Where is my Paper?
That’s not another price increase, is it?
Introductions

Greg Lovensheimer
Executive VP & COO, Millcraft Paper
35 Years in the Paper Industry with roles at Mead, MeadWestvaco, NewPage, and Glatfelter
Joined Millcraft in 2013
TODAY’S DISCUSSION

1. Review: How did we get here?
2. The need for imports
3. What’s happening globally that can/will affect imports
4. How much inventory is there and what impact will this have on availability/pricing?
5. Pricing forecast for 2022 – 2023
6. The 5 forces that will impact supply chains going forward
North American apparent consumption of printing & writing grades
Seasonally adjusted, annual rate

- 8mm ton
- 7.5 mm ton
- 6.5 mm ton
- 6mm ton
- 3.5 mm ton
- 2.5 mm ton
- 3 mm ton

Data source: PPC, AF&PA (shipments), US Commerce Department (trade) and Fastmarkets.
Data revised to include uncoated bristol and cotton.
THE BEST MAY & JUNE SINCE BEFORE COVID!


-5%  -2%
HOW MUCH WILL THE COMMERCIAL PRINT MARKET DECLINE, UNDER NORMAL CIRCUMSTANCES, PER YEAR FOR THE NEXT 5 YEARS?

6.5 Million tons
(rough estimate of current market)

If we decline by
2% = 130,000 tons per year
3% = 195,000 tons per year
4% = 260,000 tons per year
5% = 325,000 tons per year

Next 5 years...
2% decline per year = 650,000
5% decline per year = 1,625,000 tons
EVERY YEAR WE NEED TO LOSE A MAJOR MILL

6.5 Million tons
(rough estimate of current market)

If we decline by
2\% = 130,000 tons per year
3\% = 195,000 tons per year
4\% = 260,000 tons per year
5\% = 325,000 tons per year

Next 5 years…
2\% decline per year = 650,000
5\% decline per year = 1,625,000 tons

<table>
<thead>
<tr>
<th>Mill</th>
<th>Number of Machines</th>
<th>Tons ('000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domtar</td>
<td>8</td>
<td>2,311</td>
</tr>
<tr>
<td>Sylvamo</td>
<td>4</td>
<td>1,039</td>
</tr>
<tr>
<td>International Paper*</td>
<td>3</td>
<td>655</td>
</tr>
<tr>
<td>Pixelle Specialty</td>
<td>9</td>
<td>603</td>
</tr>
<tr>
<td>PCA</td>
<td>2</td>
<td>454</td>
</tr>
<tr>
<td>Finch</td>
<td>4</td>
<td>250</td>
</tr>
<tr>
<td>Phoenix Paper</td>
<td>1</td>
<td>209</td>
</tr>
<tr>
<td>All Others</td>
<td>25</td>
<td>953</td>
</tr>
</tbody>
</table>

Source: RISI
Nearly 2 Million tons of UFS papermaking capacity has been permanently closed over the past three years. An additional 388k tons has been removed in just the first six months of 2021.

Source: PPPC and Industry Data
HOW MUCH WILL THE COMMERCIAL PRINT MARKET DECLINE, UNDER NORMAL CIRCUMSTANCES, PER YEAR FOR THE NEXT 5 YEARS?

450,000 tons per month (5,400,000 annual tons)
(rough estimate of current market)

If we decline by
2% = 108,000 tons per year
3% = 162,000 tons per year
4% = 216,000 tons per year
5% = 270,000 tons per year

Next 5 years…
2% decline per year = 540,000 tons
5% decline per year = 1,350,000 tons
Several coated mills were indefinitely idled in 2020 as a result of shuttered economies and drop in demand for coated papers. Over 992k tons of capacity removed from the market, only 140k tons was the result of a paper machine conversion.

### Coated Freesheet Capacity Reductions

<table>
<thead>
<tr>
<th>Country</th>
<th>Company</th>
<th>Location</th>
<th>PPC</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>Verso</td>
<td>Jay, ME</td>
<td>(200)</td>
<td>3Q17</td>
<td>Paper machine conversion to specialty release liners</td>
</tr>
<tr>
<td>U.S.</td>
<td>Appleton Coated</td>
<td>Combined Locks, WI</td>
<td>(365)</td>
<td>4Q17</td>
<td>Receivership. Mill Closure</td>
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<tr>
<td>U.S.</td>
<td>West Linn</td>
<td>West Linn, OR</td>
<td>(245)</td>
<td>4Q17</td>
<td>Mill Closure</td>
</tr>
<tr>
<td>U.S.</td>
<td>Sappi</td>
<td>Somerset, ME</td>
<td>(260)</td>
<td>2Q18</td>
<td>Converting PM#1 from to Consumer Packaging.</td>
</tr>
<tr>
<td>U.S.</td>
<td>Sappi</td>
<td>Westbrook, ME</td>
<td>(42)</td>
<td>2Q20</td>
<td>PM9 permanent shutdown</td>
</tr>
<tr>
<td>U.S.</td>
<td>Nine Dragons</td>
<td>Rumford, ME</td>
<td>(140)</td>
<td>Dec-20</td>
<td>Conversion of R15 to LtWt. Linerboard</td>
</tr>
<tr>
<td>U.S.</td>
<td>Verso</td>
<td>Wisconsin Rapids</td>
<td>(540)</td>
<td>Jul-20</td>
<td>Indefinitely idling mill due to COVID and structural declines</td>
</tr>
<tr>
<td>U.S.</td>
<td>Verso</td>
<td>Duluth, MN</td>
<td>(270)</td>
<td>Jul-20</td>
<td>Indefinitely idling mill due to COVID and structural declines</td>
</tr>
<tr>
<td>U.S.</td>
<td>Sappi</td>
<td>Westbrook, ME</td>
<td>(42)</td>
<td>2Q20</td>
<td>PM9 permanent shutdown</td>
</tr>
</tbody>
</table>

Source: PPC and Industry Data
### Geographic Business Segment Operating Results | Quarterly

<table>
<thead>
<tr>
<th></th>
<th>$ Million</th>
<th>Sales</th>
<th>D &amp; A (^1)</th>
<th>Adj. Operating Profit (^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industrial Packaging</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>$3,355</td>
<td>$3,371</td>
<td>$3,485</td>
<td>$181</td>
</tr>
<tr>
<td>Europe</td>
<td>$350</td>
<td>$364</td>
<td>$396</td>
<td>$15</td>
</tr>
<tr>
<td>Europe Coated Paperboard</td>
<td>$92</td>
<td>$100</td>
<td>$98</td>
<td>$4</td>
</tr>
<tr>
<td>Brazil</td>
<td>$54</td>
<td>$0</td>
<td>$0</td>
<td>$(1)</td>
</tr>
<tr>
<td><strong>Global Cellulose Fibers</strong></td>
<td>$568</td>
<td>$582</td>
<td>$581</td>
<td>$(54)</td>
</tr>
<tr>
<td><strong>Printing Papers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>$446</td>
<td>$363</td>
<td>$366</td>
<td>$21</td>
</tr>
<tr>
<td>Europe</td>
<td>$287</td>
<td>$248</td>
<td>$250</td>
<td>$9</td>
</tr>
<tr>
<td>Brazil</td>
<td>$176</td>
<td>$198</td>
<td>$168</td>
<td>$14</td>
</tr>
</tbody>
</table>

**Industrial Packaging**: 11-13% ROS

**Global Cellulose Fibers**: (Data not provided)

**Printing Papers**: 4-6% ROS

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Earnings Presentation | First Quarter 2021
See footnotes beginning on slide 17
U.S. Corrugated Packaging Shipments

<table>
<thead>
<tr>
<th>Year</th>
<th>Shipments (BSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>373</td>
</tr>
<tr>
<td>1997</td>
<td>378</td>
</tr>
<tr>
<td>1998</td>
<td>390</td>
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<td>396</td>
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<td>2000</td>
<td>405</td>
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<td>2001</td>
<td>401</td>
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<tr>
<td>2002</td>
<td>380</td>
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<td>2003</td>
<td>379</td>
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<td>2004</td>
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<td>2010</td>
<td>357</td>
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<td>2020</td>
<td>407</td>
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<td>2021</td>
<td>418</td>
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<td>2022</td>
<td>423</td>
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<tr>
<td>2023</td>
<td>430</td>
</tr>
<tr>
<td>2024</td>
<td>439</td>
</tr>
<tr>
<td>2025</td>
<td>448</td>
</tr>
<tr>
<td>2026</td>
<td>457</td>
</tr>
</tbody>
</table>

Historical Data Source: Fibre Box Association
2022-2026: 1.9% CAGR (RISI – February 2022, 5-yr forecast)
DIRTY SECRET OF THE NORTH AMERICAN PAPER INDUSTRY - INVENTORY

North American Paper Industry Supply Chains

Issues: Working Capital tied up at far end of supply chain, majority of obsolescence risk is on the mill. Prices held at lower end due to lack of alternatives to building inventory.
DIRTY SECRET OF THE NORTH AMERICAN PAPER INDUSTRY - INVENTORY

North American Paper Industry Supply Chains
Plan B Emerges

Opportunity: Working Capital demands are lowered improves mill ROTC, forward staged inventory has greater probability of being tied to specific piece of business, so risk of obsolescence is lowered. Price stability exists as inventory is a shared responsibility.
Mid-Term elections seem to drive an additional 50,000-100,000 tons of UFS and CFS papers. 2022 Mid-term elections are likely to exceed this due to the charged political environment.

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How Long Does this last?
5 key factors that will determine that ...

1. **Imports**
   - European - Natural Gas Issues & Container access
   - Asia – Container Cost & Domestic Demand
2. **Demand** (economic headwinds)
3. **Inflation**
4. **Supplier Issues**
   - Strategic alternatives (board/brown)
   - Capacity rationalization
   - Suppliers still at risk
5. **Labor**
   - Impacting Envelope Market
   - Impacting third party converting that the industry relies on
THE NORTH AMERICAN MARKET NEEDS IMPORTS TO BALANCE OUT DEMAND REQUIREMENTS

UFS Market Overview

Available Supply: 6.478 M tons

Imports: +664k
Exports: -108k
NA Demand: 6.37

10%

Europe: 55%
South America: 31%
Asia: 14%

CFS Market Overview

NA Capacity: 2.37M
STC 95%: -112k
Imports: 623k
Exports: -207k
Shortfall/Excess: 32k
NA Demand: 2.64M

24%

Europe: 50%
South America: 0%
Asia: 50%
Canada: 0%

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Natural Gas Prices in Europe will drive costs
Global Freight Challenges

- West Coast Port Labor Agreement expired July 1st.
- It involves 29 West Coast ports and 22,400 workers!
- Automation & productivity improvements are a key sticking point. West coast ports are some of the least efficient in the industry!
- Calif AB5 also impacting independent truckers which will impact port productivity as well!
- Relocated freight from West to East is creating unintended consequences. Volumes are now up as much as 192% in the East!

- The movement to the East is causing freight to sit in containers an average of 13 days longer (25 days to West coast vs 38 to East). Tying up capacity.
- Concerns over rail line mismatch as railways cannot adjust to the volume movement like truck capacity can. Union Pacific in West versus CSX and Norfolk & Southern in the East.

<table>
<thead>
<tr>
<th>Route</th>
<th>28-Jul-22</th>
<th>4-Aug-22</th>
<th>11-Aug-22</th>
<th>Weekly change (%)</th>
<th>Annual change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Index</td>
<td>$0,762</td>
<td>$0,628</td>
<td>$0,430</td>
<td>-3% ▼</td>
<td>-32% ▼</td>
</tr>
<tr>
<td>Shanghai - Los Angeles</td>
<td>$7,199</td>
<td>$6,985</td>
<td>$6,834</td>
<td>-2% ▼</td>
<td>-34% ▼</td>
</tr>
<tr>
<td>Rotterdam - New York</td>
<td>$9,921</td>
<td>$9,939</td>
<td>$9,945</td>
<td>0%</td>
<td>9% ▲</td>
</tr>
</tbody>
</table>

**Spot freight rates by major route**

Our assessment across eight major East-West trades.
North American Paper Industry Cost Drivers

US input cost inflation
Percentage change versus January 2021

UFS & CFS Pricing Forecasts 2023-24

1- Price Increase 2H of ’22
   Price Stability thru Q1 of ’23, then softens

2- Price Increases 2H of ’22
   Price Stability into Q2 of ’23
CM & UM Pricing Forecasts 2023-24

2- Price Increases 2H of ’22
Price Stability in ‘23

Data source: Fastmarkets estimates.
5 Biggest Supply Chain Trends

1) Technology
2) Environmental Sustainability
3) Durability of Supply Chain Links
4) Partnerships
5) Transportation
KEY TREND #1: TECHNOLOGY

1. Automation to overcome labor shortages
2. Data > Information > Streamlined Decisions > Faster Market Response
3. Integrated data
   • System to system integrated to reduce cost of clerical updates
4. Omni channel experience
Key Trend #2: Environmental Sustainability

- Carbon footprint is known and shared
- Supplier Sustainability Scorecards
- Reduction in fossil fuel vehicles
- Extended Producer Responsibility
Key Trend #3: Durability of Supply Chain Links

- Do you know your partners’ long-term vision for themselves, what risks do they see, are they working to ride it out or reinvent for longevity?
- What inherent risks does their model have?
  - Raw Materials
  - Transportation
  - Labor
  - Environmental Sustainability
  - Do they have a financial Right to Win?
- Who are your suppliers’ suppliers?
- Supplier Sustainability Scorecard (including cyber security)

Supply chain attacks, by the numbers

- 700 organizations were affected by third-party/supply chain compromises in 2020
- 42 million individuals impacted by third party/supply chain compromises in 2020
- 39% of global business leaders believe supply chain partners pose a high/somewhat high risk to their organization
- 43% of leaders who report no confidence in their ability to prevent third-party cyber threats
- 430% increase in attacks against the software supply chain between 2019 and 2020

Source: 2020 Marsh McLennon Study
Key Trend #4: Partnerships

- Fewer / more concentrated by segment
- Global scale in nature
- System integration provides visibility to entire supply chain
- Advanced forecasting and supply agreements in place, more contract less spot demand
- Downstream converting will remain a challenge (labor availability, fixed cost absorption, scale is needed)
Key Trend #5: Transportation

- Long term driver availability
- Carbon footprint – tax??
- Cost to operate last mile
- Liability issues with owning/operating fleet
- Cameras & GPS everywhere!

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Wrap Up/Conclusion

1. Demand will exceed domestic capacity for next 18+ months. This means we will require imports

2. Imports will be challenged due to global economic issues (European energy crisis)

3. Expect more price increases from European imports this winter as energy issues persist and reach new crisis levels

4. Asian imports may be answer but supply chain costs still very high and not easing (Zero-Covid policy & a resurgent Chinese economy could cause issues here)

5. Sustainability will play a bigger role in future (carbon footprint, energy platform)

6. Technology will be required to manage & monitor supply chains efficiently

7. Labor will continue to be a challenge and will affect service / selection (special sizes, digital, cartons)
Thank You

Questions?