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Season's Greetings!

On behalf of the CPBIS management team and the entire body of CPBIS faculty, staff and students, I extend best wishes for this holiday season to all of our newsletter readers. We value your continued interest in the Center's work as we strive to help meet the industry's research, education, and outreach needs. During this joyous season, we hope that your travels are safe and your holidays relaxing.

*With warm regards,
Pat McCarthy, Director*

The Bioeconomy: Opportunity or Threat?

At the same time as North American demand for paper declines, an increasing share of the output of the forests is finding its way into the bioenergy supply chain. Currently, the main route is via wood pellet production. As cellulosic biofuels capacity comes on stream, there will be a corresponding further increase in demand for woody feedstocks.

Climate change considerations, high heating oil prices and fears of future fossil fuel shortages are prompting governments to pass legislation that favors the production of energy from alternative fuel sources, and wood pellets are a leading candidate. They are made by hammer milling, compressing and extruding the woody raw material. Demand for the pellets is particularly strong in European Union countries; they aim to get 20% of their energy from renewable sources by 2020. Coal-fired plants there are trending towards co-firing pellets with coal. This has not gone unnoticed

in the U.S. and Canada, both of which have gone heavily into pellet production to satisfy export markets, as well as domestic ones. According to a recent IEA Bioenergy report, "Global Wood Pellet Industry Market and Trade Study," (<http://www.bioenergytrade.org/downloads/t40-global-wood-pellet-market-study-final.pdf>) global wood pellet production reached 14.3 million tons in 2010, while consumption was close to 13.5 million tons, an increase of more than 110% compared to 2006. In 2006 the U.S. produced slightly more than 1 million tons. By 2010 U.S. capacity had grown to 6 million tons. Canadian capacity was 2.5 million tons in 2010.

Although sawdust from sawmills has traditionally been the main raw material for the production of wood pellets, the rapid growth in pellet demand has resulted in investments in large-scale plants, ranging up to several hundred thousand tons. At the same time, the availability of sawmill residues has decreased, partly as a result of recession-related declines in homebuilding, but also because of the growth in the pellet industry itself and growth in competing sectors. Difficulties in sourcing feedstocks at competitive prices are contributing to a low utilization rate of installed pellet capacity. Consequently, producers see a need for a more stable and secure feedstock supply and are turning their attention to roundwood and forest residues.

The production of cellulosic biofuels, though currently minuscule, is finally showing signs of coming to life. The Environmental Protection Agency has been successful in fending off challenges to the expanded Renewable Fuels Standard (RFS2), which mandated the use of at least 8.65 million gallons of cellulosic ethanol in 2012. Actual domestic production in 2012 to date has only been about 20,000 gallons and prospects for success of the sector seemed to dim when BP abandoned plans for a commercial operation in Florida. On the other hand, there have been positive

developments that seem to justify optimism. KiOR Inc. has begun operating its cellulosic biorefinery in Columbus, MS, which will use southern yellow pine to produce 11 million gallons per year of what they call renewable crude, a “drop-in” biofuel that does not need to be blended with gasoline. Chemtex, which operates a commercial scale cellulosic ethanol plant in Italy, is developing a similar plant to produce cellulosic ethanol in North Carolina with a goal of completion in 2014. Ineos, a European oil and chemical company, is nearly finished building a plant in Vero Beach, FL that will convert wood and woody garbage into eight million gallons per year of ethanol via a syngas intermediate.

The growing demand for forest-based biomass, whether for wood pellets or cellulosic biofuels, has sparked concern within the paper industry, which foresees a potentially negative impact on the availability of fiber for paper production. Donna Harman, CEO of the American Forest and Paper Association, argues that government mandates to encourage biofuels could threaten supply and costs related to feedstock inventories and, ultimately, jobs. (see <http://energy.nationaljournal.com/2012/07/whats-the-way-forward-on-biofu.php#2231026>) She notes that:

- Per ton of wood used, the forest products industry sustains nine times the number of total jobs as the biomass energy sector.
- Woody biomass is an essential raw material for carbon-sequestering items such as paper, packaging, and wood building products.
- The paper industry produces approximately two-thirds of its energy by using forest residues and manufacturing byproducts to create both thermal and electrical energy.
- EPA’s Renewable Fuel Standard calls for 16 billion gallons of cellulosic ethanol in the domestic fuel supply by 2022; estimates show that if only half of this amount comes from woody biomass, it will exceed the total amount of wood currently used by the pulp and paper industry.

Harman argues that “If we are to create a sustainable path forward on renewable energy production, market forces – not government mandates – should determine the use of wood and wood residuals for renewable energy. Any policies implemented should treat

existing industry biomass energy production equally, guard against government incentives for fiber supplies being diverted for a particular use, and maintain open market access. Recognizing the long growing cycle for forests, we must take care to ensure a sustainable fiber supply that can meet the demands of the energy market AND the manufactured products markets for paper, wood, chemical, and pharmaceuticals.”

AF&PA News

The American Forest and Paper Association recently released its September and October 2012 Printing/Writing and Recovered Fiber Statistics Reports and its October 2012 Containerboard, Kraft Paper and Paperboard Statistics Reports. Below are the key findings:

- Total printing-writing paper shipments decreased 2 percent in October compared to October 2011, primarily driven by declines in uncoated mechanical shipments.
- October shipments of coated free sheet papers increased year-over-year for the fifth time in the past twelve months, reaching the highest level since September 2010.
- October shipments of uncoated free sheet paper in October increased 2 percent over the same period in 2011, with mill inventories at the lowest level since July 1995.
- October uncoated mechanical paper shipments decreased 23 percent compared to October 2011, with YTD shipments down 16 percent relative to the previous year.
- Total September printing-writing paper shipments decreased 7 percent compared to September 2011.
- All four major printing-writing grades posted decreases in September compared to the previous period.
- The September decrease in shipments followed the drop in U.S. purchases of printing-writing papers by 10 percent compared to September 2011.
- August U.S. imports of coated free sheet (CFS) papers decreased year-over-year for the tenth time in the past 12 months.
- August U.S. exports of uncoated free sheet (UFS) papers increased year-over-year by

more than 20 percent – the third 20+ percent increase in 2012.

- September shipments of coated mechanical (CM) papers reach second highest monthly total for the year but are still down year-over-year.
- Total U.S. industry consumption of recovered paper in October was 2.49 million tons, 6 percent higher than in September 2012
- October recovered paper consumption was up across all grades except for newspapers, which remained at its September low and was 25 percent lower than in October 2011.
- October year-to-date total recovered paper consumption was 4 percent lower than during the same period last year.
- U.S. exports of recovered paper remained approximately flat, dropping 1 percent in September compared to August. Average export \$/ton figures were lower across all grades when compared to the prior month.
- Year-to-date exports of recovered paper in 2012 were 7 percent lower than during the same period in 2011.
- Total U.S. industry consumption of recovered paper in September was 2.36 million tons, 8 percent lower than August 2012. Year-to-date total consumption in 2012 is 4 percent lower than during the same period last year.
- U.S. exports of recovered paper, as reported by the U.S. Census Bureau, decreased 4 percent in August compared to July, led by a drop in mixed papers exports, which fell after a very strong July.
- Year-to-date exports of recovered paper in 2012 are 6.5 percent lower than during the same period in 2011.
- Containerboard production rose 2.6 percent over September 2012 and 0.5 percent compared to the same month last year.
- The month-over-month average daily production decreased 0.7 percent.
- The containerboard operating rate for October 2012 gained 0.1 points over September 2012, increasing from 96 percent to 96.1 percent.

- Total October kraft paper shipments were 128.3 thousand tons, a decrease of 5 percent compared to the prior month.
- Total inventory was 72.9 thousand tons in October.
- Both unbleached and bleached kraft shipments decreased year over year.
- Total boxboard production increased by 2.6 percent compared to October 2011 and increased 0.5 percent from September.
- Unbleached kraft boxboard production decreased over the same month last year and decreased compared to September.
- Total solid bleached boxboard & liner production increased compared to October 2011 and increased compared to September. The production of recycled boxboard increased compared to October 2011 and increased when compared to September.

The complete surveys with detailed tables can be purchased by contacting Caroline Nealon (Statistics_Publications@afandpa.org or 202-463-2448).

Recent Industry Intelligence Inc. Headlines

[Industry Intelligence Inc.](http://www.industryintel.com) 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 selection of particularly relevant recent headlines, together with brief synopses.

December 4 - 10

IP CEO John Faraci recognized by Kennan Institute for contributions to corporate and public service related to US-Russia relations, including his leadership at IP and formation of Ilim Group, one of the largest US-Russian JVs

Faraci will receive the Woodrow Wilson Award for Corporate Citizenship for his leadership and the formation of Ilim Group, one of the largest U.S.-Russian joint ventures with over 20,000 employees in the Russian Federation

UPM issued patent application number for review of its fibre-containing sheets with large content of nanofibrillated cellulose

The inventors claim to have overcome problems associated with using nanofibrillated cellulose to improve sheet properties.

Sappi to purchase more than US\$2.6M in technology, engineering from Lenzing Technik as part of conversion process at its pulp plant in Cloquet, Minnesota, to dissolving pulp from paper pulp

The newly equipped facility is anticipated to start operation in May 2013.

Trademark issued to Cascades Recovery by US Patent and Trademark Office--We Care So Much About Paper and Packaging; When You're Done With It We Want It Back

The application serial was filed on Sept. 30, 2010 and was registered on Nov. 27.

Empresas CMPC approves investment in new 1.3 million tonnes/year pulp production line at its Guaiba, Brazil, mill; US\$2.1B project will almost double company's market share of global pulp, expected to begin production by Q1 2015

This unit will be in addition to the existing bleached eucalyptus line at the site, which currently has an annual capacity of 450,000 tons per year.

November 27 – December 3

Western Europe's paper and paperboard market expected to show CAGR of 1.6% for five-year period 2011-2016, drive market to value of US\$74.6B by end of 2016, report forecasts

Although consumption was down 1.9% per year and revenue was down 2.9% per year between 2007 and 2011, the Western European paper & paperboard market is forecast to accelerate, with an anticipated annual growth rate of 1.6% for the five-year period 2011 - 2016, which is expected to drive the market to a value of \$74.6 billion by the end of 2016.

Tetra Pak featured on CNN International's Make, Create, Innovate program about transformational impact of packaging, highlighting company's packaging and processing solutions to deliver food safely to billions of people daily

Tetra Pak sold 167 billion packages around the world in 2011.

November 20 - 26

Verso Paper's Sartell mill the latest to close as US river towns in the forest lose more than 100 paper mills from consolidation over a decade; analysts say North American demand for three types of coated, SC paper could fall 18% by 2024

To avert a similar fate, two mills in Minnesota, UPM Blandin and Sappi Fine Paper in Cloquet, are working toward a future in which they produce something other than

paper. Sappi is spending \$170 million to convert its pulp mill to produce chemical cellulose and the parent company of the Blandin mill has invested in research on cellulosic nanomaterials.

Resolute Forest Products to indefinitely idle its 200,000 tonnes/year kraft mill, 105,000 tonnes/year PM No. 5 producing groundwood specialty printing papers at its facility in Fort Frances, Ontario, in November; 239 employees to be affected

Resolute is exploring alternative product possibilities for its Fort Frances pulp mill, which will be idled in a manner that will protect the equipment.

Fibria executive says moment is favorable for pulp prices to rise in next few months, citing recovering Asian demand and supply cutbacks; however, market outlook not favorable enough to reconsider expansion of its Três Lagoas mill

The end of the European summer, a pickup in Chinese demand and unexpected capacity reductions signal a "tight" pulp market in the short and medium terms.

November 13 - 19

Paper and paperboard market in North America forecast to see 0.7% CAGR for five-year period 2011-2016, expected to drive market to value of US\$80.4B by end of 2016, report finds

By contrast, the market had total revenue of \$77.7 billion in 2011, representing a compound annual rate of change (CARC) of -3% between 2007 and 2011.

Investments in market pulp industry will force 'massive changes' on demand and supply sides, price differentials to lead to further fiber substitution; China remains key driver, Hawkins Wright's Tom Wright tells audience in London

The speaker noted that the sometime large price differentials between softwood kraft, hardwood kraft, and high-yield pulps can stimulate substitution; and that there will be continued substitution of eucalyptus pulp for softwood and other hardwood pulps.

November 6 - 12

London Pulp Week attendees hear talk about mill capacity plans regarding Klabin and Fibria in Brazil, Montes del Plata in Uruguay, Ilim in Russia, Oji Paper in China, others

Stora Enso/Arauco, Montes del Plata 1.3 million t BEKP, Uruguay (Q2 2013); Klabin, Paraná, Brazil, 1.5 million t BEKP (H1 2015); Fibria, Três Lagoas, Brazil, 1.75 million t BEKP addition (tentative, 2014); Eldorado, Três Lagoas, Brazil, 1.5 million t BEKP (Q4 2012); Ilim Group, Bratsk, Russia, 0.5 million t BSKP (Q1 2013); Oji Paper, Nantong, China,, 0.4 million t printing paper (timing indefinite);

Level of expertise and investment required for manufacturing dissolving pulp, combined with market

and cost vagaries, cause particular challenges for newcomers, say conference speakers; Fortress Paper's financial woes noted

According to speakers at the second annual "Investing in Cellulose" conference, the spot price of commodity grade dissolving pulp has dropped into the low \$900s/tonne. These prices, along with operational issues, have left [Fortress Paper](#) Ltd.'s recently converted DP mill in Thurso, Quebec, struggling.

October 30 – November 5

Sappi to expand existing fiberline at its Ngodwana, South Africa, mill to produce dissolving pulp, with expanded fiberline to produce 210,000 tonnes/year of dissolving pulp; mill startup scheduled for early 2013

In this project, called Go-Cell, the existing fiberline is being expanded to produce chemical (specialised) cellulose, also known as dissolving pulp.

Brazilian eucalyptus pulp producer Jari Celulose to stop operations at end of January; closure will mean loss of about 410,000 tonnes/year from the market

The closure of Jari will ease some of the impact on global BEKP capacity of the startup this month of Eldorado Brasil's 1.5 million tonnes/year mill in Três Lagoas, which will not immediately be producing at full capacity.

October 23 - 29

Domtar to invest US\$30M to repurpose Bennettsville, South Carolina, mill to shift production capacity to specialty and packaging base papers from communication papers--part of previously announced supply agreement with Appleton Papers

According to Bill Edwards, vice-president and mill manager at Domtar's Marlboro mill, "The conversion of our production capacity is an example of Domtar adapting to meet market demands for the long-term.

Mississippi River Pulp to close down its recycled fiber mill in Natchez, Mississippi, citing lack of demand; closure to affect 79 workers, effective Oct. 31

MRP bought the former Mississippi River Corporation (MRC) mill for \$8.2 million in 2010 after MRC had declared bankruptcy, citing low demand for its products as one of the reasons.

Study finds pulp, paper mills expect their access to water will be threatened in next five years, majority of global mills expect to make changes to water usage goals: Fisher International

The study, titled "The 2012 Global PPI Water Benchmark Report," is available from Fisher International (info@fisheri.com).

Statistics Corner: Fuel Ethanol Production

As shown in Figure 1 below, the Americas are the source of nearly all of the world's fuel ethanol, most of which is produced from corn or sugarcane. Cellulosic ethanol is not yet a significant part of the total. ■

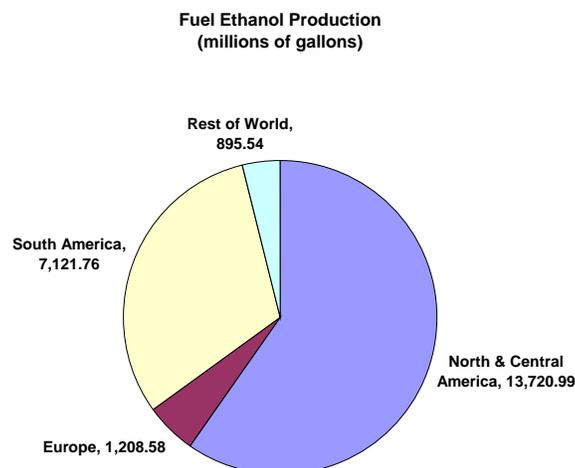


Figure 1. World Fuel Ethanol Production

(source: <http://cta.ornl.gov/bedb/biofuels.shtml>)