Pulp Industry Expansion and New Wood Fibre Demand in Southern China
- Implications for the Region -

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CI FOR

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The Paper & Board Industry Expansion

- 11 million tons of new capacity came on stream during the last 3 years;

- Corresponding fibre requirements (recycled & virgin wood pulp) amounts to nearly 8 million tons per year.

Source: Jaakko Pöyry Consulting, Sept. 2004
The Paper & Board Industry Expansion

Capacity additions in 2005 and beyond
- As a percent of 2002 production -

Source: Hawkins Wright, Sept. 2004
The Paper & Board Industry Expansion

Imports of recycled fibre

- Have amounted to 25% of the total Chinese fibre use in 2003;
- USA, Europe and Japan have been the largest import sources in recent years;
- All these suppliers have reached their export limits;
- There are no other substantial new sources for Chinese imports.

Sources: Jaakko Pöyry Consulting, Sept. 2004 and Hawkins Wright, Sept. 2004
The Paper & Board Industry Expansion

Chinese imports of market pulp & use of domestic wood

- Chinese imports have accounted for 3.88% of the global market in 1997;
- 12.86% in 2003;
- A 26% growth p. a. between 1997 and 2003 while growth was 1.6% for the rest of the World;
- More than 50% of the 21.2 million tons imported between 1999 and 2003 came from Canada, Indonesia and Russia
- Domestic wood has accounted for only 5% of Chinese fibre use in 2003

Source: Hawkins Wright, Sept. 2004
New Challenges for the Chinese Paper & Board Industry

- Develop Non Wood Pulp into a viable alternative. With modern technology, non-wood pulp can now be processed efficiently and in an environmentally sound way;

- Improve the domestic collection of recovered paper & board;

- Develop sustainable new sources of pulpwood within economic distance of the new pulp capacities
Hainan Jinhai Pulp & Paper Co (APP)
a JV between APP and Hainan Forestry General Corporation

Product: Bleached Hardwood Kraft Pulp

Approved Capacity (Dec 97): 0.6 million ADT

Installed Capacity: 1.1 million ADT (tested in September 2004)

Expected Start up: October 2004

Targets for production increase:
- 1st month: 50% installed capacity
- 2nd month: 75% installed capacity
- 3rd month: 100% installed capacity
- By mid 2005: 3500 ADT/day equivalent to 1.2 million ADT/year after fine tuning/minor modifications have been made

Pulpwood Needs (assuming that production will be 100% from virgin wood fiber)
- For 1.1 million ADT of pulp: 4.6 million m³ of debarked wood yearly
- For 1.2 million ADT of pulp: 5 million m³ of debarked wood yearly

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Guangxi – Lipu

Product: Un-bleached Kraft Pulp
Expansion: 20,000 ADT in 2003
Expansion: 50,000 ADT awaiting approval
Raw Material Options (Wood, Bamboo, Waste Paper, Agricultural Fibers) & Needs: not yet assessed

Jing Da Xing Paper

Product: Thermo Mechanical Pulp
Expansion: 120,000 ADT in 2004
Raw Material Options (Wood, Bamboo, Waste Paper, Agricultural Fibers) & Needs: not yet assessed

APP Qinzhou or Stora Enso Beihai?

2 competing projects with the following characteristics:

Product: Bleached Hardwood Kraft Pulp
Capacity: 1.2 million ADT
Pulpwood needs: 5 million m³ (sub) assuming that production will be 100% from virgin wood fiber
Current Status: both projects still under evaluation by the National Planning and Development Commission

Also in the evaluation / approval pipeline: a smaller project by APP for a 300,000 ADT pulp mill and a 600,000 tonnes paper mill
**Pulp Capacities Expansion in Southern China**

**Guangdong province**

**Huilai Paper**
- **Product**: to be determined
- **Capacity**: 170,000 ADT in 2006
- **Raw Material Options (Wood, Bamboo, Waste Paper, Agricultural Fibers) & Needs**: not yet assessed
- **Expected Start up**: 2006

**Fuxing – UPM Kymmene**
- **Product**: Bleached Hardwood Kraft Pulp
- **Capacity**: 700,000 ADT - Not yet approved
- **Pulpwood needs**: 2.9 million m³ (sub) assuming that production will be 100% from virgin wood fiber
- **Expected Start up**: 2008 – 2009

**Xinhui RGM**
- **Product**: Bleached Hardwood Kraft Pulp
- **Capacity**: 1,000,000 ADT - Not yet approved
- **Pulpwood needs**: 4.2 million m³ (sub) assuming that production will be 100% from virgin wood fiber

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China is known for having scarce forest resources

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Capital expenditures, based on the low cost of raw materials, have been most successful
Emerging market acquisitions are often expensive and investments driven by attractive market opportunities have had mixed success
China: the world’s second largest market with rapid investment growth stimulated by easy access to cheap financing

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- How much more plantation area will be needed?
  - Accessibility and availability of the existing resource

- How large a plantation area can be grown by the new pulp industries?
  - The land availability issue and challenges that new pulp capacities are facing to secure enough land for cost efficient plantations

- How important is the expected pulpwood shortfall and what are the solutions to address it?
  - Opportunities or threats for the region?
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- How much more plantation area will be needed?
- How large a plantation area can be grown by the new pulp industries?
- How important is the expected pulpwood shortfall and what are the solutions to address it?

APP Guangxi 0.3 million ADT
APP Hainan 1.2 million ADT
Fuxing – UPM Kymmene 0.7 million ADT

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How much more plantation area will be needed?

Area of Eucalyptus plantations

- The 3 southern provinces have substantial plantation resources but not all are accessible or available;
- New plantations will be needed

Guangdong | Guangxi | Hainan

Area (x '000 ha)

1993 Inventory | 1998 Inventory | 2001 Data

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How much more plantation area will be needed?

October 2004: APP Hainan becomes on stream

The 1.1 million ADT capacity mill will require:

- 2.025 million BDT of chips during the first 12 months of operation. This is approximately 10 times the current export capacity of Hainan.

- 2.520 million BDT of chips during the following 12 months of operation (Oct. 2005 – Sept. 2006) This is 12 times the current export capacity of Hainan.

Source: Hainan Jinhai Pulp & Paper Co. Ltd
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How much more plantation area will be needed?

Yearly needs of the UPM Kymmene mill will be 2.8 million m³ of wood

Plantations already in place in the area have a yearly production capacity of 1.8 to 1.9 million m³:

- 350,000 m³ go to 2 MDF mills and 1 fiber board mill;
- 1.4 to 1.5 million m³ are processed into chips and shipped to other destinations;
- A small share goes to local small plywood mills

It is estimated that about half of the current production could be re-routed to the future Zhanjiang mill

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How much more plantation area will be needed?

- Eucalypt fibre will continue to be the most in demand;
- Casuarina and Acacia mangium are also grown for chip production
- In Hainan, before 1995, all chips were produced from eucalypts. At present, eucalypts accounts for 47%, Casuarina (38%) and Acacia mangium (15%)
At the end of 2003
- 63,500 ha in Hainan
- 30,000 ha in coastal Guangxi
- 26,900 ha, 2 sites north & north-east of Guangzhou

To entirely sustain its Hainan mill, at a capacity of 1.2 million ADT of pulp, APP would need 360,000 ha of plantations.

Overall plantation target for Hainan is 233,000 ha.
Pulpwood Supply from existing APP plantations

Between Oct. 2004 and Dec. 2007:
Total pulp output = 3.7 million ADT
Pulpwood needs = 15.3 million m³ (solid under bark)
Supply from own plantations = about 4.2 million m³ (s.u.b.)
Shortfall = 11.1 million m³ (s.u.b.)

During 2008-2009:
Total pulp output = 2.5 million ADT
Pulpwood needs = 10.3 million m³ (solid under bark)
Supply from own plantations = about 3.1 million m³ (s.u.b.)
Shortfall = 7.2 million m³ (s.u.b.)

Pulpwood shortfall = amount of pulpwood to be sourced outside APP plantations

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If, within the next 6 years, APP is able to double the area of plantation currently in place in Hainan, Guangxi and Guangdong and manage the whole estate (240,000 ha) in a sustainable manner, the resource base put into place will produce:

- Approximately 72% of the fibre needs of the Hainan mill (assuming that the capacity will remain at 1.2 million ADT);
- OR
- Approximately 57% of the fibre needs of the Hainan mill and of a smaller mill in Guangxi (assuming that the total capacity of both mills will be 1.5 million ADT). APP’s fibre purchases from outside suppliers will amount to either 1.4 or 2.6 million m$^3$ of wood every year. Most will have to be imported (wood chips).

The above assumes that, between 2004 and 2009, APP will be able to plant 40,000 ha every year (20,000 ha of replanting + 20,000 ha of new plantations). Until now the maximum that APP has been able to plant, in the 3 provinces during a single year (2003), was 25,000 ha.
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The land availability issue

- Hainan’s total land area: 3,535,400 ha;
- In 2001, Hainan’s population was 7,955,500. The Agricultural population accounts for 71.3%;
- Average land per capita is 0.47 ha;
- It is estimated that approximately 230,000 ha yet un-planted (wasteland) could be used for growing crops or trees (Hainan Statistics Yearbook);
- APP plantation program on collectively-owned land (townships, villages) & on small individual farms:
  - 77% of the overall program (233,000 ha)
  - 84% of 97-2003 plantations (63,530 ha)
  - 100% of 2003 plantations

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The land availability issue

Land Leasing from Communities and individuals

- Is becoming the most common practice in Hainan with wide variation in price depending on the location, topography and soil fertility;

- Currently USD 55 to 130 per ha, per year on the West coast (Danzhou prefecture) is paid for land that is generally not suitable for agriculture. In the 90s’ prices were below USD 50 for the same type of land;

- Land lease prices on the East coast are higher. Soils are more fertile and there is a high demand for agricultural land;

- Land lease contracts are generally for 30 years

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How much plantation area is planned by Fuxing – UPM Kyrmene?

Planned Plantation areas

2003-2007: A total of 200,000 ha to be afforested or re-planted of which:
- 25% under direct control of Fuxing (Land to be leased)
- 30% land owners (mostly State Farms) will be contracted by Fuxing to procure pulpwood
- 45% out-grower schemes

So far contractual arrangements have been concluded for only a small portion of the future Plantation Resource Base

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During 2008-2009:
Total pulp output = 1.015 million ADT
Pulpwood needs = 4.2 million m³ (solid under bark)
Supply from own plantations = about 3.7 million m³ (s.u.b.)
Shortfall = 0.5 million m³ (s.u.b.)

During 2010-2014:
Total pulp output = 3.46 million ADT
Pulpwood needs = 14.4 million m³ (solid under bark)
Supply from own plantations = about 13.0 million m³ (s.u.b.)
Shortfall = 1.4 million m³ (s.u.b.)

A sustainable wood supply from plantations after 2014

The above assumes that:
- The pulp mill will come on stream in 2008 rather than 2006
- The Initial Plantations Development Plan (2002) will be fully implemented but delayed by one year

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Will Fuxing - UPM Kymmene have enough plantation to feed the Zhanjiang mill?

Fuxing - UPM Kymmene
After 2007

Pulpwood Supply from planned plantations

Pulpwood deficit = amount of pulpwood to be sourced outside plantations planned by Fuxing - UPM Kymmene
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The land availability issue

Fuxing – UPM Kymmene has an overall program of 200,000 ha, of which:

- 45% is entirely on land with collective & individual user rights (membership scheme)
- 25% on leased land. Only part of this will be on State-owned land
- 30% under wood supply contracts

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To what extent can the local market address the expected pulpwood shortfall?

In 2003 the 3 provinces exported approximately 1.1 million BD tonnes of chips, equivalent to 2.3 million m³ of debarked wood (sub)

Chips Exported from Southern China in 2003

VIETNAM

Haiphong

Sanya

Hainan

Guangzhou

Hongkong

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To what extent can the local market address the expected pulpwood shortfall?

*Period Oct. 2004 - Dec. 2007*

**Hypothesis**: All chip exports from Hainan, Guangxi and Western Guangdong (not bound to long-term contracts) are re-routed to APP - Hainan

The 3 provinces should be able to produce around 3.95 million BDT of chips equivalent to 8.1 million m³ of wood (s.u.b.) in addition to the production of APP’s plantations.

The net shortfall of pulpwood in the region, between Oct. 2004 and Dec. 2007 is expected to be around 3 million m³ (s.u.b.)
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To what extent can the local market address the expected pulpwood shortfall?

**Period 2008 - 2009 / Scenario 1**

- **Fuxing - UPM Kymmene** will come on stream in 2008. The total mill’s output during these 2 years will be 1.015 million ADT.

- **Capacity at APP - Hainan**’s mill remains at 1.2 million ADT per year.

- Any pulpwood produced locally outside the two pulp Companies is sold either to APP - Hainan or to Fuxing - UPM Kymmene.

The 3 provinces should be able to produce around 2.1 million BDT of chips equivalent to 4.3 million m³ of wood (s.u.b.) in addition to the production of APP & UPM Kymmene plantations.

The net shortfall of pulpwood in the region, during 2008 and 2009 is expected to be around 3.4 million m³ (s.u.b.).

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To what extent can the local market address the expected pulpwood shortfall?

**Period 2008 - 2009 / Scenario 2**

- APP-Qinzhou (Gangxi province) comes on stream in 2008. The total mill’s output during these 2 years will be 0.6 million ADT;
- Capacity at APP – Hainan’s mill remains at 1.2 million ADT per year
- Any pulpwood produced locally outside APP’s plantations is sold either to APP - Hainan or to APP - Guangxi

The 3 provinces should be able to produce around 2.5 million BDT of chips equivalent to 5.1 million m³ of wood (s.u.b.) in addition to the production of APP’s plantations

The net shortfall of pulpwood in the region, during the 24 month period, is expected to be around 4.6 million m³ (s.u.b.)

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To what extent can the local market address the expected pulpwood shortfall?

Period 2008 - 2009 / Scenario 3

- **Fuxing - UPM Kymmene** comes on stream in 2008. The total mill's output during these 2 years will be 1.015 million ADT;
- **APP-Qinzhou (Gangxi province)** becomes on stream in 2008. The total mill's output during these 2 years will be 0.6 million ADT;
- **Capacity of APP - Hainan’s mill** remains at 1.2 million ADT per year
- **Any pulpwood produced locally outside the three pulp Companies is sold either to** APP - Hainan, APP - Guangxi or to Fuxing - UPM Kymmene

The 3 provinces should be able to produce around 2.1 million BDT of chips equivalent to 4.3 million m³ of wood (s.u.b.) in addition to the production of APP & UPM Kymmene plantations.

The net shortfall of pulpwood in the region, during the 24 month period, is expected to be around 5.9 million m³ (s.u.b.)

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### Anticipated Regional Pulpwood Shortfall

**Oct. 2004 to Dec. 2007**

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<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
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<td>APP Hainan (1.2 million ADT) + UPM Kymmene (0.7 million ADT)</td>
<td>APP Hainan (1.2 million ADT) + APP Guangxi (0.3 million ADT)</td>
<td>APP Hainan (1.2 million ADT) + UPM Kymmene (0.7 million ADT) + APP Guangxi (0.3 million ADT)</td>
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<td>3 million m³ (sub)</td>
<td>3.4 million m³ (sub)</td>
<td>5.9 million m³ (sub)</td>
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New market opportunities for the region?
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New market opportunities for the region?

The Wood Supply situation **beyond 2009** will depend upon what the big players:
- APP
- Stora Enso
- UPM Kymmene
- Oji
- APRIL

will be able to plant in 2004 and consecutive years

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Threats for the region?

Considering the various obstacles that several Pulp Companies are facing, in their effort to secure an adequate plantation land base, it is likely that Southern China will remain largely reliant on imported wood chips beyond 2009.

There might be strong temptation, on the part of certain players, to fulfill their fiber gap from non-sustainable sources, from countries with governance problems.
Thank you

谢谢！