Hardwood Fiber for Pulp in Southern China
Scenarios of Supply – Demand Balance to 2010

By Christian Cossalter, CIFOR

The Forests Dialogue
Dialogue on Intensively Managed Planted

Beihai, China 05 April 2006
Installed Pulp Capacities

Guangxi Zhuang Autonomous Region

- **Paper & Paperboard:** 0.96 $10^6$ Adt y$^{-1}$
- **Wood Pulp:** 0.4 million Adt y$^{-1}$
- Approx. 70% Softwood & 30% Hardwood
- Other pulp:
  - bagasse pulp
  - waste paper
  - bamboo pulp

Only 6 Pulp & Paper enterprises with overall capacity over 70,000 Adt y$^{-1}$ and 6 with overall capacity between 30,000 - 70,000 Adt y$^{-1}$

Slightly over **60 Paper & Paperboard products** Only **32%** of the production meets medium to high quality standards

China Paper & Paperboard industry produces approximately 600 products

7 enterprises with 20,000 Adt y$^{-1}$ capacity and over to produce **wood-based pulp**. Two produce bleached kraft market pulp

**Adt:** Air-dry tonne
Hainan Jinhai Pulp & Paper Co (APP) is a JV between APP and Hainan Forestry General Corporation. The product is Bleached Hardwood Kraft Pulp (BHKP). The approved capacity (Dec 97) is 0.6 million Adt y⁻¹. Designed capacity is 3,230 Adt day⁻¹ (tested in November 2004) equivalent to 1.17 million Adt y⁻¹. Start up is End of March 2005. 0.676 million Adt produced in 7 months (April to October 2005). One-day production record is 3,420 Adt. By end 2005: after fine tuning/minor modifications have been made production stabilized at 1.2 million Adt y⁻¹. A 5 million m³ of debarked wood is required yearly to produce 1.2 million Adt y⁻¹ of pulp (assuming that production will be 100% from virgin wood fiber).

Adt: Air-dry tonne

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Installed Pulp Capacities

Guangdong province

Two Main Wood Pulp producers

Guangzhou Paper

- **Pulp**: Chemi-Thermo Mechanical Pulp (CTMP)
- **Pulp Capacity**: 0.1 million Adt y\(^{-1}\)
- **Pulpwood needs**: 0.35 million m\(^3\) (debarked)
- **Paper capacity (News print)**: 0.3 million Adt y\(^{-1}\)
- **Expansion (News print)**: 0.28 million Adt y\(^{-1}\)

Guangning Dingfeng

- **Pulp**: Hardwood Kraft
- **Capacity**: 0.1 million Adt y\(^{-1}\)

Adt: Air-dry tonne

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The 3 provinces exported approximately 1.1 million Bdt of chips, equivalent to 2.3 million m³ of debarked wood.

Bdt: Bone-dry tonne

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The 3 provinces exported approximately 0.85 million Bdt.
The 3 provinces exported approximately 0.85 million Bdt

Guangxi: 30,000 Bdt
100% eucalypts

Zhanjiang: 100,000 Bdt
100% eucalypts

Hainan: 500,000 Bdt
Eucalypts, acacias, casuarinas, others

Situation in 2005

and supplied APP – Hainan with approximately 0.63 million Bdt

Hainan: 500,000 Bdt
Eucalypts, acacias, casuarinas, others

Wood Chips Exports + Supplies to APP–Hainan

Bdt: Bone-dry tonne
Wood Chips Exports + Supplies to APP–Hainan

**2003-2005:** An increase over 2 years of nearly 0.38 million Bdt (+35 percent), mostly coming from Hainan

*In 2003,* Hainan had 7 wood chips plant. Two State Cies had full control on the 0.2 million Bdt yearly export. 48% was sold to Japan (eucalypt and acacia); 38% to Korea (all casuarina) and 14% to Taiwan (eucalypt and acacia).

*In 2005,* Hainan had approximately 40 wood chips plant with a cumulated capacity of 2 million Bdt. Their cumulated yearly production was 0.5 million Bdt.

Bdt: Bone-dry tonne
**Pulp & Paper Capacities – Planned Expansions**


**APP Qinzhou**
- **Pulp**: Chemi-Thermo Mechanical Pulp (CTMP)
- **Pulp Capacity**: 0.3 million Adt y\(^{-1}\)
- **Paper capacity**: 0.6 million Adt y\(^{-1}\)
- **Pulpwood needs**: 0.75 million m\(^3\) (debarked) assuming that production will be 100% from virgin wood fiber
- **Current Status**: still under evaluation by the National Planning and Development Commission. Expected to start in 2007/08

**Stora Enso Behai**
- **Pulp**: CTMP or BHKP or both?
- **Capacity** Pulp and Paper 0.6 million Adt y\(^{-1}\) or more?
- **Pulpwood needs**: from 0.75 million m\(^3\) to 2.5 million m\(^3\) (debarked) depending on the industrial process and capacity for pulp and assuming that production will be 100% from virgin wood fiber
- **Current Status**: still in the design phase. Expected to start towards 2010

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**Pulp & Paper Capacities – Planned Expansions**


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**Liujiang Paper Mill**

- **Pulp**: Bleached Chemical Bamboo Pulp (BCBP)
- **Pulp Expansion Capacity**: 0.17 million Adt y\(^{-1}\)
- **Paper Expansion capacity**: up to a total of 0.3 million Adt y\(^{-1}\)

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**Nanning Phoenix Papermaking Co**

- **Pulp**: shifting from BSKP to BHKP
- **Pulp Expansion Capacity**: increase from 0.1 to 0.15 million Adt y\(^{-1}\)
- **Paper Capacity**: 0.15 million Adt y\(^{-1}\)
- **Additional Pulpwood needs**: approximately 0.25 million m\(^3\) y\(^{-1}\)
- **Current Status**: still in the design phase.
  Expected to start towards 2008

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**Heda Papermaking Co**

- **Pulp**: BHKP or BSKP
- **Pulp Expansion Capacity**: 0.23 million Adt y\(^{-1}\)
- **Paper capacity**: 0.5 million Adt y\(^{-1}\)
- **Additional Pulpwood needs**: approximately 1 million m\(^3\) y\(^{-1}\)
Ex Fuxing – UPM Kymmene project

**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

UPM Kymmene withdrew in November 2004

At end of 2005, Shandong Chenming became the new main industrial project partner.

Will the new strategy still include a local production of wood pulp or will the resource in place will be used to supply in priority the Chenming Paper mill?

**Xinhui RGM**

**Product:** Bleached Hardwood Kraft Pulp  
**Capacity:** 500,000 ADT - Not yet approved  
**Pulpwood needs:** 2.1 million m³ (sub) assuming that production will be 100% from virgin wood fiber
Pulp & Paper Capacities – Planned Expansions

Hainan

Hainan Jinhai Pulp & Paper Co (APP)

a JV between APP and Hainan Forestry General Corporation

Step 1: Install a 1.6 million Adt y⁻¹ paper production line

Step 2: Install an additional BHKP production line of 1 million Adt y⁻¹

Step 3: Install an additional paper production line of 1.6 million Adt y⁻¹

Step 4: Install an additional paper production line of 1.6 million Adt y⁻¹

Adt: Air-dry tonne
Region of current wood pulp expansion
Main production area of hardwood chips
Wood Pulp Expansions & Fiber Demand

Assessment of Selected Scenarios - 2010 time line

Scenario 1:

Hainan: Capacity at APP’s mill remains at 1.2 million ADT BHKP per year

Guangxi: Provincial government meets his target of increasing the yearly wood pulp output from the current 0.4 million ADT to 1.3 million ADT with the assumed following distribution for the new production lines:

- Inland Provinces: Bleached Hardwood Kraft Pulp: 0.15 million Adt y\(^{-1}\)
  Bleached Softwood Kraft Pulp: 0.15 million Adt y\(^{-1}\)
- Coastal Provinces: Chemi-Termo Mechanical Pulp: 0.6 million Adt y\(^{-1}\)

Western Guangdong: Construction of a pulp mill in Zhanjiang re-evaluated / delayed. The resource in place will be used for priority supply to Chenming Paper, Shandong.

Resulting wood fiber demand for existing and planned production lines in the region would be 9.47 million m\(^3\) per year (7,700,000 m\(^3\) of hardwood and 1,770,000 m\(^3\) of softwood)

Approximately 660,000 hectares of intensively managed plantations would be required to sustain this demand

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Wood Pulp Expansions & Fiber Demand

Assessment of Selected Scenarios - 2010 time line

Scenario 2:

**Hainan:** APP goes ahead with its plan to increase the mill’s capacity to 2.2 million ADT BHKP per year

**Guangxi:** Provincial government meets his target of increasing the yearly wood pulp output from the current 0.4 million ADT to 1.3 million ADT with the assumed following distribution for the new production lines:

- **Inland Provinces:** Bleached Hardwood Kraft Pulp: 0.15 million Adt y⁻¹
  
  Bleached Softwood Kraft Pulp: 0.15 million Adt y⁻¹

- **Coastal Provinces:** Chemi-Termo Mechanical Pulp: 0.6 million Adt y⁻¹

**Western Guangdong:** Construction of a pulp mill in Zhanjiang re-evaluated / delayed. The resource in place will be used for priority supply to Chenming Paper, Shandong.

Resulting wood fiber demand for existing and planned production lines in the region would be 13.64 million m³ per year (11,870,000 m³ of hardwood and 1,770,000 m³ of softwood)

Approximately 940,000 hectares of **intensively managed plantations** would be required to sustain this demand

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Wood Pulp Expansions & Fiber Demand

Assessment of Selected Scenarios - 2010 time line

Scenario 3:

**Hainan:** APP goes ahead with its plan to increase the mill’s capacity to 2.2 million ADT BHKP per year

**Guangxi:** Provincial government meets his target of increasing the yearly wood pulp output from the current 0.4 million ADT to 1.3 million ADT with the assumed following distribution for the new production lines:

- **Inland Provinces:**
  - Bleached Hardwood Kraft Pulp: 0.15 million Adt y⁻¹
  - Bleached Softwood Kraft Pulp: 0.15 million Adt y⁻¹
- **Coastal Provinces:**
  - Chemi-Termo Mechanical Pulp: 0.6 million Adt y⁻¹

**Western Guangdong:** Start up in 2008/2009 of the 0.7 million ADT BHKP pulp mill in Zhanjiang planned under the Fuxing UPM Kymmene project

Resulting wood fiber demand for existing and planned production lines in the region would be 16.56 million m³ per year (14,790,000 m³ of hardwood and 1,770,000 m³ of softwood)

Approximately 1,140,000 hectares of **intensively managed plantations** would be required to sustain this demand

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Forest resources in the 3 Provinces

Hectares

Forest stands
Economic Forests
Bamboo Groves
Sparsely Wooded Land
Shrub Land
Others

Hainan Province
Guangdong Province
Guangxi Zhuang Autonomous Region

Hainan
Guangdong
Guangxi

Hainan Province
Guangdong Province
Guangxi Zhuang Autonomous Region

Hectares

7,000,000
8,000,000
9,000,000

0
1,000,000
2,000,000
3,000,000
4,000,000
5,000,000
6,000,000
7,000,000
8,000,000
9,000,000

Forest stands
Economic Forests
Bamboo Groves
Sparsely Wooded Land
Shrub Land
Others

Hainan
Guangdong
Guangxi

Hainan Province
Guangdong Province
Guangxi Zhuang Autonomous Region

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Forest resources in the coastal Provinces

- Hainan Province
- Western Guangdong (4 coastal Prefectures)
- Guangxi Zhuang Autonomous Region (4 coastal Prefectures)

Hectares

- Forest Stands
- Economic Forest
- Bamboo Groves
- Sparsely Wooded Land
- Shrub Land
- Other

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Forest resources in the 3 Provinces

Area of Eucalyptus Plantations

Area (in thousand ha)

Guangdong
Guangxi
Hainan

2001: Provincial data
1998: National forest inventory
1993: National forest inventory

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## Eucalypt & acacia resources in the area of hardwood wood chips production

<table>
<thead>
<tr>
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<th>Guangxi</th>
<th>Western Guangdong</th>
<th>Hainan</th>
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<tbody>
<tr>
<td><strong>Prefectures involved</strong></td>
<td>Chongzuo, Fangchenggang, Nanning, Qinzhou, Beihai Laibin, Guigang, Yulin, Wuzhou</td>
<td>Zhanjiang, Maoming, Yangjiang, Jiangmen, Yunfou</td>
<td>The entire province</td>
</tr>
<tr>
<td><strong>Corresponding total land area</strong></td>
<td>ha 10,567,925</td>
<td>4,905,400</td>
<td>3,390,768</td>
</tr>
<tr>
<td><strong>Area of eucalypt and acacia stands/ woodlots at end of 2005</strong></td>
<td>ha Approx. 300,000 ¹)</td>
<td>Approx. 245,000 ²)</td>
<td>Approx. 230,000 ³)</td>
</tr>
<tr>
<td><strong>Rate of yearly planting</strong></td>
<td>ha/y 40,000 - 45,000</td>
<td>10,000 - 15,000</td>
<td>Extremely variable</td>
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<tr>
<td><strong>CIFOR's assessment of Harvestable Volume in 2010</strong></td>
<td>m³ 4.6 million</td>
<td>3.8 million</td>
<td>2.5 million</td>
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**Sources**

1) 2000 Provincial Forest Inventory and Guangxi Forestry Bureau statistics on FGHY Plantation Development between 2001 and 2005
3) 2002 Provincial Forest Inventory, APP-Hainan, CIFOR’s assessment for the period 2003 - 2005

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# Eucalypt & acacia resources in the coastal regions

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<td>Approx. 225,000 2)</td>
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Supply–Demand Balance for Hardwood to 2010

Scenario 1

Hardwood pulpwood demand: 1.105 million m³
Output eucalypts & acacias plantations: 2.30 million m³
Surplus: 1.195 million m³

Within the same region
Wood Panel’s demand for round wood (essentially softwood) is expected to increase from a current 2.6 million m³ to 4 million m³ in 2010, should Provincial government’s plans be fully implemented.

Hardwood pulpwood demand: 6.595 million m³
Output eucalypts & acacias plantations: 8.60 million m³
Surplus: 2.005 million m³

1/ includes: MDF, HDF, Plywood (incl. LVL), Particleboards, Blockboards and Wet-process fiberboard
Supply–Demand Balance for Hardwood to 2010
Scenario 2

Hardwood pulpwood demand: 1.105 million m$^3$
Output eucalypts & acacias plantations: 2.30 million m$^3$
Surplus: 1.195 million m$^3$

Hardwood pulpwood demand: 10.765 million m$^3$
Output eucalypts & acacias plantations: 8.6 million m$^3$
Deficit: 2.165 million m$^3$

Within the same region
Wood Panel sector’s demand for round wood (essentially softwood) is expected to increase from a current 2.6 million m$^3$ to 4 million m$^3$ in 2010, should Provincial government’s plans be fully implemented.

Legend:
- Study area
- Province boundary
- Prefecture boundary
- Border of study area
- Northern border of coastal provinces

1/ includes: MDF, HDF, Plywood (incl. LVL), Particleboards, Blockboards and Wet-process fiberboard

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Supply–Demand Balance for Hardwood to 2010
Scenario 3

Hardwood pulpwood demand : 1.105 million m$^3$
Output eucalypts & acacias plantations: 2.30 million m$^3$
Surplus : 1.195 million m$^3$

Hardwood pulpwood demand : 13,685 million m$^3$
Output eucalypts & acacias plantations: 8.6 million m$^3$
Deficit : 5.085 million m$^3$

Within the same region
Wood Panel 1/ Sector’s demand for round wood (essentially softwood) is expected to increase from a current 2.6 million m$^3$ to 4 million m$^3$ in 2010, should Provincial government’s plans be fully implemented

1/ includes: MDF, HDF, Plywood (incl. LVL), Particleboards, Blockboards and Wet-process fiberboard

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Thank you
谢谢！