

### ***Biorefinery Update***

The biorefinery concept, unheard of just a few years ago, is now an important part of conversations about the future of the paper and forest products industries. Why not, as the petroleum refiners do, make maximum use of the biomass resource by separating its components and converting each to a valuable end product? Indeed, doing so would represent the culmination of a natural progression in resource utilization: In the nineteenth century it was not unusual to use the sulfite pulping process to extract less than half of the value of the wood feedstock before discarding the rest as waste (and simultaneously creating an environmental problem). Converting to the kraft process was an early step in this progression, providing for the utilization of that part of the wood not converted to pulp. Using it to generate steam and power was the signature achievement of that process. The biorefinery idea goes one step further by providing for the production of not only pulp, paper, steam and power, but also chemical coproducts.

Increasingly, researchers have been exploring a variety of pathways toward maximum resource utilization and industry is reducing the concept to practice, as may be illustrated by many relevant news reports. One example comes from the University of York in the UK, where chemists have developed technology for converting biomass to a valuable intermediate. Conventional biorefineries produce ethanol from biomass. The rationale for doing so is that ethanol can substitute for oil. A problem with this is that oil prices fluctuate and ethanol cannot compete with cheap oil. The solution proposed by the York chemists is to convert biomass not into ethanol but into a different product, a chemical intermediate that can be converted to a valuable solvent.

Another example is the biorefinery established by American Process International (API) in Alpena, Michigan. It was constructed as a precommercial demonstration plant to produce ethanol and potassium

acetate. More recently, API has demonstrated the plant's versatility by producing wood molasses, a binder for animal feeds. The company is also looking into the possibility of producing higher value products such as xylitol, a component of low-calorie dietary products

### ***Trend Indicators from Industry Intelligence Inc.***

Industry Intelligence Inc. has provided market intelligence to more than 600 companies worldwide since it began as Forestweb in 1999. Industry Intelligence delivers a daily report featuring news of the paper and forest products industries. For your subscription visit: <http://www.industryintel.com>

Below is a sampling of recent Industry Intelligence headlines, chosen to mirror significant trends and other interesting developments in and around the paper and forest products industries.

***US containerboard production in July down 0.7% year-over-year, but average daily output 0.3% higher month-over-month; July containerboard operation rate drops to 93.9% and year-to-date rate of 94.4% is 1.7 percentage points lower versus year ago: AF&PA***  
Complete AF&PA reports, with detailed tables, charts and historical data, can be purchased by contacting Caroline Nealon at AF&PA: [http://Statistics\\_Publications@afandpa.org](http://Statistics_Publications@afandpa.org) or 202-463-2448

***US July boxboard output down 2.5% year-over-year but up 2.2% month-over-month; production of all grades down from year ago and output off from month earlier for unbleached kraft boxboard but up for solid bleached boxboard & liner, recycled board: AF&PA***  
The July 2016 U.S. Paperboard Report is available from AF&PA; see note above.

***US kraft paper shipments in July fall 10.6% versus year ago, which had second highest shipments in***

**2015, while month-end inventories increase to 80,200 tons from 68,600 tons; year-to-date kraft paper shipments decline 3.7% year-over-year: AF&PA**

Total kraft paper shipments in July were 133,000 short tons.

***Thea Foss Waterway in Tacoma, Washington, once considered a marine garbage dump that was polluted with chemicals from such operations as former Simpson Tacoma Kraft paper mill, thriving after 10-year cleanup, with mix of housing and businesses***

A decade has passed since the EPA finished the Superfund project to repair the bay.

***Guangdong Shaoneng Group's new tissue machine starts up at Shao Guan mill in Guangdong Province, China***

The machine, from Andritz, processes bamboo pulp at a design speed of 1,600m/min.

***Tolko's announcement that it will close kraft paper mill in The Pas, Manitoba, as of Dec. 2 raises local concerns about effect on community, including loss of jobs and tax revenue; Unifor official says efforts under way to find another buyer for the mill***

The mill has operated in the northern Manitoba town since the late 1960s.

***US July boxboard output down 2.5% year-over-year but up 2.2% month-over-month; production of all grades down from year ago and output off from month earlier for unbleached kraft boxboard but up for solid bleached boxboard & liner, recycled board: AF&PA***

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***Spain's paper and paperboard production in 2015 up year-over-year by 2.6%, led by specialty and sanitary paper segments, which rose 15.3% and 9.2%, respectively, but demand growth highest for packaging paper and paperboard: Aspapel***

Demand growth was greatest in packaging paper and paperboard, with consumption up 8.2% for containerboard, 6.8% for coated paperboard, and 9.3% for other packaging papers. Paper and paperboard imports increased 2.3% in 2015 compared to 2014, while exports declined by 4.1%.

***Scientists develop fire-resistant and antibacterial paper***

Chinese researchers have developed a fire-resistant paper by using ultra-long hydroxyapatite nanowires as

raw material; the paper also has high mechanical strength and is antibacterial.

***2016 shaping up to be a good year for bookstores***

Bucking the recent rise of e-books, bookstores are appearing to make a comeback this year. In the first half of 2016, bookstore sales rose 6.1% year-over-year, generating \$5.44 billion, according to the US Census Bureau.

***US kraft paper shipments in July fall 10.6% versus year ago, which had second highest shipments in 2015, while month-end inventories increase to 80,200 tons from 68,600 tons; year-to-date kraft paper shipments decline 3.7% year-over-year: AF&PA***

Bleached Kraft paper shipments decreased from 7700 short tons in June to 6700, while unbleached shipments decreased from 130.1 to 126.3 thousand short tons.

***Paper output in Sweden falls 5% year-over-year in 2015, the largest decline among six leading paper producing countries in Europe; in same period, paper output increases in Spain, Italy and Germany, decreases in Finland and France: Aspapel***

Production of paper and board increased by 2.6% in Spain, being the largest increase in Europe. Paper production also increased in Italy and Germany. Finland and France also experienced a decline in paper production in 2015.

***Tranlin's plans to build US\$2B paper mill in Chesterfield County, Virginia, on schedule, with work continuing on planning, permits and acquiring 650-acre parcel, says company; but little evidence of progress at site since October 2015 groundbreaking***

Tranlin wants to start limited production in 2018 and be fully operational by 2020. The mill would produce pulp and paper from straw, corn stalks, and other fibrous materials, in addition to a high-grade fertilizer manufactured from an organic byproduct of the production process.

***Pulp and paper industry faces wave of consolidation due to excess capacity that has cut prices to lowest levels in two decades, says Suzano CEO; family-owned model of Brazil's pulp and paper industry hampering potential consolidation, say other executives***

According to rating agency Moody's, global pulp production is expected to reach 70 million tonnes in 2018, up from the projected 63 million tonnes by the end of this year.

***Pulp and paperboard output in Finland rises in H1, driven by investments, with production up year-over-year 4.2% for pulp, to 3.7 million tonnes, and 6.6% for***

**paperboard, to 1.6 million tonnes, while paper output drops 6.7%, to 3.4 million tonnes: FFIF**

This according to the Finnish Forest Industries Federation.

**Tappi launches online forum, called TAPPI Connect, to provide online resource for collaborating, sharing knowledge and expanding personal and professional networks; users can participate in real-time communication, create blogs, among other features**

The platform provides an online resource for members, non-members, and volunteers.

### **Paper Quotes**

“Unfortunately, despite years of continued effort to improve the cost structure and business results of the operations, the business is not financially sustainable.”

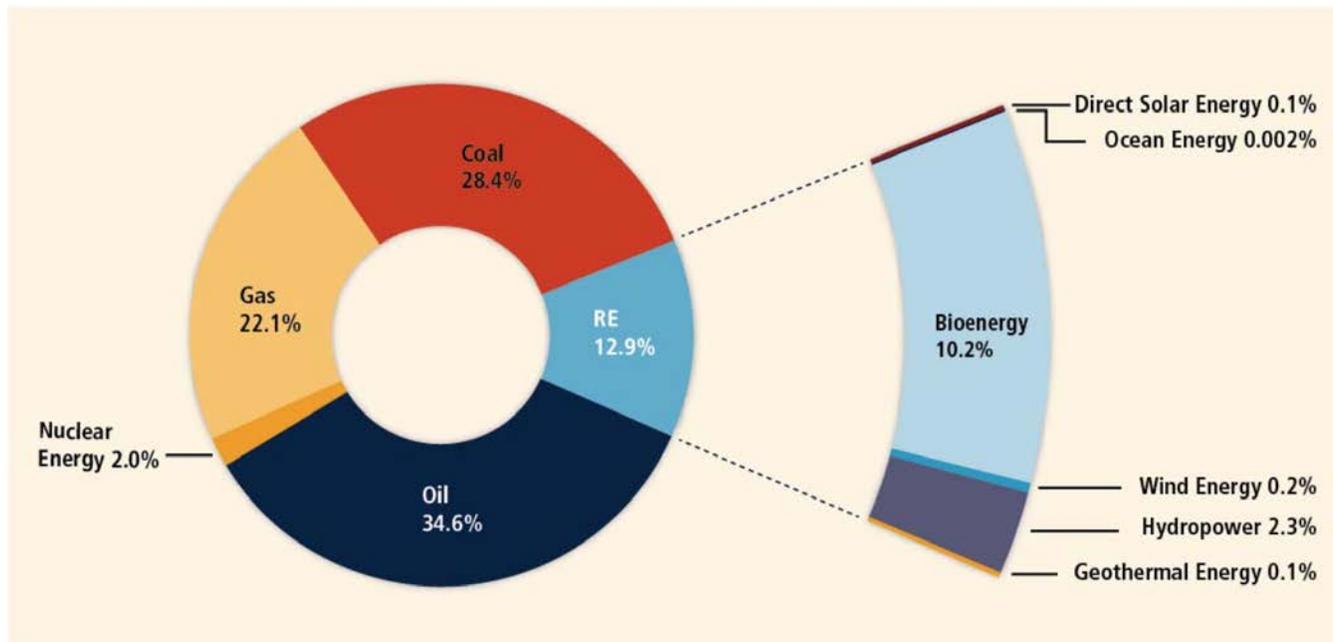
– *Tolko president and CEO Brad Thorlakson, on the*

*company’s decision to close the kraft mill in The Pas, Manitoba.*

“Fibria understands that healthy business growth depends not just on economic and financial aspects but also on social and environmental aspects. We believe in shared value and having our principle recognized by entities with global credibility is reason for celebration.” – *Marcelo Castelli, Fibria CEO, acknowledging the company’s inclusion in Fortune magazine’s list of companies that “Change the World.”.*

### **Statistics Corner: Global Energy Sources**

The chart below shows that, in 2008, renewables were the source of only 12.9% of the world’s energy use. ■



Shares of energy sources in total global primary energy supply in 2008

### **Global Energy Sources**

(Source: Intergovernmental Panel on Climate Change)