



Pulp and Plantation Development in Indonesia:

A Summary of Recent Trends

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Overview of the Sector

- Rapid expansion of BHKP capacity since early-1990s, with Indonesia reaching 6.2 million Adt/yr in 2001
- Industry dominated by APP and APRIL, which control over 75 % of total pulp capacity – both linked to China
- 2003 BHKP production = 5.0 million Adt (83 % capacity)
- 2003 pulpwood consumption = 24.5 million m³
 - 75 % was MTH from natural forest
- 1.2 million ha of plantations (net), roughly 80 % *Acacia spp*
- New capacity planned, possibly including 2 greenfield BHKP mills

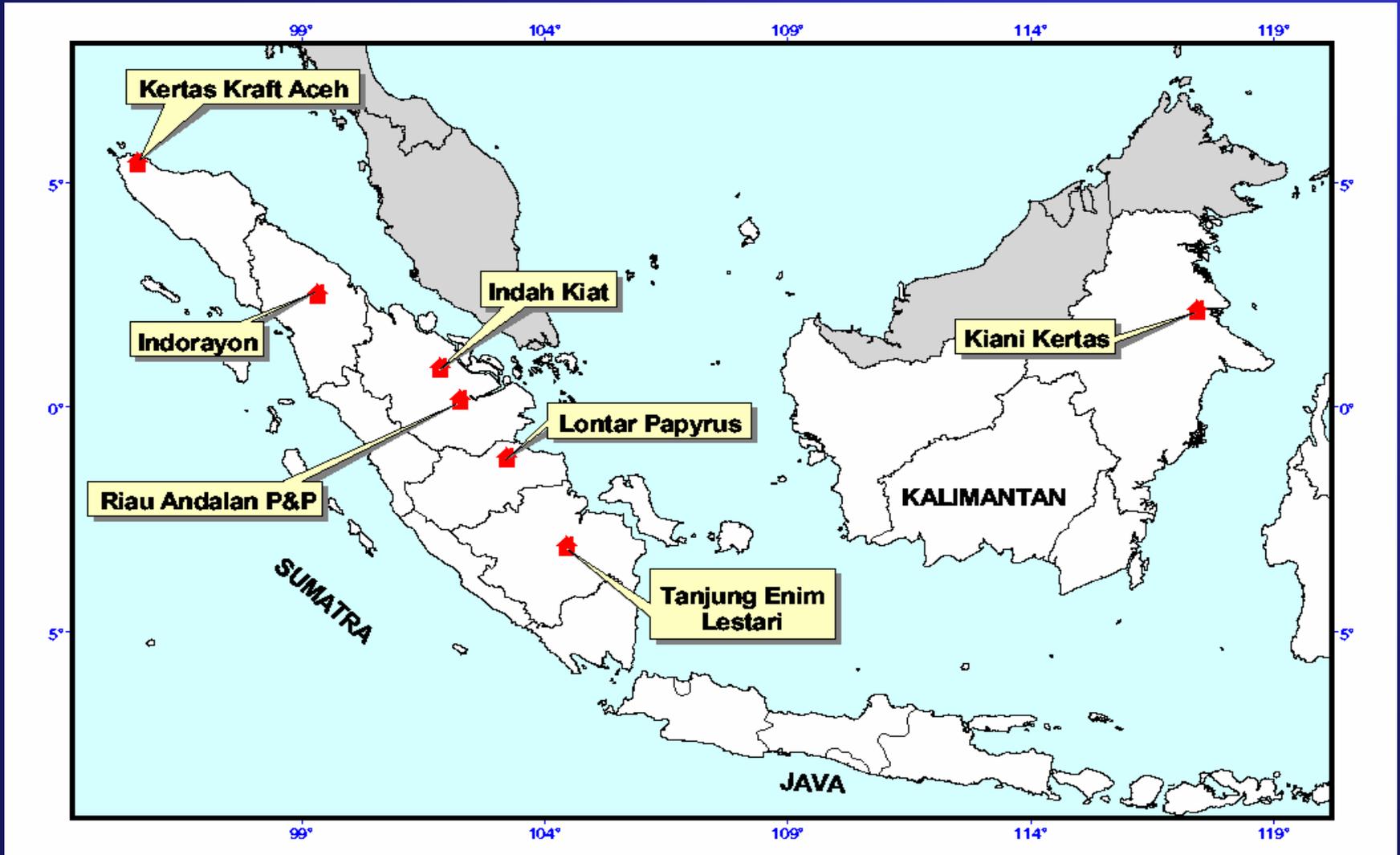


Pulp Capacity and Effective Wood Demand of BHKP Mills in Indonesia

Mill	Pulp Capacity (Adt/yr)	Wood Demand (m ³ /yr) ¹	Location
Indah Kiat (APP)	2.0 m	9.8 m	Riau, C. Sumatra
RAPP (APRIL)	2.0 m	9.8 m	Riau, C. Sumatra
Lontar Papyrus (APP)	750,000	3.2 m	Jambi, C. Sumatra
Kiani Kertas	525,000	2.6 m	East Kalimantan
Tanjung Enim Lestari	450,000	2.2 m	South Sumatra
Toba Pulp (APRIL)	220,000	1.1 m	North Sumatra

1) Assumes 4.9 m³ (ob) per Adt, including 15% wood loss

Kraft Pulp Mills in Indonesia





Pulp Producers are Developing Large Plantations...

- Government issued 23 HTI-pulp industrial plantation licenses for 4.3 million ha
- Subsidies via soft loans and cash grants from DR Reforestation Fund
 - > Rp 1 trillion allocated by May 1998 (+/- US\$ 113 million)
- 1.2 million ha planted by end-2003
- 80 % *Acacia Mangium*
 - Rapid growth (7-year rotation)
 - Adaptability to degraded soils
 - High pulp yields



...Yet Heavy Reliance on Natural Forests Continues

- 80 % of the 185 million m³ of wood fiber consumed by producers during 1988 – 2003 was 'Mixed Tropical Hardwoods' (MTH)

Sources of MTH:

- Forest clearing at pulp companies' HTI plantation sites
- Land-clearing for oil palm and other estate crops
- Purchases from local communities and timber suppliers
- Questions have been raised about use of illegally harvested wood?



Structural Problem: Overcapacity and Fiber Deficits

- Most Indonesian pulp producers have expanded pulp processing capacity at a much faster pace than plantations have come online
- APP and APRIL mills in Central Sumatra now facing fiber deficits as supplies of MTH are becoming exhausted
- Both APP and APRIL have announced ambitious ‘sustainability’ targets for 100 % use of plantation fiber
 - » 2007 for APP 2009 for APRIL
- Yet neither company has yet released a credible plan for achieving these targets



Asia Pulp & Paper

Pulp capacity: Indah Kiat mill = 2.0 million Adt/yr (Riau Province)

Lontar Papyrus mill = 750,000 Adt/yr (Jambi Province)

APP has developed large Acacia plantations by end-2003

- For Indah Kiat: 121,000 ha at own sites; 34,000 ha at JV sites (net)
- For Lontar Papyrus: 72,000 ha at own sites (net)

However, pulp capacity has exceeded plantation development, and both mills rely heavily on MTH

- Indah Kiat used 7.2 million m³ of MTH in 2003 (est.)
- Lontar Papyrus used 2.9 million m³ of MTH in 2003 (est.)

Own plantation sites to supply < 50% of fiber needs on a sustained basis



APP's 'Sustainability Action Plan'

- To meet 2007 'sustainability' target, APP estimates that additional 252,000 ha of net plantation is needed to supply Indah Kiat
- Planting to occur in 2 provinces:
 - 152,000 ha in Riau
 - 100,000 ha in South Sumatra
- Planting to be done in 4 years (2004-2007), with 72 % occurring in 2004 and 2005
- Replanting during 2004-2007 est'd to be 77,000 ha to 90,000 ha
- From 2008 onwards, APP projects all planting to be replanting

Source: APP 'Sustainability Action Plan', released February 2004



Risk Factors for APP (1 of 4)

Sharp Increase in Annual Planting

- To supply Indah Kiat mill, PT Arara Abadi will plant *at least*:
 - 85,000 ha (2004) and 98,000 ha (2005) in Riau and S. Sumatra
- Previous annual planting was not even close to this:
 - 24,000 ha (2000); 35,000 ha (2002); 35,000 ha (2003)
- Projections for 2004-2005 exceed total area PT Arara Abadi has planted since it began operating in 1984

PT Arara Abadi appears to be making no major investments or changes in operational procedures to raise efficiency levels



Risk Factors for APP (2 of 4)

Optimistic Projections for Plantation Productivity

- Indah Kiat wood supply scenarios based on net delivered volumes at mill gate of:
 - 200 m³/ha for *Acacia Mangium*
 - 139 m³/ha for *Acacia Crassicarpa*

- These productivity levels are achieved at only:
 - 9 % of current *Acacia Mangium* sites
 - 23 % of current *Acacia Crassicarpa* sites

APP has based productivity projections on sites with high stocking and medium-high site class

→ Assumes very high standard of silvicultural practices



Risk Factors for APP (3 of 4)

Heavy Reliance on Peatland Sites

- Approximately 75 % of projected total area (408,000 ha) in Riau and South Sumatra are located on peat swamps
- Compared to mineral soil sites, plantations on peat swamps have:
 - Higher investment costs
 - Lower productivity
 - Higher risks
- Risks include susceptibility to fire; disease; poor root anchorage, leading to large numbers of trees topping before age 4

Can intensive industrial plantations on peatlands succeed over multiple rotations?



Risk Factors for APP (4 of 4)

Social conflict and uncertain land tenure

- Regional autonomy has led to sharp increase in land claims and illegal logging
- Security of existing plantation sites not guaranteed
 - In Jambi, APP lost 70,000 ha to local claims in 2001
→ (25% of total concession)
 - In Riau, 57,000 ha at APP sites now subject to claims

AMEC audit: *“The existing level of claim disputes can have a large impact on sustainable wood supply plans. If the number of successful claims escalates, it will have a further severe impact.”*



APRIL – Riau Andalan Pulp & Paper

BHKP Capacity = 2.0 million Adt/yr

Gross plantation area = 280,500 ha at own HTI sites; 255,000 ha at joint venture sites; and 27,000 ha at community sites

Planted area = 207,000 ha (end 2003) at all sites

- Like APP, APRIL expanded pulp processing capacity much faster than developing Acacia plantations
- APRIL now competing with APP to secure land base in Riau
- 80 % of 9.8 million m³ (ob) used by Riau Andalan in 2003 was MTH
- APRIL has taken some steps to curtail illegal logging near the proposed Tesso Nilo protection area, but with mixed results
- 25 % of APRIL's plantation sites in Riau are located on peatlands



Toba Pulp Lestari (ex-Indorayon)

- Owned by RGM Group, affiliated with APRIL
- Resumed operations in 2003
- Had been closed since 1998 due to community conflict and environmental problems
- Moved rayon production line to China

BHKP Capacity = 220,000 Adt/yr

Gross plantation area = 269,000 ha

Planted area = 50,000 ha (est.)

- RGM purchased 81.7 % stake in Klabin Bacell and 100 % in Norcell in August 2003 to supply dissolving pulp to China



PT TEL – Marubeni and Barito Pacific

BHKP Capacity = 450,000 Adt/yr (est'd 85 % in 2002 and 2003)

Gross plantation area = 270,000 ha

Planted area = 207,000 ha (end 2003)

- Many areas not fully stocked
- 90,000 ha (47 % of net planted area) > 7 years
- Drum debarking requires Acacia to be aged by road-side
→ Moderate-high wood cost

Barito currently seeking to raise wood cost as part of broader strategy to renegotiate PT TEL debt, perhaps for new pulp line

- New wood contract lasts only until April 2004



Kiani Kertas – Bob Hasan Group

BHKP Capacity = 525,000 Adt/yr (operates at only 35-60 %)

- Operations suspended for much of 3Q-4Q/2003

Gross plantation area = 183,330 ha

Planted area = 67,000 ha (not all harvestable)

- Normal silvicultural practices not well implemented
- Poor roads restrict access to planted areas
- Inefficient harvesting and transport

→ High wood cost

External sourcing – Australia (> 200,000 Bdt/yr Eucalypt chips);
Sabah (pulpwood logs -- Acacia/Gmelina)

- May be seeking to buy Sumatra Acacia!



UFS South Kalimantan Project

-- Planned Greenfield BHKP Mill

BHKP Capacity = 600,000 Adt/yr

Projected cost = US\$ 890 million

Stakeholders

- United Fiber System, Ltd (Singapore)
- Tektronix Industries (owned by Cellmark shareholders)
- Several co's registered in British Virgin Islands

Financing

- 80 % from China's state banks through Chinese National Machinery and Equipment Corporation (CMEC)
- 20 % commercial financing now being sought
- MIGA recently declined application for political risk guarantee



UFS South Kalimantan Project

Affiliated with PT Hutan Rindang Banua plantation

- Gross plantation area = 268,000 ha
- Net plantable area = 164,490 ha
- 75,000 ha of Acacia planted 1994-98, no new planting since

Estimates of standing volumes vary

- 10,605,140 m³ (UFS)
- 6,787,290 m³ (Jaakko Poyry)

Optimistic growth projections

- JP estimates current MAI = 15.9 m³/ha/yr
- UFS projects 29 m³/ha/yr for next 2 rotations