Pulp and Paper Market Outlook

Shanghai, CHINA
March 2019

Hu Wei
Commercial VP, Pulp & Paper
Moderate Growth in Global GDP

Real GDP growth (Annual percent change, 2019)

Source: IMF - World Economic Outlook Update, Jan 2019
Global Paper Demand Continues to Grow

- Global paper and board demand is forecasted to grow at 1.3% p.a. in long term, reaching 490 million tons by 2030
- Tissue and paperboard expected to grow at 2-3% p.a., while consumption of graphic papers expected to decline slowly

World Demand for Paper and Paperboard 2000-2030

- Emerging Markets CAGR 2.2%/a
- Mature Markets CAGR -0.2%/a

Long-term Global Demand Growth by Product Area through 2030

- Average: 1.3%/a
- Tissue: 3% growth
- Containerboard: 2% growth
- Cartonboard: 2% growth
- Other Grades: 1% growth
- Sack Paper: 0% growth
- Uncoated Woodfree: -2% growth
- Coated Woodfree: -1% growth
- Coated Mechanical: -1% growth
- Uncoated Mechanical: -2% growth

Source: Poyry
Major Currencies Stabilizing Against USD Recently

Source: Investing.com

<table>
<thead>
<tr>
<th>Currency</th>
<th>Change% vs Early 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYR</td>
<td>10%</td>
</tr>
<tr>
<td>EUR</td>
<td>8%</td>
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<tr>
<td>CNY</td>
<td>3%</td>
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<tr>
<td>IDR</td>
<td>-4%</td>
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<tr>
<td>INR</td>
<td>-5%</td>
</tr>
<tr>
<td>BRL</td>
<td>-12%</td>
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Pulp Price Lagged Behind Other Commodities

Commodity Price Changes %
- Coal: 296%
- Gold: 262%
- Iron ore: 138%
- Crude Oil: 84%
- Rubber: 76%
- BSKP: 74%
- BHKP: 66%

Source: World Bank & Hawkins Wright
China Merchandise Export Increased Steadily

2012-2018 China Merchandise Export Amount

Source: China Customs

China Paper Products Export Volume

Paper and Paperboard (uncutting) vs. Printed Articles

China Merchandise Export Increased Steadily

China Paper Products Export Volume

Paper and Paperboard (uncutting) vs. Printed Articles
China Net Import of Paper Increasing

2016-2018 China Import and Export Volume

**Source:** China Customs
China Aims to “Zero Waste Import” by 2020

China's plans to reduce its imports of solid waste to zero by the end of 2020

China CPC Central Committee
June 2018
Recycled Fiber Shortage and Solution

China’s Alternatives To “Zero Waste Import”

~17m MT waste paper (or 13m MT fiber) will be reduced in future

1. Increase collection of domestic waste paper
   - Add ~5m MT (or 4m MT fiber)

2. Increase the usage of virgin fiber
   - Add ~3.5m MT fiber

3. Import more / Export less paper
   - Add ~3m MT paper (or 2.5m MT fiber)

4. Import more recycled pulp
   - Add ~3m MT recycled fiber

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Market Pulp Concentration Increased

2019 Global Market BHKP by Suppliers

<table>
<thead>
<tr>
<th>Company</th>
<th>Mill</th>
<th>Period</th>
<th>2018</th>
<th>2019Q1</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics</td>
<td>Regionwide</td>
<td>2018Q1, exceptionally warm winter</td>
<td>30</td>
<td>30</td>
<td>30</td>
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<tr>
<td>Brazil</td>
<td>Countrywide</td>
<td>2018Q2, Trucker Strike</td>
<td>300</td>
<td>300</td>
<td>300</td>
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<tr>
<td>Suzano &amp; Fibria</td>
<td>Imperatriz</td>
<td>2018Q4</td>
<td>40</td>
<td>40</td>
<td>40</td>
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<tr>
<td></td>
<td>Aracruz</td>
<td>2018</td>
<td>200</td>
<td>200</td>
<td>200</td>
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<tr>
<td>Klabin</td>
<td>Ortigüeira</td>
<td>2018Q2</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>APP</td>
<td>OKI</td>
<td>2018Q1: Turbine issue; 2019Q1:Jan 2nd-25th</td>
<td>100</td>
<td>185</td>
<td>285</td>
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<tr>
<td>Alpac</td>
<td>Alberta</td>
<td>2018Q2</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>APRIL / AS</td>
<td></td>
<td>2019Q1</td>
<td>150</td>
<td></td>
<td></td>
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<tr>
<td>Eldorado</td>
<td>Três Lagosas</td>
<td>2018Q1</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Mondi</td>
<td>Regionwide</td>
<td>2018Q1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Woodland Pulp</td>
<td>Baileyville</td>
<td>2018Q1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>2019Q1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>772</td>
<td>345</td>
<td>1,117</td>
</tr>
</tbody>
</table>

Source: RisI & Internal

Source: Howkins Wright
China Market Pulp Supply & Demand Balance

China BHKP S&D and Stock Change

K MT

- Pulp Stock @ CN Port
- Pulp Stock @ Paper Mill
- Market Supply (R-Axis)
- Market Demand (R-Axis)
- Backlog Pulp of Paper Mill

Forecast

K MT

- 2018
- 2019

J F M A M J J A S O N D J F M A M J
Market BHKP Supply Remains Tight in Next 3 Years

Source: Hawkins Wright
Global BHKP Demand & Supply and Operating Rate

- **2021**
  - Arauco Line 2: 1.28m
  - Fibria Horizonte 3: 2.00m
  - UPM: 2.00m

- **Source:** RISI & Internal Estimate
Tight Woodchip Supply with Higher Cost

Market Hardwood Chips Supply and Demand

Demand - China
Demand - Others
Supply - SEA
Supply - LatAm
Supply - Oceania
Supply - Others
Paper Market Correction After CNY

China UWF Inventory Turnover Days of T1 Distributors

Source: Internal
Global UWF Demand & Supply and Operating Rate

Global UWF Market

Source: Hawkins Wright & Internal Data

2018 Capacities Change
Chenming: +1,000k MT
Sun: +200k MT
Others: -360k MT

2019 Capacities Change
Itthad: +350k MT
APP: -300k MT
GP: -630k MT
Others: -360k MT

2020-21 Capacities Change
Bohui: +500k MT
IP Selma: -235k MT
UPM Nordland: -200k MT
Others: -335k MT
Conclusions

• Global economic development is positive for paper demand, but some risks from trade disputes

• China import ban on waste paper will positively impact wood pulp demand

• Tight market pulp supply for next three years, and UWF balanced

• Destocking in paper value chain triggered the price shock in 4Q2018, with market correction after CNY

• As market consolidates further, Pulp & Paper market will return to a sustainable level
Thank You!