eyes on the Forest (EoF) investigation conducted in November - December 2009 confirmed that two Industrial Timber Plantation companies associated with Asia Pulp & Paper (APP) of Sinar Mas Group (SMG), namely PT Bina Duta Laksana (PT BDL) and PT Mutiara Sabuk Khatulistiwa (PT MSK), continue to clear natural forest and dig drainage canals through the deep peat inside Kerumutan forest block under legally questionable circumstances. The forest clearance and peat draining by the two companies started in 2005, as EoF reported in [EoF Investigative Report April-May 2005](#), [June 2006](#) and [February 2007](#).



Picture 1—Natural forest logs in large area deforested by PT BDL.

EoF analysis of Landsat images found that by 2005, the majority of both concessions were still covered by quite dense canopy natural forest. However, by 2008, at least 9,678 ha and 6,560 ha of natural forest was lost in PT BDL and PT MSK, respectively. EoF found that that both companies, located next to each other, did not halt natural forest clearance during the de-facto logging moratorium that was in force between February 2007 and December 2008. This moratorium was due to a province-wide illegal logging investigation conducted by Riau Police with support by the National Police.

As “Annual forest cutting permits (RKT)” issued by the Ministry of Forestry in March 2009 then they cleared around 1,000 hectares of Kerumutan peat forest each.

The EoF investigation confirms that natural forest clearance operations by both APP-affiliated companies are legally questionable based upon existing laws and regulations based on the following:

- a. They cleared natural forest with dense canopy cover which is not allowed to be converted into plantations,
- b. They cleared natural forest on peat with a depth of more than 3 meters deep, which is not allowed to be converted into plantations,
- c. A majority of the concessions overlaps with national Protected Area
- d. Some of the concessions overlaps with provincial Protected Areas

PT BDL is one of 14 companies that were investigated by the police in 2007-2008 for alleged involvement in widespread illegal logging by the pulp & paper industry in Riau. In November 2007, the inter-departmental team set up by President Susilo Bambang Yudhoyono recommended that the 14 companies should be processed thoroughly by the Law. However, in December 2008, 13 out of 14 companies cases, including PT BDL, were abruptly closed by the police as the dossier for them was rejected many times by the local Prosecutors Office. One company left to probe is PT RUJ which then also acquitted secretly by the police in June 2009.

President Susilo Bambang Yudhoyono has recently ordered the presidential Judicial Mafia Eradication Task Force to probe illegal logging practices as he believes the practices remain rampant due to the involvement of judicial mafia in the forestry sector. A coalition of NGOs has recently requested the Task Force to reopen the Riau illegal logging cases, including that of PT BDL.

The natural forest clearance and plantation development in these concessions do not provide any benefit for the local communities, moreover they create social-economic conflicts. Villagers suffer economic losses due to broken promises and ignorance by the companies.

These forest clearance operations also significantly contribute to global climate change and to the local extinction of Sumatran tigers, as human-tiger conflict in Kerumutan block rose in 2009 and 2010. Kerumutan forest block is considered to maintain various High Conservation Values, one of them being a critically endangered species, Sumatran Tiger (*Panthera tigris sumatrae*).

The EoF coalition calls on PT BDL, PT MKS and APP/SMG to immediately stop all further clearance of natural forest in their concessions due to the questionable legality of their activities, social conflicts, threat to critically endangered Sumatran tigers and other High Conservation Values, and its potential negative impacts on the climate. In addition, the EoF coalition calls for a halt to all further development of canals, roads and other infrastructure to prevent illegal loggers, encroachers and poachers from entering the heart of Kerumutan and take other measures to protect the remaining forest and peat soil, as well as respect the communities' rights.

EoF calls on the Government of Indonesia to protect natural forest and peatlands by reviewing all forestry and plantation licenses granted to companies including to PT BDL and PT MSK in Kerumutan block.

Last but not least, EoF also calls on APP/SMG stakeholders, including national and global companies as well as financial institutions, to not conduct any business with a

major driver of deforestation in Riau as well as impacting global climate change: APP/SMG. Every company that buys APP/SMG product or supports its operations is contributing to legally questionable forest destruction, further loss of natural forest in Riau and beyond, as well as contributing to suffering of local communities, population decline of already endangered wildlife and to climate change.



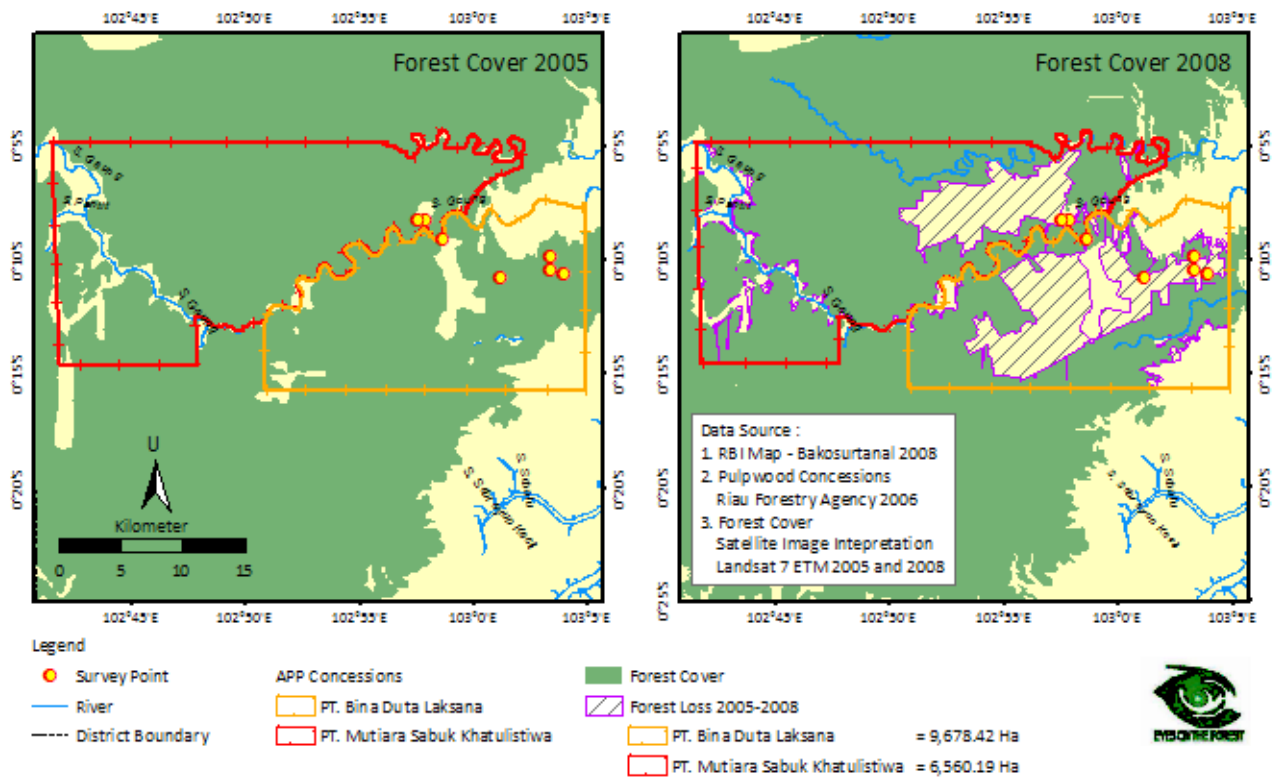
Picture 2—Natural forest in deep peat cleared for pulpwood plantation in PT BDL concession

Asia Pulp Paper (APP) – Investigative Findings in Kerumutan

Eyes on the Forest (EoF) investigation conducted in November - December 2009 confirmed that two Industrial Timber Plantation companies affiliated to Asia Pulp & Paper (APP)/ Sinar Mas Group (SMG), namely PT Bina Duta Laksana (PT BDL) and PT Mutiara Sabuk Khatulistiwa (PT MSK) inside Kerumutan forest block, continue to clear pristine natural forest and dig up canals through the deep peat. The forest clearance and peat draining by the two companies started in 2005, as EoF investigated and published in [EoF Investigative Report April-May 2005](#), [June 2006](#) and [February 2007](#).

PT BDL concession's size is 30,405 hectares, based originally on a legally questionable license issued by Indragiri Hilir District head (No.17.A/TP/VI/2002 on 3 June 2002). PT MSK concession is 44,595 hectares, based on a Selective Logging Concession (HPH/IUPHHKHA) license issued by Forestry Minister Decree Number 109/Kpts-III/2000 Dated 29 December 2000. However, on 12 July 2004, the Forestry Ministry modified the terms of the Selective Logging Concession to allow management of 28,660 hectares within the concession as pulpwood plantation development, which in effect, allowed clearcutting.

EoF analysis of Landsat images found that by 2005, the majority of both concessions were still covered by quite dense canopy natural forest, however, by 2008, 9,678 ha and 6,560 ha of natural forest was lost in PT BDL and PT MSK, respectively (Maps 1 and 2).



Map 1 & 2: Natural forest (*green*) and loss (*cream*) in PT BDL and PT MSK concessions between 2005 and 2008 based on analysis of Landsat images of 2005 and 2008.

In November-December 2009 a field investigation found five units of heavy equipment in PT BDL concession and approximately 1000 ha of natural peatland forest had been cleared since resuming clearance of natural forest May 2009. In the PT MSK concession, the cleared forest in deep peat Kerumutan started in May 2009 and also reached 1,000 ha. During this period, stacks of cleared logs are the evidence that good natural forest in peat swamp of Kerumutan had been cleared in both concessions (Pictures 1, 2 & 3).

Their logging operations are 1. Legally highly questionable, 2. causing social conflicts, as well as 3. human-tiger conflicts, 4. destroying potential HCVMs and 5. causing significant CO₂ emissions.



Picture 3—One (1) unit of heavy equipment is clearing natural forest in PT BDL on coordinate point S. 00 09 50.6 E. 103 03 18.7.

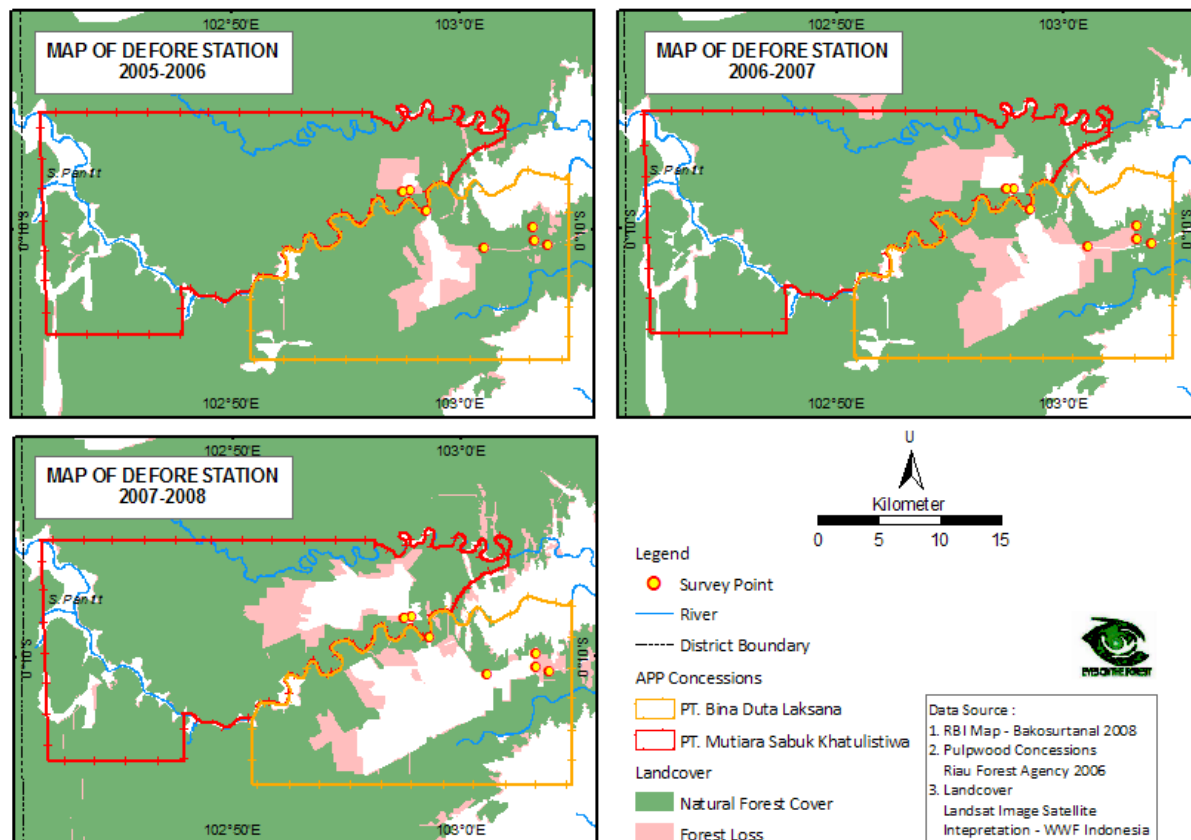
Picture 4— Felled logs taken from natural forest clearance in concession of PT BDL in Kerumutan peat forest on coordinate point S. 00 10 37.5 E. 103 03 54.6

1. Natural forest clearance by the two companies are legally highly questionable

The investigation reveals that natural forest clearance operations by both APP-affiliated companies in these concessions are on several accounts.

a. Forest clearance during the de-fact moratorium 2007-2008

Historical Landsat analysis reveals that both companies did not stop natural forest clearance even during a mandated logging moratorium between February 2007 and December 2008 due to a province-wide illegal logging investigation conducted by Riau Police with support of National Police (Map 3, 4 & 5). The police probed widespread illegal natural forest clearance allegedly conducted by many wood suppliers to the local, but internationally marketing, pulp and paper producers: APP and their competitor, APRIL.



Maps 3, 4, and 5: Historical natural forest loss in PT BDL and PT MSK concessions between 2005 and 2008 based on Landsat image analysis.

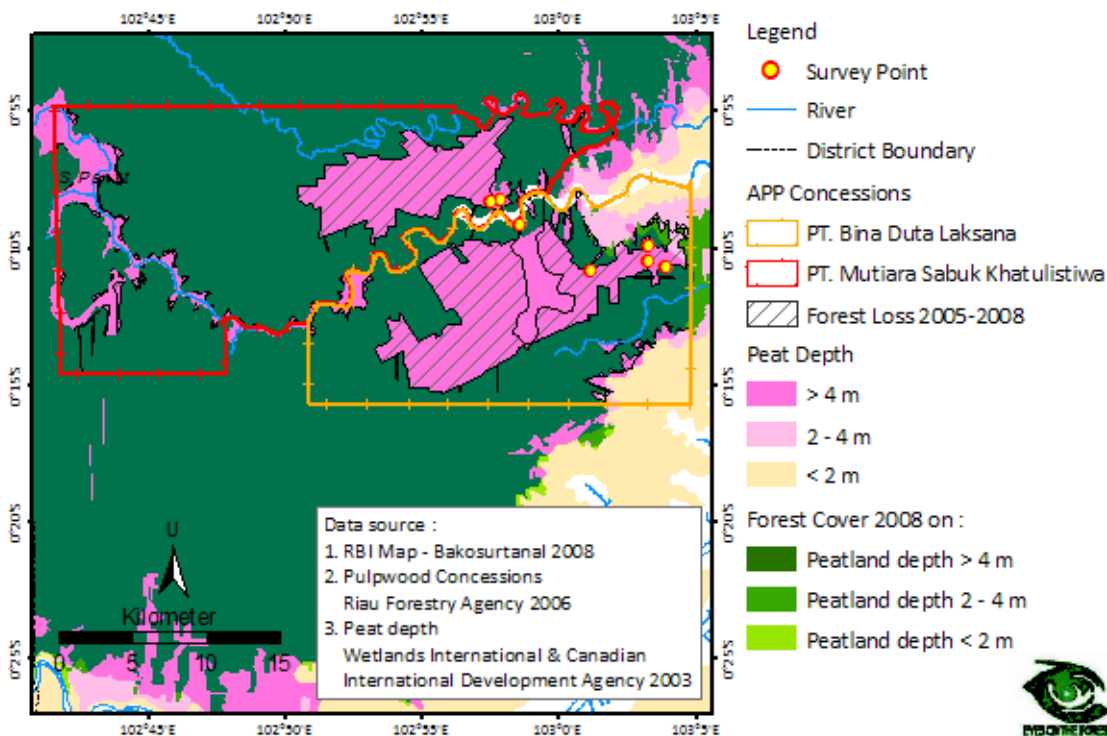
b. Clearance of good natural forest

Historical Landsat images show that natural forest inside this concession remained in good condition, if not clear-cut by the companies. Therefore natural forest clearance

by the companies violates Indonesian Regulation Number 34 year 2002, which stipulates that HTI development cannot be conducted in areas with intact natural forest.

c. Clearance of natural forest on deep peat

A majority of PT BDL and PT MSK concessions lie on peat with depth over 4 meters (pink area in Map 6), therefore **all natural forest clearance in these concessions violate the Presidential Decree Number 32/1990 which stipulates that natural forest located on peat of 3 meter depth or over in river’s upstream or swamp should be protected. It is also in violation of Presidential Decree No 80/1999, Republic of Indonesia Law No 26/2008 and Law No 5. 1990.**

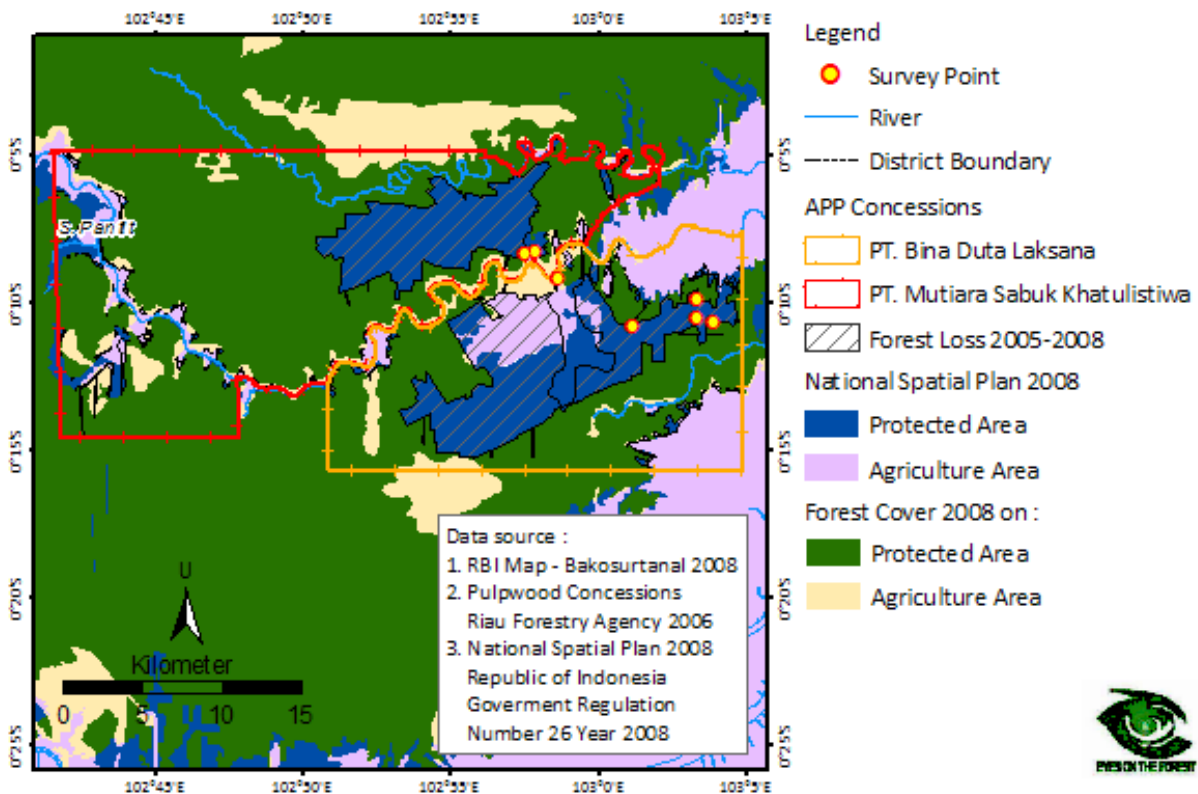


Map 6: Peat depth in PT BDL and PT MSK concessions. Natural forest loss 2005 and 2008 (hatched area) on peat with over 4 meter depth (*pink*) violates the Presidential Decree Number 32/1990. Natural forest on peat over 4 meter depth (*dark green*) should not be cleared.

d. Concessions inside national and provincial Protection Area

Nearly the entire area of the concessions for PT BDL and PT MSK are located inside national Protected Area (Kawasan Lindung) according to the Republic of Indonesia Government Regulation Number 26 Year 2008 Concerning the National Land Use Plan

and forest clearance in this zoning violates this regulation (Map 7).

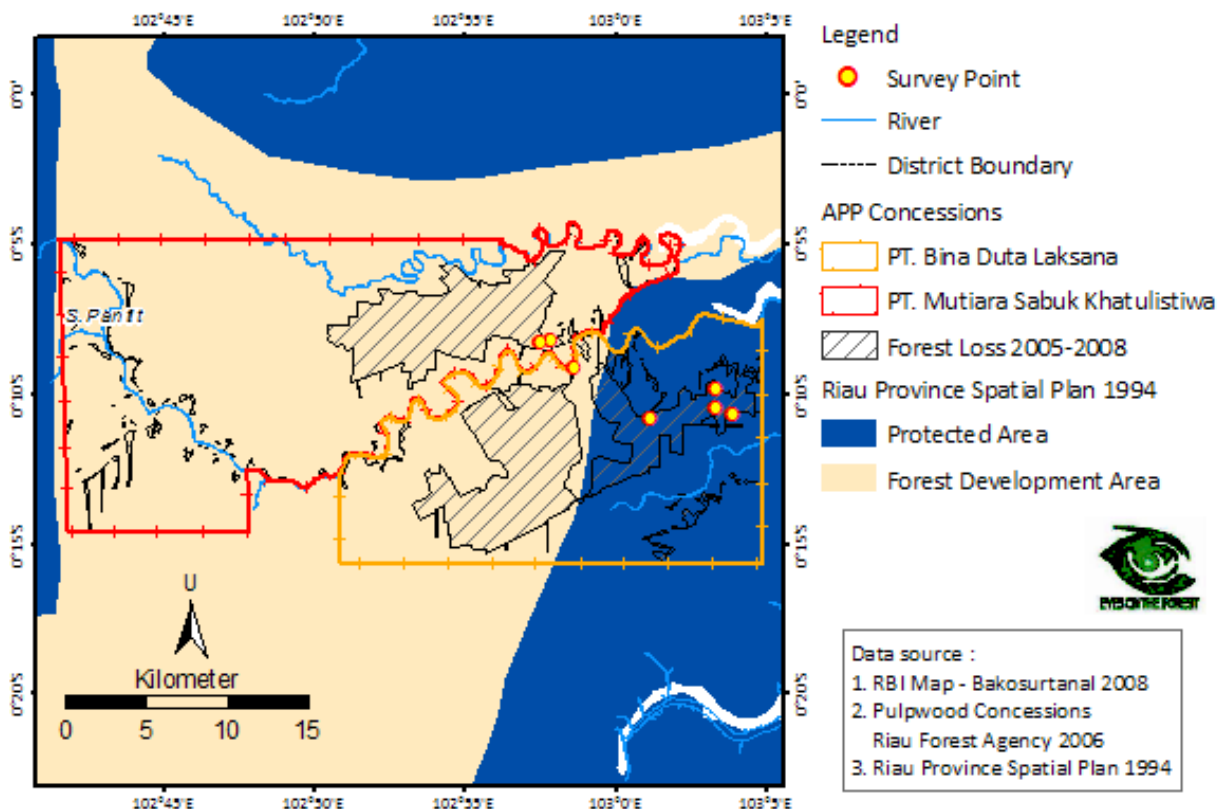


Map 7: PT BDL and PT MSK concessions and natural forest and National Land Use Plan based on the Republic of Indonesia Government Regulation Number 26 Year 2008 Concerning the National Land Use Plan. Natural forest clearance (hashed marked area) in national Protection Area (Kawasan Lindung, *dark blue*) is in violation of the Regulation. Natural forest in national Protection Area (*dark green*) should be protected.

Republic of Indonesia’s Government Regulation Number 26 Year 2007 on Spatial Plan, article 77 subsection (1) states: “As the land use plan is determined, all spatial use that is not aligned to the land use plan should be adjusted to the land use plan” Subsequently Article 37 subsection (6) stipulates, “Permits for spatial uses that are not appropriate due to an adjustment of the regional land use plan can be revoked by the Government and local government by providing fair compensation.”

The concession licenses for two concessions are therefore no longer in line with the national spatial designation, as they sit in a national protected area. Thus, they should be annulled by the Government.

In addition, some of the PT BDL concession is considered as provincial Protected Area (Kawasan Lindung), therefore **forest clearance in this zoning is in breach of the Riau Provincial Spatial Plan 1994** (Map 8).



Map 8: PT BDL and PT MSK concessions and Riau Provincial Spatial Plan 1994. Natural Forest loss (hatchet area) in Protection Area (dark blue) is in violation of RTRWP Riau 1994.

e. PT BDL was acquitted of illegal logging allegation under controversial circumstance in 2008

PT BDL is a pulpwood plantation company included in 14 companies named as suspects by Riau Police for their alleged illegal logging and environmental crimes during the 2007-2008 investigation. Findings of the Riau Police investigation strongly indicated that the natural forest clearance operation by PT BDL to be illegal. However, this case was abruptly closed in December 2008 by the local police as the provincial Prosecutors Office rejected dossiers submitted by the first.

In November 2008, the inter-departmental team set up by President Susilo Bambang Yudhoyono also recommended that 14 out of all 21 originally investigated companies should be processed thoroughly by the Law for allegedly conducting illegal logging

and environmental crimes. This team was called the "Specific Joint Team to Tackle Riau Illegal Logging" and led by Coordinating Minister for Politics, Law and Security Widodo A.S, with members mainly from Forestry Ministry, Industry and Trade Ministry, and the Indonesian Police. Seven out of fourteen companies are associated to APP/SMG: PT Satria Perkasa Agung, **PT Bina Duta Laksana**, PT Arara Abadi, PT Suntara Gajapati, PT Ruas Utama Jaya, PT Inhil Hutan Pratama dan PT Anugrah Bumi Sentosa.

The cases named approximately 125 individual suspects, including company management, field staff and local government officials. Riau Pos daily on 22 April 2008 reported that Riau Police Office had also named 54 people of the above listed APP/SMG associated companies, including key executives, as suspects of allegedly involved in Criminal Case on Environmental Destruction and Illegal Logging in Riau Province. The rest of suspects are from other corporations (29), province and district forestry service officials (13), officials issuing licenses (10) and Amdal environmental impact assessment consultants (2).

However, in December 2008, the Riau Police abruptly closed cases against 13 of the 14 companies including PT BDL by issuing Letter of Order to Stop Investigations (SP3) due to expert witnesses from the Forestry Ministry and Environmental Ministry told the police there were not any ecological damages caused by the companies. This letter issuance indicated that the de-facto logging moratorium initiated by the police since February 2007 was lifted. Wood suppliers to APP and APRIL, including PT BDL and PT MKS, started to apply for large-scale Annual Working Plans (RKT) or "annual forest cutting permits" to restart natural forest clearance to supply raw material for their pulp production.

Meanwhile, Indonesia's Corruption Eradication Commission (KPK), continued to investigate and managed to convict one ex-District head who was sentenced to 11 years' imprisonment for accepting bribes for issuing licenses to APP's and APRIL's wood suppliers. The KPK continues investigating the three former Riau Forestry Service heads and another District head for similar graft offences. Riau Forestry Service refused to sign new RKTs for considering the companies should fix some problems as the police have ever probed, but the Ministry of Forestry signed Permenhut No.14/2009 permits in March 2009, just one month before the national election allowing natural forest clearance as new RKTs issued by the institution.

As EoF has reported several times, the original license for PT BDL concession was legally questionable as it was issued by Indragiri Hilir District head in 2002. Such licenses issued by District heads between 2002 and 2003 are considered all legally questionable as they have no authority to do so and issued on areas prohibited for pulpwood plantation. One District head (Pelalawan District) who issued such licenses were prosecuted by Corruption Crime Court and finally imprisoned for 11 year sentence for accepting bribes for issuing such licenses to APP and APRIL's wood suppliers.

The decision by Corruption Crime Court in Jakarta on 16 September 2008 has sentenced the Pelalawan District Head Tengku Azmun Jaafar to 11 year imprisonment

and pay off Rp 500 million fine as well as pay off compensation to Rp 12.367 billion (equals to USD 1,359,010). Judges at the Corruption Crime Court considered that several pulpwood plantation licenses issued by Pelalawan District Head are located inside natural forest and not in areas as suggested by Ministry of Forestry regulations.

Unfortunately, the companies who received these licenses from him still continue to operate, unpunished. The jailed Pelalawan District head recently petitioned Indonesian President Susilo Bambang Yudhoyono, saying he was victimized to save other people, including Riau's Governor and the then-Minister of Forestry. He also questioned why the government still had not revoked the illegal licenses.

President Susilo Bambang Yudhoyono has recently ordered the presidential Judicial Mafia Eradication Task Force to probe illegal logging practices as he believes the practices remain rampant because of the involvement of "judicial mafia" in the forestry sector. The President also said that the Task Force must reach out to this sector so that the Government can control, process and reduce forestry crimes significantly (*The Jakarta Post*, 8 April 2010).

According to the Indonesian Center for Environmental Law, Riau illegal logging case is the most visible example of lack of coordination and too many conflicts of interest to tackle illegal logging in Indonesia (*The Jakarta Globe*, 20 April 2010). Indonesian Corruption Watch saw that case closure for Riau's 14 illegal logging cases raised suspicions easily as the Riau Prosecutors Office returned the dossiers 11 times to police, and Sutjiptadi, the provincial police chief was removed some months before the case termination.

On 22 April, a coalition of activist groups including Jikalauhari, Walhi Riau and Indonesian Corruption Watch reported 12 public officials, including Riau Governor, four District heads, two high-ranking police officials and ex-Minister of Forestry and four former officials from Riau's forestry service to the presidential Judicial Mafia Eradication Task Force for suspected involvement in the Riau illegal logging cases (*The Jakarta Globe* 22 April 2010). The coalition thinks that the decision to stop the investigation is controversial and suspect that a 'forestry mafia' is involved. The head of the task force said it planned to re-open the illegal logging case. Jikalauhari, Walhi along with other NGOs under a coalition have also submitted data on such crimes to Anti-Corruption Commission (KPK) in February 2010 demanding the law enforcers to take legal action against those allegedly involved in destroying natural forest.

2. Natural forest clearance by PT BDL and PT MSK has incited conflicts with community

EoF investigations confirm that this natural forest clearance operations and peat drainage in this area do not provide any benefit for the local communities, moreover they bring about social and economic conflicts against the villagers who first occupied this area in late 1980s.

According to a village leader living in Gembira sub-village of Teluk Kabung village, Gaung of Indragiri Hilir district, they have developed and managed traditional plantation before PT BDL arrived in the area, however, about 2,000 ha of their land was seized by the company and converted into acacia plantation. The villagers desperately have fought to recoup their land until now.

Residents of Gembira sub-village who neighbours the PT BDL concession also suffered the economic loss as their coconut plantation were killed by harmful beetles attacking their crops since the operation of company started in 2004. Media reported that at least 1,500 out of the 4,500 hectares of community's coconut plantation were attacked by the harmful beetles. A coconut planter cannot send his son to the college due to the beetle attack that caused by the mismanagement of forest clearance by PT BDL (See reports at www.antarariau.com *Hama Bertanduk Rusak Ribuan Hektare Tanaman Kelapa, 24 April 2009* and Media Indonesia, 27 April 2009, "Matinya Primadona di Negeri Sri Gemilang.").



Picture 5 – Coconut trees near PT BDL concession attacked by harmful beetles believed come from waste of logs cleared by the company

A Plantation Official at Indragiri Hilir District government admitted that rotten log waste in concession of PT BDL drove the attack of coconut plantation by the harmful beetles (Riau Terkini, 24 April 2009, *Diserang Kumbang Kelapa, Ribuan Hektar Kebun Kelapa Warga Desa Teluk Kabung Rusak* www.riauterkini.com). In a feature story reported by Living on Earth radio program in the U.S, APP management did not deny explicitly the loss suffered by coconut planters in Teluk Kabung village who blamed to poor management of PT BDL concession¹.

Another complaint also comes from residents of Desa Sungai Empat, Gaung Anak Serka of Indragiri Hilir, who blocked the logging road of PT BDL in mid of March this year. They protested PT BDL for breaking their promise to fix the community road that damaged by trucks carrying logs cleared to APP pulp mill².

3. Natural forest clearance by PT BDL and PT MSK has increased human – tiger conflicts

In the global ranking of tiger conservation landscapes by world experts³, the Kerumutan forest block is of regional importance as its forest is continuous and of adequate size for tiger movements. However, continued natural forest conversion by APP and APRIL (see *EoF Investigative Report June 2009*) contribute to the local extinction of critically endangered Sumatran tigers (*Panthera tigris sumatrae*) by loss and disturbance of their habitat.



Picture 5—Photos of a Sumatran tiger killed by villagers in Kerumutan block in February 2009. Photo by WWF-Indonesia

As a result, human-tiger conflicts in Kerumutan block increased in 2009 and 2010. At least 4 conflicts have killed 4 Sumatran tigers, and injured 4 people which occurred in Kerumutan block in 2009, out of which 2 conflicts, one tiger death and four human injuries occurred near concessions of PT BDL and PT MSK⁴. In March 2010, a Sumatran tiger was killed in Kerumutan forest block and the police nabbed a poacher.

A testimony by a village leader of Gembira sub-village of Teluk Kabung village in Gaung sub-district, said that tigers more frequently roam and can be heard near the village as the residents believed that rampant deforestation by PT BDL and PT MSK could drive this⁵. Before the pulpwood companies started to operate, there was no record of incidents caused by the Sumatran tiger.

An analysis of human-tiger conflicts in central Sumatra in 2009 found that 55 people and 15 Sumatran tigers have been killed during conflict encounters since 1997 in Riau Province – and that most of the incidents occurred near sites being cleared by APP and its affiliates⁶.

4. Natural forest in PT BDL and PT MSK concessions is potential High Conservation Value Forest (HCVF)

Concessions of PT BDL and PT MSK are included in Kerumutan deep peatland landscape of around 1.3 million ha, which consists of Kerumutan Game Reserve (93,223 ha) and national and provincial Protected Areas as seen above. The areas outside these protected areas are equally important for conservation.

Natural forest in Kerumutan, including that inside the two concessions are considered landscape HCVF because it is important habitat for critically endangered Sumatran tiger (HCV 1.2); the Kerumutan landscape in the East-Central Sumatran peat swamp forest ecoregion has one of this endangered ecosystem's few remaining large continuous blocks of peat swamp forest (HCV 3); the Kerumutan peat swamp forest ecosystem has water retention and regulation functions (HCV 4); and provide economical and environmental services to local communities (HCV 5).

Therefore, EoF considers that clearcutting of natural forests in the two concessions destroys potential High Conservation Value Forests.

The Forest Stewardship Council (FSC) defines High Conservation Value Forests as "forests of outstanding and critical importance due to their environmental, socio-economic, cultural, biodiversity and landscape values". The concept of HCVF was first developed by [the Forest Stewardship Council \(FSC\)](#) in 1999 as their "[Principle 9: Maintenance of High Conservation Value Forests](#)". To ensure that High Conservation Values are protected, FSC Principle 9 states that: "*Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.*" In practice this means that no forests should be cleared without prior assessment of High Conservation Values in the forest and its surrounding landscape combined with identification of the measures needed to maintain and enhance such values.

5. Impact on the whole Kerumutan peat ecosystem and global climate

Natural forest clearance and peat draining operations in these concessions contribute significantly to global climate change. The carbon emissions from loss of natural forest and associated peat drainage and burning in Riau, including those happening in PT BDL and PT MKS, have helped make Indonesia the world's third-largest emitter of greenhouse gases behind only the United States and China.

A report by WWF-Indonesia and peat scientists⁷ concluded that average annual CO₂ emissions from deforestation, forest degradation and associated peat decomposition and fires in Riau between 1990 and 2007 was equal to 122% of the Netherlands' total CO₂ annual emissions (including emissions/removals from LULUCF, in 2005), 58% that of Australia, 39% that of the UK and 26% that of Germany. Future emissions from Riau until 2015 are expected to increase and could be equal to or

even more than a quarter of the collective annual greenhouse gas emissions reduction Kyoto target for the Annex I countries in the first commitment period of 2008-2012, because most of the new deforestation would happen on peat soil, such as Kerumutan.

Kerumutan peatland forest should be protected, and not converted, to help Indonesia to meet the President's commitment to reduce the country's emissions by 20 or 41 percent. Conversion of natural forest by these concessions to supply APP's pulp production goes against the country's own and global aspiration towards mitigation of climate change.

Eyes on the Forest calls to APP/SMG and stakeholders

The EoF coalition calls on PT BDL, PT MKS and APP/SMG to:

1. Immediately stop all further clearance of natural forest in their concessions due to the questionable legality of their activities, social conflicts, threat to critically endangered Sumatran tigers and other High Conservation Values and its potential negative impacts on the climate,
2. stop all further development of canals, roads and other infrastructure to prevent illegal loggers, encroachers and poachers from entering the heart of Kerumutan,
3. dismantle all such infrastructure established to avoid further draining of Kerumutan peat landscape and resultant CO₂ emissions,
4. set aside the whole concession for conservation, considering its management under a carbon offset scheme, and
5. respect the rights of community and resolve conflicts with the locals.

EoF also calls on APP/SMG stakeholders, including national and global companies as well as financial institutions, to not conduct any business with a major driver of deforestation in Riau as well as of global climate change: APP/SMG. Every company that buys APP/SMG product or supports its operations is contributing to legally questionable forest destruction, further loss of natural forest in Riau and beyond, as well as contributing to suffering of local communities, population decline of already endangered wildlife and to climate change.

EoF will continue to monitor field operations of wood suppliers to APP/SMG in Sumatra. EoF calls on business partners of APP/SMG to continue checking www.eyesontheforest.or.id for updates, and consider EoF information when evaluating APP's environmental and social performance and their business relationships with the company.

END

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REFERENCES

¹ "Where the Forest Ends" www.loe.org

² Abaikan Kerusakan Jalan, PT BDL Diblokir Warga, Riau Terkini 16 Maret 2010, <http://www.riauterkini.com/sosial.php?arr=28529>

³ Sanderson, E., J. Forrest, C. Loucks, J. Ginsberg, E. Dinerstein, J. Seidensticker, P. Leimgruber, M. Songer, A. Heydlauff, T. O'Brien, G. Bryja, S. Klenzendorf, and E. Wikramanayake. 2006. Setting Priorities for the Conservation and Recovery of Wild Tigers: 2005-2015. WCS, WWF, Smithsonian, and NFWF-STF.

⁴ http://eyesontheforest.or.id/index.php?option=com_content&task=view&id=250&Itemid=39

⁵ *Where Forest Ends*, Living on Earth radio program, www.loe.org/

⁶ Eyes on the Forest (17 March 2009) PR: Forest clearing by paper giant APP/Sinar Mas linked to 12 years of Sumatran tiger, human fatalities
http://eyesontheforest.or.id/index.php?option=com_content&task=view&id=227&Itemid=6&lang=english

⁷ WWF (February 2008) Report: Deforestation, Forest Degradation, Biodiversity Loss and CO2 Emissions in Riau, Sumatra, Indonesia. WWF Indonesia Technical Report, Jakarta, Indonesia.

<http://www.worldwildlife.org/who/media/press/2008/WWFBinaryitem7625.pdf>