MARKETS AND METHODOLOGY 2016

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May 17, 2016
TOPICS

- OCC + domestic pricing, supply-demand condition
  - China’s demand + outlook
- MRFs, specifications, processors
  - *Pulp and Paper Week*’s pricing methodology
U.S. RECOVERED PAPER FAST FACTS

- $7.5 billion/yr market: 58% domestic + 42% export
  - 52.04 million tons 2015 demand.
  - 31 million domestic + 21 million export, 69% to China

- 2015 mill consumption was highest since 2010
  - 20-30% from curbside collection
  - Single-stream MRF system for 290 million Americans

- 1Q consumption rose behind export to 13 million
## P&PW Pricing Update

<table>
<thead>
<tr>
<th>Destination</th>
<th>May 2015</th>
<th>Dec 2015</th>
<th>May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOB, seller’s dock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCC, Southeast</td>
<td>$80</td>
<td>$90</td>
<td>$85</td>
</tr>
<tr>
<td>Mixed, Southeast</td>
<td>50</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>SOP, Southeast</td>
<td>145</td>
<td>115</td>
<td>120</td>
</tr>
<tr>
<td>FAS, Long Beach/LA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCC, Export/China</td>
<td>150</td>
<td>147</td>
<td>144</td>
</tr>
<tr>
<td>Mixed, Export/China</td>
<td>$107</td>
<td>$98</td>
<td>$115</td>
</tr>
</tbody>
</table>

Source: *PPI Pulp & Paper Week*, RISI.
OCC FORECAST

- OCC is forecast to increase this year at US mills, by $3 on average, and decline $4 to China, based on RISI April forecast. If true, this could be a first.

- Export OCC dipped in early May – but domestic increased. LA OCC $144, down $5. MW domestic up $15 in two mos.

- New US mill capacity should pressure domestic prices at times, when China actively buys.

- RISI forecasts 2% drop on OCC imports to China in 2016.

- 1Q US GDP at 0.5%; 2015 total = 2.4%. 5-yr. = 2.42%.
# GROWING NEED FOR OCC

- **US mill consumption (000 short tons)**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCC</td>
<td>61%</td>
<td>68.5%</td>
</tr>
<tr>
<td></td>
<td>19,085</td>
<td>21,084</td>
</tr>
<tr>
<td>MP</td>
<td>14%</td>
<td>12.1%</td>
</tr>
<tr>
<td></td>
<td>4,390</td>
<td>3,713</td>
</tr>
<tr>
<td>HGD</td>
<td>8%</td>
<td>10.9%</td>
</tr>
<tr>
<td></td>
<td>2,498</td>
<td>3,377</td>
</tr>
<tr>
<td>ONP</td>
<td>12.8%</td>
<td>5.1%</td>
</tr>
<tr>
<td></td>
<td>3,989</td>
<td>1,563</td>
</tr>
<tr>
<td>Pulp subs</td>
<td>4.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td></td>
<td>1,301</td>
<td>1,049</td>
</tr>
</tbody>
</table>

- Notes: OCC a 31-million-ton US market in 2015: 21.0 million domestic -- which is up 2.37 million from 2012. 49.3% of 2015 US exports were OCC vs 39% in 2010. Resolute Augusta, GA, newsprint 190,000 PM shut in May.
MIDWEST SURPRISE: NEW CAPACITY

- Two machines started in last six months and third planned -- The first new ones in years in Midwest

  1. Pratt Industries: Valparaiso, IN, 355,000 tons/yr, 65% mixed paper, 35% OCC. Startup at end of September.

     - 575,000 tons of demand from the two

  Offset: WestRock shuts three medium mills with 675,000 tons in late 2015/early 2016
CAPACITY ADDITIONS 2016-2017

- **2015**
  - Orchids, Pryor, OK – Mar 2015 – Tissue (20)
  - IP, Valliant, OK – May 2015 -- Restarted Corr Medium PM (355)
    - Double Tree, Gila Bend, AZ – 2015 – Tissue (40)
  - Pratt, Valparaiso, IN – Sept/Oct 2015 – Containerboard (360)

- **2016**
  - Corrugated Supplies, Alsip, IL – Jan 2016 – Corr Medium (220)
    - von Drehle, Natchez, MS – 1Q 2016 – Tissue (40)

- **2017**
  - Orchids, Barnwell, SC – 1Q 2017 – Tissue (30, mix)
    - Kruger, Trois Rivieres, QC – 2Q 2017 – Containerboard (360)
  - Corrugated Supplies, Milwaukee, WI – 2H 2017 – Containerboard (350)
    - Confidential, US East – Mid- to late-2017 – Containerboard (TBA)
2015 MILL CONSUMPTION HIGHEST SINCE 2010

- **US mill consumption (000 short tons)**
  - 2008: 32,655
  - 2009: 28,748
  - 2010: 31,552
  - 2011: 30,009
  - 2012: 29,913
  - 2013: 29,975
  - 2014: 29,992
  - 2015: 30,786

ONGOING BUY-SIDE CONSOLIDATION

- **Largest consumers in NA**
  - 1. International Paper 5,871 17.3%
  - 2. WestRock* 5,129 15.2%
  - 3. Georgia-Pacific 3,302 9.6%
  - 4. Cascades+ 2,342 6.9%
  - 5. Pratt+ 2,122 6.2%
  - 6. Caraustar* 1,351 4.0%
  - 7. Sonoco 1,333 3.9%
  - 8. Graphic* 1,119 3.3%
  - 9. PCA/Boise*+ 1,059 3.1%
  - 10. SCA Tissue NA* 1,045 3.1%

- Total for NA market 33,838,000
  - Top 10 Market Share 72.6%

* = Acquisitions since 2013. += New, converted PMs since 2013.
China’s buy of US recovered paper down 6% from 2011 peak = 916,000-ton drop. 2015 buying increased by 4.2%.

- US mill prices are now 30-40% below 2011 peak.
- Price depression hits processors, suppliers, MRFs.
- Strong dollar reduces some exports, read: high/pulp grades.

Demand unclear? Expect no sustained upticks. In last year, CNY downtime largest-ever, renminbi devalued, two near-stock market crashes, imports/exports still negative. Boxboard oversupply, newsprint cuts.

Leadership changes at two largest US export firms ACN and Ralison. The two sell 40% of US exports.
US RECOVERED PAPER PRICES, 2009-2015

(Annual price average per short ton.)

Notes: OCC and SOP Southeast and the mixed paper national average prices are at the FOB seller’s dock, excluding premiums. OCC=old corrugated containers. FAS=price at port for shipment. SOP=sorted office paper.
Source: PPI Pulp & Paper Week.
## EXPORT FALL-OFF, REVIVAL

- **(000 short tons)**
- **Exports** | **To China** | **China share** | **TOTAL**
- 2009     | 14,132   | 67.2%    | 21,017    
- 2010     | 12,872   | 62.2%    | 20,692    
- 2011     | 15,776   | 68.1%    | 23,179    
- 2012     | 15,647   | 70.5%    | 22,188    
- 2013     | 14,596   | 70.2%    | 20,794    
- 2014     | 14,273   | 67.8%    | 21,059    
- 2015     | 14,860   | 69.3%    | 21,435    

COLLECTION, THE MRF, AND COST

- Higher-cost collection without consistently higher raw material pricing, and MRF quality struggle continues.

- Waste Management (WM) plant shuts cut roughly 20% of its 2015 processed volume.

- How will the MRF of tomorrow be different? New technology, better contracts?


- Extended producer responsibility in BC, Ontario, Canada
SPECS, PROCESSORS

- PSI specification changes approved by ISRI. ONP Nos. 6-8 recast to single-stream curbside SRP. + high quality SCN. Three mixed paper grades become one. Market appears in tune with these changes. MRF growth + ongoing drop in ONP quality caused the changes.

- Fastest-growing processor is a paper company, Pratt Industries, which is the US’s largest buyer, by far, of mixed paper. WestRock, Sonoco, Cascades, IP, Pratt, Caraustar are among 10 largest processors. WM is #1, Republic #2, ReCommunity #7.
RISI USA RECOVERED PAPER PRICE REPORTS

- *PPW/OBM’s US monthly* coverage -- for 17 materials sold to domestic mills in six regions, and for six export grades for mainly China, and Asia, India, Mexico. We also do weekly bulk grade export prices and *Bench$mart*.

- For the OBM/PPW monthly, I survey **80+contacts** from the 1\textsuperscript{st} through the 4\textsuperscript{th}.
  - Survey 40% processors, 40% mills, 20% brokers (export).

- Seek **consensus** + actively cross-checking for the monthly.
METHODOLOGY

- We reviewed our pricing methodology in 2H 2015 and made two additions.

- We committed to the 5th of the month for price publishing + allow for flexibility related to holidays and full weeks where the 4th falls on a Friday.

- Also, if volatile domestic pricing occurs from the 20th to 28th to 31th in a previous month, and a large enough share of a region participated, these movements may be considered in the upcoming 1st-5th period of price collection.
THANKS

› BEST OF LUCK WITH YOUR BUSINESS

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