

## OUTLOOK

19 March 2018

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## Paper, Packaging & Forest Products - Global

# Outlook remains stable as escalating costs offset higher prices

Our outlook for the global paper and forest products industry is stable. This outlook reflects our expectations for the fundamental business conditions in the industry over the next 12 to 18 months.

- » **Our outlook for the global paper and forest products industry is stable.** We expect consolidated operating income of the 40 paper and forest product companies that we rate will increase by 2%-4% over the next 12-18 months. Higher prices, productivity improvements and synergies from recent acquisitions, as well as stronger wood product, paper packaging and market pulp demand, will drive profit growth. This will be partially offset by lower paper demand and rising freight, labor, energy and chemical costs. Fiber prices, typically the largest input cost for most of the industry's products, will be volatile, but average 2018 costs will be flat compared to average 2017 costs.
- » **The outlook for the paper packaging and tissue subsector remains stable.** Most companies that we rate in this sector will generate modestly stronger operating earnings in 2018 (+3%). Stronger e-commerce and agriculture packaging demand and the full flow-through of higher paper packaging prices will more than offset escalating freight, labor, energy and chemical costs. We expect small price declines in most regions for several tissue grades as the pace of new tissue capacity exceeds demand growth.
- » **Our outlook for the paper subsector remains negative.** North American and European operating income will decline as falling demand will more than offset higher pricing. In Latin America, operating earnings for paper producers will improve as economic growth improves, and as larger rated producers take market share from smaller unrated producers.
- » **The outlook for the timber and the wood products subsector is stable.** Operating income for this subsector will increase 4% as the growing US housing market will accelerate the harvesting of timberlands and increase demand for wood products such as lumber, plywood, oriented strandboard (OSB), and engineered wood products (EWP). Prices for most grades in this subsector will be close to 2017 levels but North American OSB prices will decline in 2018 as the pace of additional supply exceeds demand growth.

- » **Our outlook for the market pulp subsector remains stable.** Operating income for this subsector will increase about 3%, as demand grows and average prices across most pulp grades remain flat for the year. Strong prices in the beginning of 2018 will likely reverse during the second half, as the ramp-up of additional pulp capacity outpaces demand.
- » **In March 2017, we incorrectly assigned a stable global outlook based on our forecast of 2%-4% earnings growth.** The rated industry's consolidated operating income actually increased by 4.8% in 2017, which warrants a positive outlook. Actual earnings growth beat our forecast primarily due to stronger than expected North American growth, driven by stronger than expected North American lumber, OSB and pulp prices. Operating earnings growth in Europe and Latin America were in-line with forecasts.
- » **What could change the global industry outlook.** We would change the outlook to positive if we believed that consolidated operating income would increase by more than 4% over the next 12 to 18 months. This would most likely result from a combination of lower costs and higher prices across several grades and regions due to a tight demand-supply balance (for example, some of the expected new capacity expansion projects are delayed or canceled) or stronger demand from higher-than-expected GDP growth. We would change the outlook to negative if we expected consolidated global operating income to decline over the next 12 to 18 months. This would result from increased input costs that cannot be passed on to customers, or reduced pricing driven by operating capacity exceeding demand for several grades and regions.

*\*A negative industry outlook indicates our view that fundamental business conditions will worsen. A positive outlook indicates that we expect fundamental business conditions to improve. A stable industry outlook indicates that conditions are not expected to change significantly. Since industry outlooks represent our forward-looking view on conditions that factor into ratings, a negative (positive) outlook indicates that negative (positive) rating actions are more likely on average.*

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moody's.com](http://www.moody's.com) for the most updated credit rating action information and rating history.

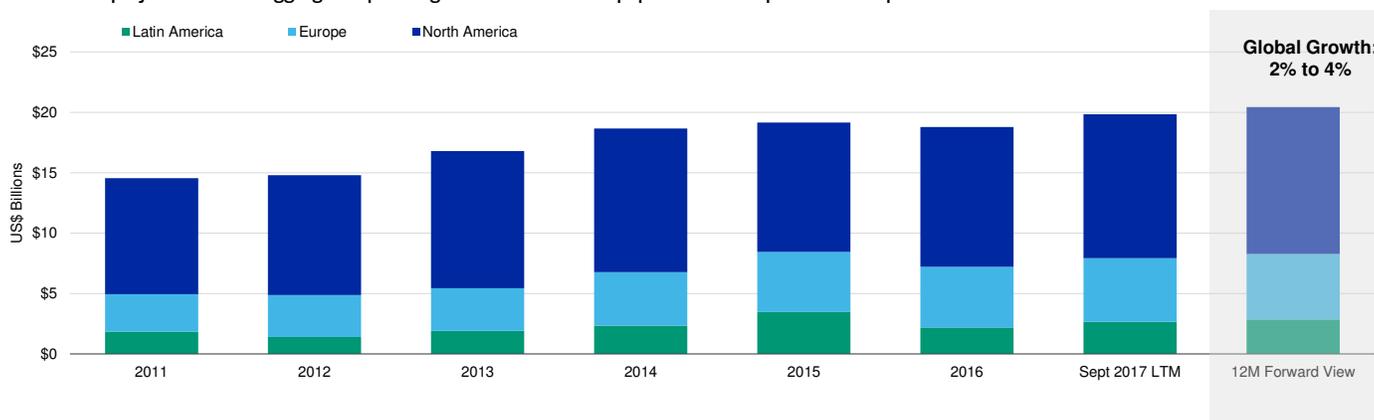
## Global paper and forest product operating income growth will be modest

**Global stable outlook:** We expect consolidated operating income for the 39 paper and forest product companies that we rate globally to increase by 2%-4% over the next 12-18 months. As shown in Exhibit 1, we expect modestly positive consolidated operating income growth from producers in all three regions: North America, Europe and Latin America. Continued synchronized global economic growth and the recently enacted US Tax Cuts and Jobs Act will fuel demand. Moody's forecasts economic growth of 2.7% and 2.4% for the US, 2.1% and 1.8% for the Euro Area and 2.5% and 2.7% for Brazil in 2018 and 2019 respectively.

Exhibit 1

### Global operating income growth will be modest

Historic and projected annual aggregate operating income of 39 rated paper and forest products companies



Source: Moody's Financial Metrics and Moody's estimates

**1. North America - Stable Outlook:** The consolidated operating income of the 23 North American companies that we rate (which account for about 60% of the global rated industry's operating income) will grow 2%-4% over the outlook period. Modest operating income growth from North American paper packaging, pulp, wood products and timberland producers will be offset by lower operating earnings from paper companies. North American paper packaging companies, like [International Paper \(Baa2 stable\)](#), [WestRock Company \(Baa2 stable\)](#) and [Packaging Corporation of America \(Baa2 stable\)](#), will primarily benefit from the full flow through into their converting business of the March 2017 containerboard price hike. Operating earnings will be flat for North American pulp producers, such as [Mercer International \(Ba3 stable\)](#), as average prices remain close to 2017 levels. North American timberland and wood products companies, including [Weyerhaeuser Company \(Baa2 stable\)](#), [West Fraser Timber Co Ltd \(Baa3 stable\)](#) and [Norbord Inc \(Ba1 stable\)](#), will primarily benefit as demand for new US housing increases about 7% in 2018. North American paper producers such as [Domtar Inc \(Baa3 stable\)](#) and [Verso Paper \(B2 stable\)](#) will continue to face demand declines across their commodity paper grades as digital alternatives continue to replace paper.

**2. Europe - Stable Outlook:** We expect the consolidated operating income of the 11 European producers, which represent about 27% of the global rated industry's operating income, to increase 2%-4% over the outlook period. We expect stronger prices and demand across most subsectors, including specialty paper and paper packaging. Paper producers will continue to face secular declines in demand, which could be partially offset by stronger pricing in 2018 compared to 2017. Paper packaging companies, such as [Smurfit Kappa Group plc \(Ba1 stable\)](#), [Metsa Board Corporation \(Ba1 stable\)](#) and [Mondi plc \(Baa1 stable\)](#), will benefit from ongoing productivity improvements and slightly stronger demand and prices. Packaging volume will grow as the European economy improves and consumers purchase more goods on-line. In addition, we expect an increase in operating income from European wood-based building producers like [Stora Enso Oyi \(Ba1 positive\)](#) as larger investments in homebuilding and renovations strengthen demand for lumber and panels.

**3. Latin America - Stable Outlook:** The operating income from the five rated Latin American pulp producers, which represent about 13% of the global rated industry's operating income, will increase by 2%-4% over the outlook period. Strong demand and pricing for bleached eucalyptus (BEK) pulp will drive the earnings growth. [Fibria Cellulose's \(Ba1 negative\)](#) will benefit from increased volumes as it ramps up its new 1.95 million tonne BEK pulp mill in Tres Lagoas, Brazil, and [Suzano Papel e Celulose's \(Ba1 negative\)](#) will benefit from

the ramp up of its two new tissue production lines. We expect that BEK pulp prices, which steadily increased through 2017 primarily due to higher than normal supply disruptions and stronger than expected Chinese demand, will reverse in 2018, as the ramp-up of additional capacity outpaces demand. Overall we expect that average 2018 BEK prices will be flat or slightly higher than average 2017 prices.

## Business Fundamentals

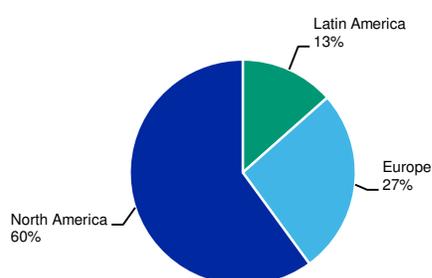
The interplay between pricing, demand, supply and costs will continue to influence the operating and financial performance of the various paper and forest product segments over the next 12-18 months. We divide the industry into three regions (North America, Europe and Latin America) and across four main categories:

1. Paper packaging and tissue
2. Printing and writing paper
3. Timberlands and wood products
4. Market pulp

Exhibit 2

### Operating earnings by geographic domicile

Aggregate earnings of rated paper and forest product companies

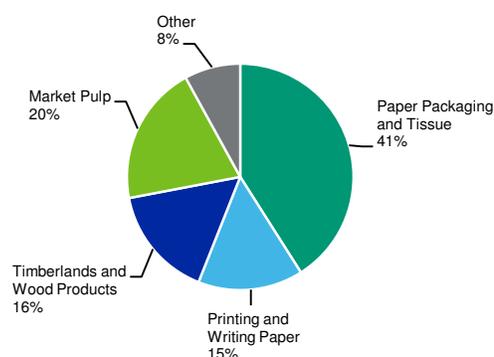


Source: Moody's Financial Metrics and Moody's estimates

Exhibit 3

### Operating earnings by subsector

Aggregate earnings of rated paper and forest product companies



Source: Moody's Financial Metrics and Moody's estimates

Many companies have diversified operations across many different subsectors and commodity grades. Each subsector has its own fundamental trends, geographic considerations and supply-demand dynamics, which we outline below.

## 1. Paper Packaging and Tissue - Stable Outlook

Operating earnings of the 15 rated companies that are primarily driven by their paper packaging and tissue operations (see Appendix) will grow by about 3% over the next 12-18 months. This subsector represents about 41% of the rated industry's global operating income.

Exhibit 4

Region	Sector	Outlook	Demand	Supply	Pricing	Cost	
North America	Paper Packaging	▶	↑	↑	↑	↑	
	Tissue	▼	↑	↑	↓	↑	
Europe	Paper Packaging	▶	↑	↑	↑	↑	
	Tissue	▶	↑	↑	↑	↑	
Legend		▲ Positive Outlook	▶ Stable Outlook	▼ Negative Outlook	↑ Increasing	→ Flat	↓ Decreasing

**DEMAND:** Demand for paper packaging will continue to modestly grow over the outlook period, primarily due to stronger global economic growth (Moody's forecasts G-20 Real GDP growth of 3.4% for 2018 and 3.2% for 2019), as well as a growing share of e-commerce purchases. Home delivery of goods purchased on-line require more paper packaging material (including protective packaging) than large bulk shipments to retail outlets. In addition, we expect the increase in demand for boxes used to transport agriculture to continue, as healthier eating trends reduce the consumption of prepackaged goods.

Demand for consumer paper packaging grades like coated recycled boxboard (CRB) will continue to decline slightly, as consumers' tastes trend away from prepackaged processed food. This will be offset slightly by increased demand for solid bleached (SBS) board used for liquid packaging and food service products, as large convenience food operators like McDonald's and Dunkin' Donuts switch from plastic foam cups and trays to fiber-based alternatives.

We expect demand for tissue in mature markets to continue to grow in step with population growth. Demand will grow at a faster rate in emerging markets, where hygiene standards continue to improve. In North America, we expect consumers will continue to move away from higher-priced branded products to less expensive private-label tissue products, as the quality of private-label products continues to improve.

**SUPPLY:** Approximately 1.2 million tons of new North American containerboard capacity (about 3% of all North American capacity) will ramp up in 2018 and 2019, in-line with annual 1.5% demand growth. Western European containerboard producers (especially recycled (testliner)) will need to rely on a growing export market to balance the approximately 1.1 million tons of new containerboard capacity (about 5% of Western European capacity) that will start ramping up in 2018. Exports to China will grow. Chinese recycled fiber import restrictions will result in the need for more Chinese imports of finished packaging paper, because there will not be enough fiber available for Chinese domestic production. The additional European testliner capacity from International Paper's mill conversion in Spain, Leipa's (unrated) German mill and Pro-Gest's Italian mill, will likely come on-line in 2018 after facing delays.

Exhibit 5

**Continued containerboard supply growth from conversions and new capacity\***

**Announced North American and Western European containerboard expansion projects for 2018 and 2019**

Company	Location	Capacity (000 Tons)	Grade	Start-up Date
International Paper	Madrid, Spain	450	recycled containerboard	2018
Leipa	Schwedt, Germany	450	recycled containerboard	2018
Pro-Gest	Grezzago, Italy	210	recycled containerboard	2018
Packaging Corporation of America	Wallula, WA, USA	400	virgin containerboard	2018
International Paper	Selma, AL, USA	450	virgin containerboard	2019
Prat	Wapakoneta, OH, USA	400	recycled containerboard	2019
	<b>Total</b>	<b>2,360</b>		

\* Only major projects (greater than 150,000 annual tons) are listed. There are a significant number of smaller projects not listed.

Source: RISI and Company Reports

North American tissue supply continues to grow faster than demand. We expect about 600,000 tons of new tissue capacity will ramp up in North America over the next two years. This represents a 6% capacity increase to a 11 million ton North American tissue market that grows by about 1%-2% per year. Higher-cost capacity will be shuttered to balance the market. [Kimberly-Clark \(A2 stable\)](#) recently announced plans to shut its Fullerton, Calif. tissue mill (about 66,000 tons of capacity, which is less than 1% of North American capacity). In the developing markets of China and Latin America, large, modern and low-cost tissue mills continue to replace small, less efficient ones. We expect a further increase in supply in these regions as hygienic standards continue to improve.

Exhibit 6

**New North American tissue capacity will exceed demand growth**

Announced new North American tissue mills\*

Company	Location	Capacity (000 Tons)	Grade	Start-up Date
Sofidel America	Circleville, OH, USA	75	premium	2018
ST Tissue	Franklin, VA, USA	50	premium	2018
Sofidel America	Circleville, OH, USA	75	premium	2018
First Quality Tissue	Anderson, SC, USA	70	TAD	2018
Clearwater Paper	Shelby, NC	70	premium	2019
First Quality Tissue	Lock Haven, PA, USA	70	TAD	2019
First Quality Tissue	Anderson, SC, USA	75	ATMOS	2019
Georgia-Pacific	Palatka, FL, USA	70	TAD	2019
Irving Consumer Products	Macon, GA, USA	80	TAD	2019
<b>Total</b>		<b>635</b>		

\* Only major projects are listed.

Source: RISI and Company Reports

**PRICING:** We expect average 2018 North American corrugated box prices to increase by about 6% from 2017. This reflects essentially a full flow through to box prices following about a six-month lag to the March 2017 \$50/ton (8%) kraft linerboard price increase.

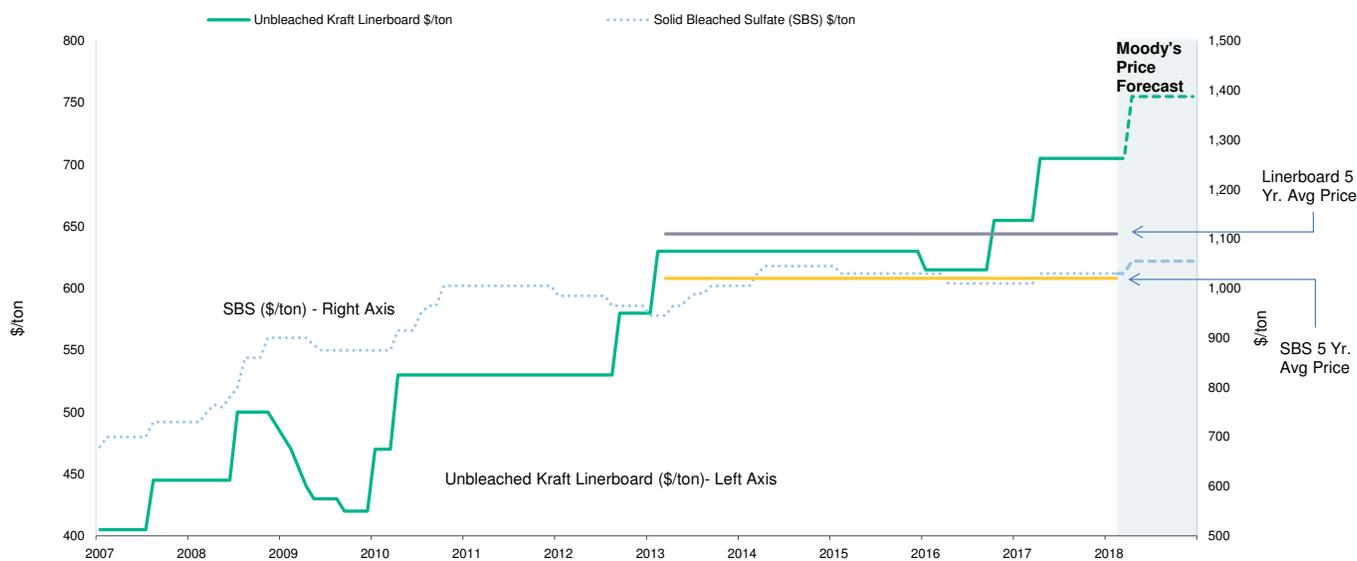
Given the tight operating rates, we expect that the recently announced \$50/ton linerboard price for March 2018 will be implemented. However, we expect little additional positive impact in 2018 to our rated producers given their high forward integration level to boxes (most in excess of 75%), the uncertain ability to pass on this price increase to their box customers, and the typical six-month lag from linerboard price increase to higher box prices.

We expect half of the recently announced North American consumer packaging price increases to gain traction, resulting in North American bleached kraft board prices (SBS) increasing about 2% and coated recycled folding boxboard (CRB) prices staying essentially flat.

In Europe, the delay in the start-up of several testliner (recycled linerboard) capacity additions has resulted in stronger than anticipated prices. European kraftliner (virgin) prices will likely remain strong with no new supply entering the market. Testliner (recycled) may see some price pressure as new supply exceeds regional demand growth.

Exhibit 7

### North American linerboard and solid bleached sulfate prices will improve Virgin paper packaging price trends



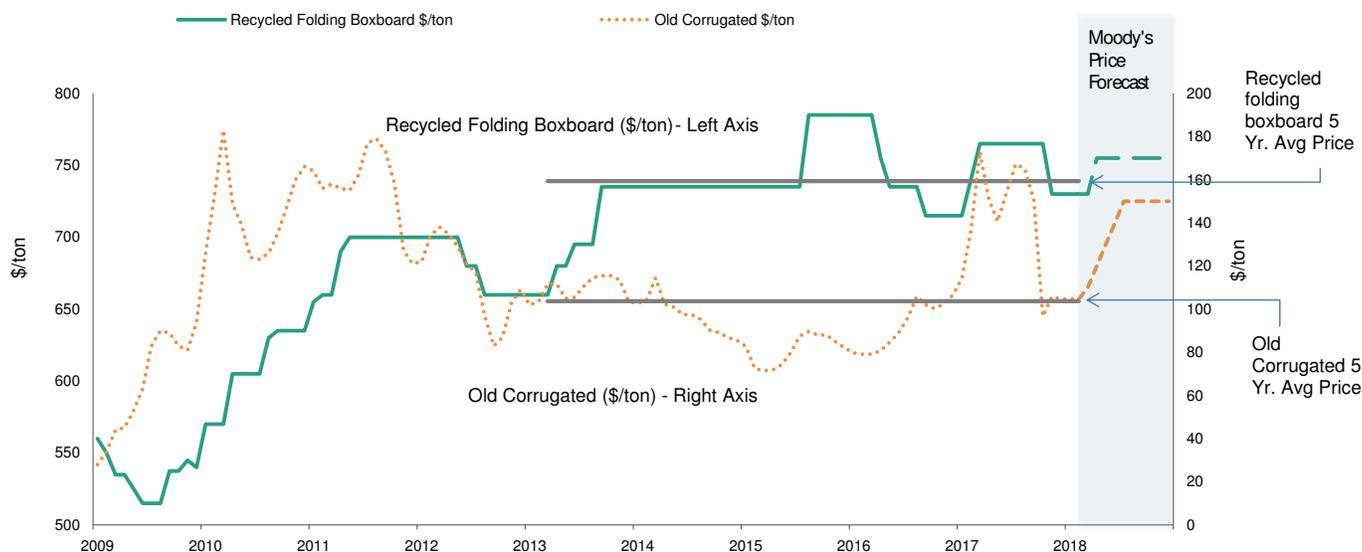
Source: RISI and Moody's estimates

**COST:** We expect costs for most companies in this subsector will be higher due to rising freight, labor, energy and chemical costs. Freight and energy costs, which represent about 20% of total cash cost for companies in this subsector, will rise due to trucking shortages and higher oil prices. Trucking rates have risen due to labor shortages, a surge in e-commerce deliveries, as well as the enforcement of rules (through electronic logging devices) that require layovers for long distance truck shipments. Moody's expects Brent and West Texas Intermediate crude, the main oil-price benchmarks, to be range bound at \$45-\$65 per barrel, and North American natural gas at Henry Hub to be \$2.50-\$3.50 per million British thermal units.

Fiber costs (typically about 30% of total cash costs for paper packaging producers) will be flat in 2018. Recycled fiber costs, in particular old corrugated container (OCC) prices, the primary input in the production of recycled paper packaging, will likely stay flat or slightly decline in 2018, as a restriction on recycled fiber inputs into China will keep supply levels high in North America and Europe. The US supplies about 40% of China's recycled fiber imports. Stricter contamination limits resulted in about 2.5 million (or 17%) fewer tons of US recovered fiber being sold to China last year (about 12 million tons in 2017 versus about 14.5 million tons in 2018). A slight reduction in average OCC costs will benefit [Sonoco Products Company \(Baa2 stable\)](#) and [Caraustar Industries \(B3 stable\)](#) given their concentration in recycled boxboard. Virgin fiber costs will likely remain flat as higher lumber production will increase the supply of residual wood chips in most regions. Large paper packaging producers, like Packaging Corporation of America, International Paper, [Georgia-Pacific \(A3 stable\)](#) and WestRock Company, with 80%, 70%, 70% and 65% dependence on virgin fiber, benefit the most from stable virgin fiber costs. Higher freight, labor and energy costs will be partially offset by productivity improvements. In addition, non-backward integrated paper and packaging producers will benefit from lower pulp prices in the second half of the year.

Exhibit 8

### Coated recycled folding boxboard prices will increase while average OCC prices will bounce back, but average at or below 2017 levels Recycled Paper Packaging Cost and Price Trends



Source: Moody's Estimates

**PAPER PACKAGING AND TISSUE SUBSECTOR IMPLICATIONS:** The outlook for **North American tissue** producers has turned negative, as we expect weaker prices from over supply and higher costs to lower operating earnings over the outlook period. The outlook for **North American paper packaging** producers remains stable, as we expect higher prices and demand to be partially offset by higher costs. We expect margin pressure in North America will be limited as consolidation has put a significant amount of containerboard and boxboard operating capacity in the hands of a small number of producers. Pro forma for recent acquisitions, about 55% of containerboard (used to make boxes to transport bulk goods), 55% of SBS (used to make perfume boxes and paper cups), 75% of CRB (used to make cereal boxes), 70% of uncoated recycled boxboard (used for tubes and cores) and almost 100% of coated unbleached kraft board (used to make beer cases) are in the hands of just two producers for each substrate. We anticipate these companies will operate their mills in-step with market conditions to minimize inventory buildup that can negatively affect prices.

The outlook for **European paper packaging** and **tissue** producers remains stable. Most European producers will generate modest earnings growth driven by higher volumes, generally higher prices and productivity improvements.

Several companies will benefit from productivity improvements and the realization of synergies from recent mergers and acquisitions. For example, WestRock's recently announced acquisition of packaging producer KapStone (not rated) will generate \$200 million in synergies within two years. The savings will come from increased paperboard integration (WestRock will internally supply containerboard that KapStone currently buys from the open market), machine and logistics optimization, and increased scale and efficiencies.

## 2. Printing and Writing Paper - Negative Outlook

Operating earnings of the 11 rated companies that are primarily driven by their printing and writing paper operations (see Appendix) will decline about 4% over the next 12-18 months. This subsector represents about 15% of the global industry's operating income.

Exhibit 9

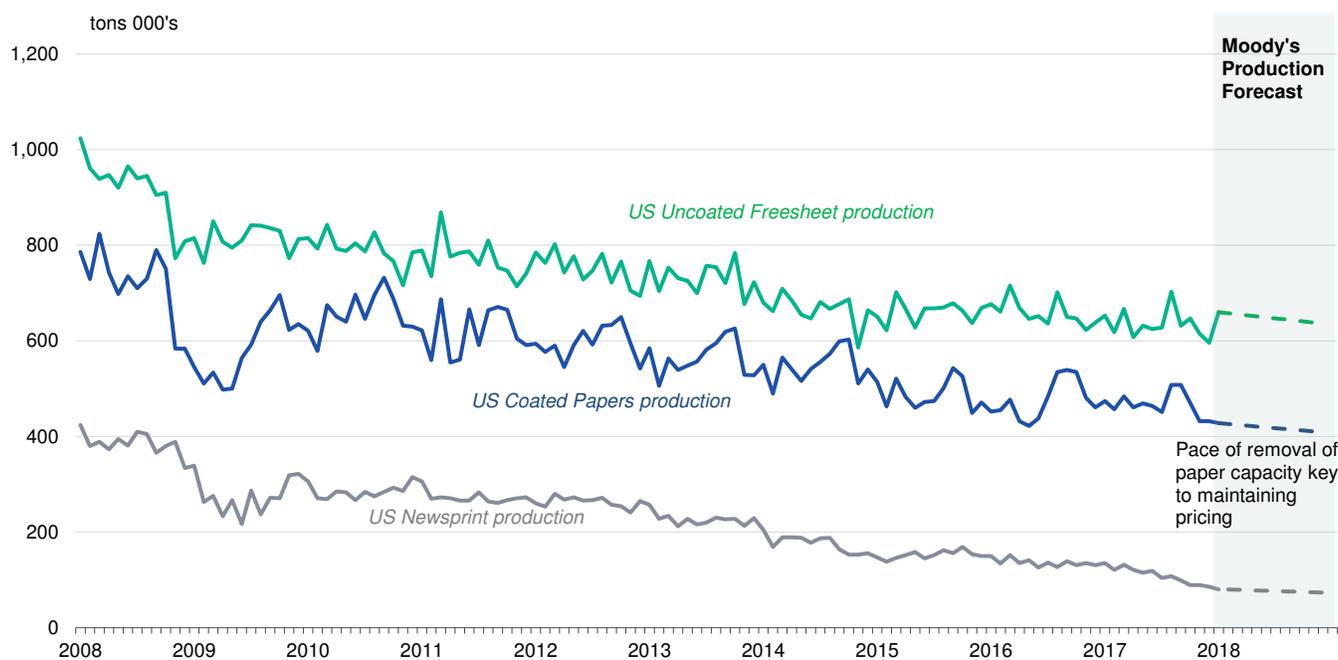
Region	Sector	Outlook	Demand	Supply	Pricing	Cost
North America	Uncoated Paper	▼	↓	↓	↑	↑
	Coated Paper	▼	↓	↓	↑	↑
	Newsprint	▼	↓	↓	↑	↑
Europe	Uncoated Paper	▼	↓	↓	↑	↑
	Coated Paper	▼	↓	↓	↑	↑
	Newsprint	▼	↓	↓	↑	↑
Latin America	Printing and Writing Paper	▶	↓	→	↑	→

▲ Positive Outlook     
 ▶ Stable Outlook     
 ▼ Negative Outlook     
 ↑ Increasing     
 → Flat     
 ↓ Decreasing

**DEMAND:** Demand for North American and European printing and writing grades of paper will decrease by approximately 5% this year, as traditional consumers of paper turn to digital alternatives, such as tablets and e-readers. Over the past five years, average production for US uncoated freesheet (UFS), coated paper and newsprint, declined by 3%, 4% and 11%, per annum, respectively. We expect that future declines will continue at similar rates of decline. Demand for paper in emerging markets will be flat as substitution by electronic devices is offset by higher paper consumption from higher literacy rates, better living standards and increasing white collar jobs.

Exhibit 10

**US UFS, coated and newsprint paper production will continue to decline at historic rates** Monthly US Paper Production Trends



Source: American Forest & Paper Association, Moody's estimates

**SUPPLY:** We expect capacity shuts and paper machine conversions to other grades to match or exceed demand declines across most commodity paper grades and regions over the next 12 to 18 months.

Expected UFS capacity shuts and conversions totaling over 700,000 tons (about 8% of North American supply) over the next two years will be in-line with ongoing demand declines. This includes Georgia-Pacific's closure of a 240,000 ton paper machine at its Camus, Washington, mill in 2018 and International Paper's conversion of its 235,000 tons of UFS mill in Selma, Alabama to linerboard in 2019. Three recent coated paper shuts (West Linn (unrated), Appleton Coated (unrated) and UPM-Kymmene's (Baa2 stable) Blandin mill

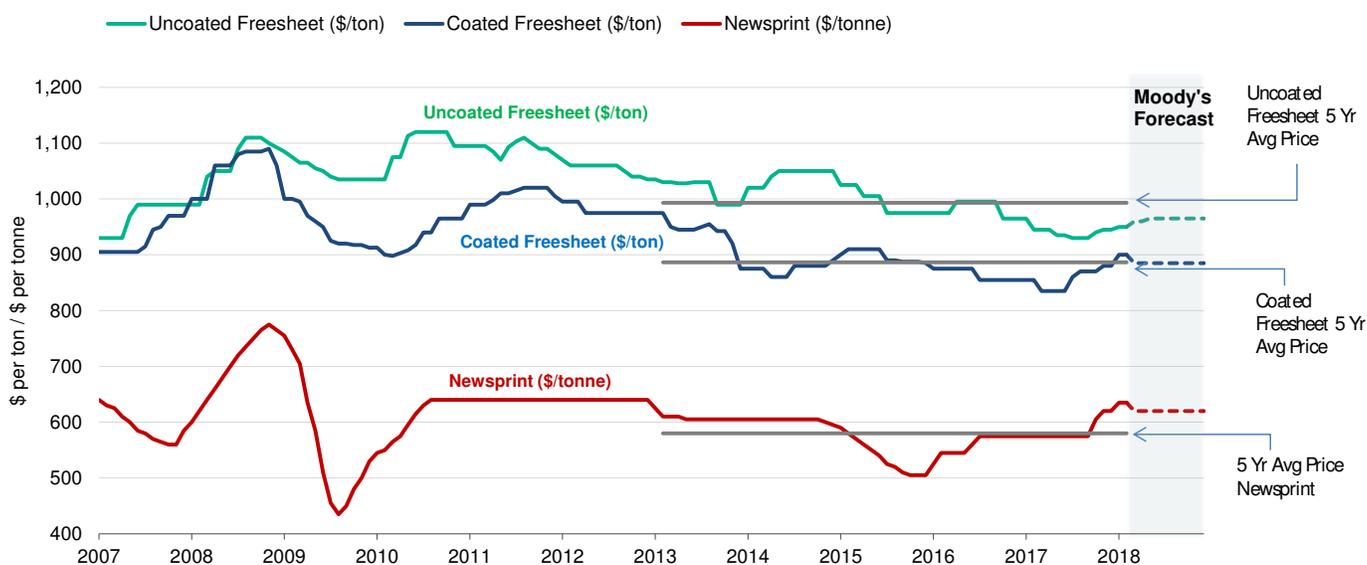
in Minnesota, USA) have removed over 700,000 tons of coated paper capacity, well in excess of expected demand declines. North American newsprint capacity reductions have also kept pace with demand declines, including recent capacity reductions at Norpac's (unrated) Longview, Washington, and Resolute's Calhoun, Tennessee, mills, and the announcement that Kruger (not rated) plans to convert two smaller newsprint machines to specialty products.

Similar paper capacity declines across all grades are occurring in Europe. Reductions in European newsprint capacity includes the conversion of International Paper's mill in Spain and Leipa's Schwedt mill in Germany to packaging papers and the closure of Papierfabrik Utzenstorf (not rated) mill in Switzerland. European mechanical capacity declines include the shut-down of UPM's paper machines at its Augsburg mill in Germany, Steyermühl mill in Austria, Stora Ens's Kvarnsveden mill in Sweden and the conversion of a paper machine by Heinzl (unrated) in Laakirchen. Coated mechanical capacity reductions include the expected shut down of a paper machine by Burgo's Verzuolo (unrated).

**PRICING:** Price increases of 3%-6% are likely across most paper grades in most regions, as recent and expected mill closures and paper machine conversions have tightened supply. Additional price increases are expected for newsprint to offset the recently announced anti-dumping duties on Canadian newsprint exported to the US.

Exhibit 11

### Uncoated free sheet, coated paper and newsprint paper prices will improve North American Commodity Paper Price Trends



Source: RISI and Moody's estimates

**COST:** We expect costs for most companies in this subsector to increase over the next 12-18 months. In addition to mill closure costs, paper producers will face higher freight, energy and labor costs. Canadian newsprint paper producers, such as [Resolute Forest Products \(B1 stable\)](#) and [Rayonier A.M. Products Inc. \(Ba3 stable\)](#) will also be required to pay duties (estimated to be about 5% and 29% respectively) on newsprint produced in Canada and sold to the US. Higher costs will be partially offset by ongoing productivity improvements, and lower pulp costs for the second half of 2018, for non-backward integrated paper producers.

**PRINTING AND WRITING PAPER SUBSECTOR IMPLICATIONS:** Our outlook for **North American and European printing and writing** producers remains negative. Price increases across most grades will not offset the continued secular decline in demand as consumers switch to digital alternatives. Higher paper prices could exacerbate the secular demand decline by causing a further cut in paper usage. The outlook for **Latin American printing and writing paper** is stable, as our large rated paper producers have been able to expand market share as smaller players leave the market or competition from imports decline.

Although paper markets will be near balance in 2018, additional capacity will need to be removed through grade conversions or closures to meet the ongoing demand declines in future years. Market leading paper producers, like Domtar, UPM, Verso and Resolute, will be further burdened to reduce supply to match demand declines to minimize downward pressure on pricing.

### 3. Timberlands and Wood Products - Stable Outlook

Operating earnings of the seven rated companies that are primarily driven by their timberland and/or wood product operations (see Appendix) will grow about 4% over the next 12-18 months. This subsector represents about 16% of global operating income of the industry.

Exhibit 12

Region	Sector	Outlook	Demand	Supply	Pricing	Cost
North America	Lumber	▶	↑	↑	→	↑
	OSB	▼	↑	↑	↓	↑
	Timberlands	▶	↑	→	→	→
Europe	Lumber	▶	→	→	→	→

▲ Positive Outlook      ▶ Stable Outlook      ▼ Negative Outlook      ↑ Increasing      → Flat      ↓ Decreasing

**DEMAND:** The US housing market continues to slowly improve. Our central scenario forecasts about 1.28 million housing starts in 2018, up from 1.2 million in 2017. This will accelerate the demand for sawlogs from timberland owners and wood products such as lumber and OSB. We expect that US housing starts will improve towards trend levels (the 25-year annual average of 1.5 million) over the next several years.

**SUPPLY:** North American OSB capacity growth will exceed demand. Approximately 2.7 million square feet of additional OSB capacity (about 11% of North American operating capacity) will start to ramp up in 2018 (see exhibit 13), exceeding annual demand growth of about 4%. We expect the ramp up of additional lumber capacity (five new sawmills totaling over 1 billion board feet, about 2% of North American capacity), plus expansion projects and industry creep, will be in-line with the pace of demand growth and the loss of Western Canadian production due to the pine beetle infestation. Several years of harvest deferrals have kept stock inventory of timber high in the US South, while timber exports have allowed the stock inventory of Pacific Northwest forests to return to balanced levels.

Exhibit 13

#### OSB capacity additions will exceed demand growth Announced North American OSB Expansion Projects for 2018\*

Company	Location	Capacity (000 msf)	Type	Start-up Date
Roy-O-Martin	Corrigan, TX, USA	800	greenfield	2018
Tolko	High Praire, AB, Canada	640	re-start	2018
Forex	Amos, QC, Canada	350	greenfield	2018
Norbord	Huguley, AL, USA	500	re-start	2018
Huber	Spring City, TN, USA	450	re-start	2018
<b>Total</b>		<b>2,740</b>		

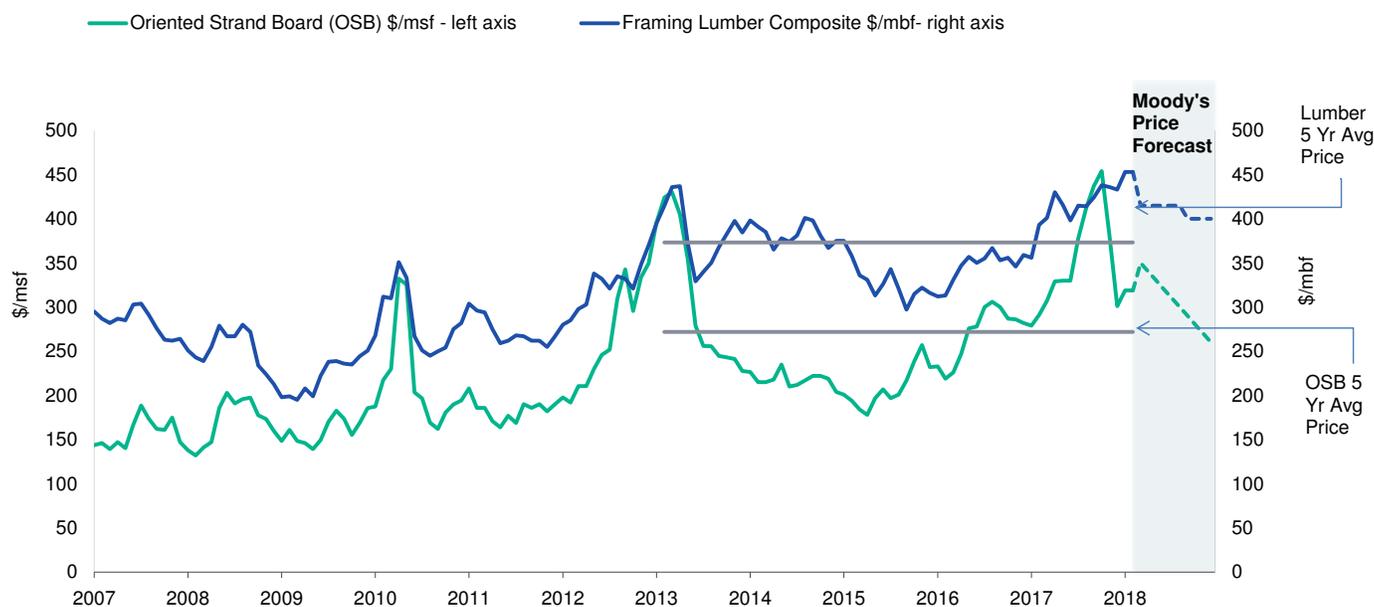
\*Only major projects listed  
Source: Company Reports and Moody's Estimates

**PRICING:** The subsector's inability to manage the ramp-up of new and previously-idled capacity as demand improves will continue to generate volatile lumber and OSB pricing. Benchmark prices for OSB will decline 12% in 2018 (versus 2017) as the ramp-up of additional OSB capacity exceeds demand growth. Although we expect most of the remaining wood product prices (lumber, plywood and timber) to show some variability with seasonal demand swings, we expect average 2018 prices will be close to 2017 levels, as the pace of additional supply meets increased demand.

Exhibit 14

**North American lumber prices remain strong while OSB prices decline**

Current prices are near all-time peaks



Source: RISI and Moody's estimates

**COST:** We expect log hauling and freight costs to increase in 2018 due to labor shortages (forestry workers as well as truck drivers) and higher fuel costs as oil prices continue their recovery. OSB producers will see an escalation in resin prices, as a derivative of oil. In addition, Canadian producers will need to pay the recently imposed tariffs on Canadian lumber exports to the US (about 20%).

**TIMBERLANDS AND WOOD PRODUCTS SUBSECTOR IMPLICATIONS:** The outlook for **North American OSB** producers is negative, as higher OSB demand will be offset by lower OSB prices, as significant new and previously idled capacity enters the market. The outlook for the remaining **North American and European wood product producers** and timberland owners is stable. Increased demand from the growing US housing market will accelerate the harvesting of timberlands and the need for wood products such as lumber, plywood, OSB and EWP. Other than OSB, average annual prices for most grades will be flat as increased demand is met with increased supply.

Given the tight lumber market, the lumber duties on Canadian producers (which supply about 30% of the US market) are being fully passed to US consumers through higher lumber prices. [Potlatch Corporation \(Ba1, review for upgrade\)](#), Georgia-Pacific and Weyerhaeuser will continue to benefit from higher lumber prices while paying little or no duties. (Please see [US duties push up lumber prices, credit positive for all lumber producers, November 2017](#).) Canadian lumber producers West Fraser, Resolute Forest Products, and Rayonier A.M. Products will benefit from higher prices, but need to pay duties on the lumber that ends up being shipped to the US, which is about half their Canadian production.

#### 4. Market Pulp - Stable Outlook

Operating earnings of the seven rated companies that are primarily driven by their pulp operations (see Appendix) will grow about 3% over the next 12-18 months. This subsector represents about 20% of the global industry's operating income.

Exhibit 15

Region	Sector	Outlook	Demand	Supply	Pricing	Cost
North America	Market Pulp (primarily softwood)	▶	↑	↑	→	→
Europe	Market Pulp	▶	↑	↑	→	→
Latin America	Market Pulp (primarily eucalytus)	▶	↑	↑	→	→
▲ Positive Outlook	▶ Stable Outlook	▼ Negative Outlook	↑ Increasing	→ Flat	↓ Decreasing	

**DEMAND:** Increased market pulp demand will continue to be driven by higher pulp exports to China. Increased Chinese demand stems from growing domestic paper packaging and tissue production, as well as the Chinese government's strict enforcement of environmental regulations on domestic pulp and paper mills, which has forced the closure of a number of small and medium-sized pulp mills. In addition, China's restriction on recycled fiber imports (the government has reduced contamination acceptance levels to 0.5%) has increased demand for market pulp as some Chinese paper producers switch from using recycled to virgin fiber.

**SUPPLY:** New softwood pulp capacity includes the ramp up of Sodra's (unrated) pulp mill in Sweden, Metsa's mill in Finland (expected to produce about 800 thousand tonnes of softwood and 500 thousand tonnes of hardwood pulp) and Svetlogorsk's (unrated) softwood/hardwood pulp mill in Belarus. New hardwood pulp capacity includes the continued ramp-up of Fibria's large pulp mill in Brazil and OKI's (Asia Pulp and Paper – unrated) very large hardwood pulp mill in Indonesia (combined about 15% of global hardwood capacity). Given that it takes about two years to build a new pulp mill, with no new projects in the pipeline, we do not expect to see any significant capacity increases until 2020. Several potential projects that are currently being contemplated include Eldorado/APP (unrated) building a 2 million tonne BEK mill in Brazil, UPM building a 2 million tonne BEK mill in Uruguay, and Fibria doing a large BEK expansion project in Latin America.

Exhibit 16

### Additional pulp capacity will exceed demand Announced pulp expansion projects\*

Company	Location	Capacity (000 Tonnes)	Grade	Start-up Date
Asia Pulp & Paper (Oki Pulp & Paper)	South Sumatra, Indonesia	2,800	hardwood	2017
Fibria (Tres Lagoas II)	Tres Lagoas, Brazil	1,950	hardwood	2017
Metsa	Äänekoski, Finland	800	mainly softwood	2017
Svetlogorsk	Gomel Region, Belarus	400	mainly softwood	2018
SCA (Ostrand)	Timra, Sweden	470	softwood	2018
Sun Paper	Savannakhet, Laos	250	hardwood/dissolving pulp	2018
	<b>Total</b>	<b>6,670</b>		

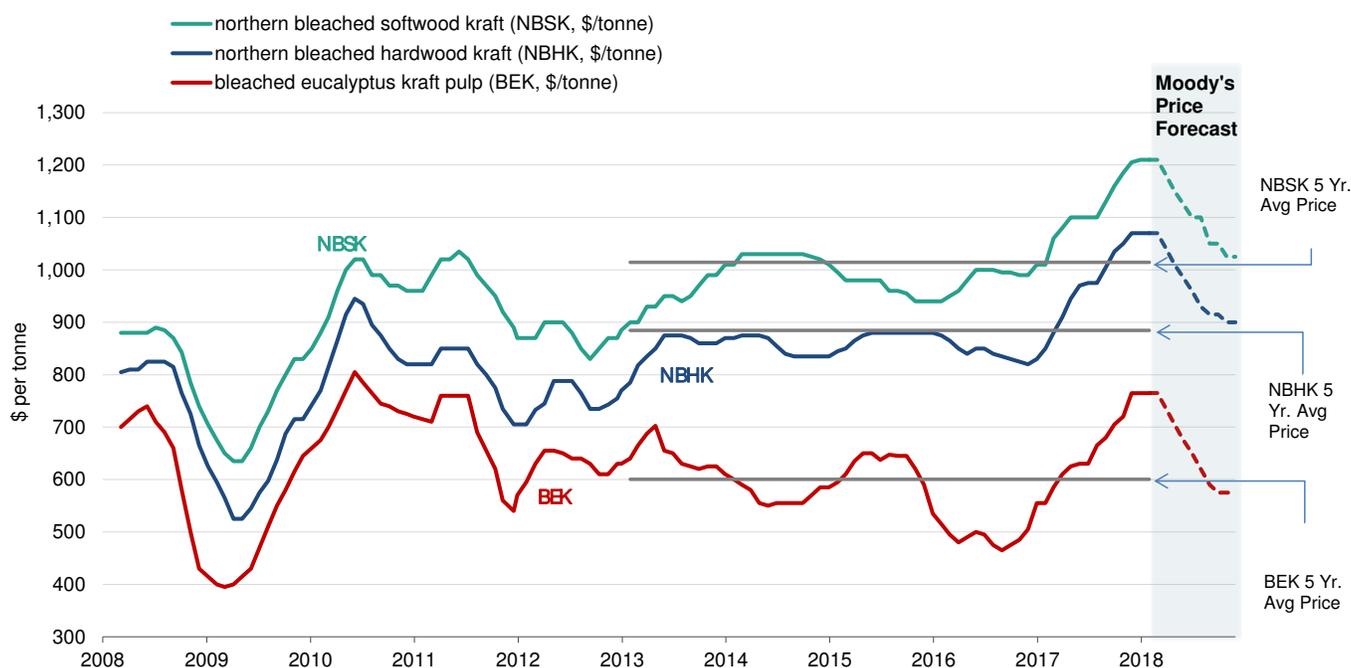
\* Only major projects are listed.  
Source: Company reports and RISI

**PRICING:** The fragmentation of the global pulp sector (Fibria is the largest market pulp producer in the world with a 8.8% share) makes it difficult to keep production in line with demand and has led to continued pricing volatility. We expect average annual prices for most grades of pulp will be essentially flat for 2018. We project that the increase in NBSK pulp prices that occurred in 2017 (average NBSK prices increased 13% in 2017 versus 2016) will reverse in 2018, as about 1 million tons of new softwood pulp supply (3% of global capacity), enters the market. BEK pulp prices, which increased 30% in 2017 due to the combination of higher than usual supply outages (CMPC's shutdown in Guaiba) and stronger Chinese demand, will likely reverse during 2018, such that average BEK prices in 2018 will be essentially in-line with average 2017 prices. Prices will start to decline in 2018 as the ramp up of about 2 million tons of new capacity (about 6% of hardwood capacity) will exceed demand growth. We expect dissolving pulp prices to be mixed, with high alpha acetate pulp declining about 4% and high alpha ether pulp increasing about 3% for the year.

Exhibit 17

**Pulp prices will likely decline in 2018**

But average 2018 prices will be in-line with 2017 prices



Source: RISI and Moody's estimates

**COST:** Higher freight, energy and chemical costs will be offset by productivity improvements. Many kraft pulp mills also have the ability to offset some of their operating costs by selling excess energy produced in making pulp back to their electricity provider as green energy.

**MARKET PULP SUBSECTOR IMPLICATIONS:** Our outlook for the **North American, European and Latin American market pulp** subsector is stable. While expected pulp capacity additions will outpace demand growth in 2018, average prices for the year will remain in-line with 2017. Latin American market pulp producers [Inversiones CMPC S.A. \(Baa3 stable\)](#), [Celulosa Arauco y Constitucion \(Baa3 stable\)](#), Fibria and Suzano will maintain structural cost advantages over North American and Western European producers on hardwood pulp, owing largely to their almost full self-sufficiency in fiber through their ownership of fast-growing trees.

## Appendix: Description of Different Paper and Forest Products Segments

Exhibit 18

### Primary Paper & Forest Products segments

Segment	Primary grades, description and examples
Paper packaging and tissue	Paperboard refers to paper packaging composed of containerboard and boxboard. Containerboard refers to both linerboard and corrugated medium, which are used to make corrugated boxes or "brown boxes." Boxboard consists of folding cartons made from bleached board and coated board used primarily in consumer packaging for food (e.g., cereal boxes) and non-food items (personal care and tissue boxes). Tissue primarily consists of toilet paper, facial tissue and paper towels.
Paper	Uncoated freesheet is used in photocopiers, direct mail, brochures, envelopes and forms. Coated freesheet and coated groundwood are used primarily for magazines, catalogs and direct mail. Newsprint is used primarily for daily newspapers and for advertising inserts. Specialty paper usually possesses unique characteristics and properties, such as filter paper or labels.
Timberlands and wood products	Logs harvested from timberlands are used to produce wood products, paper, pulp or bio-energy fuels. Wood products, such as lumber, oriented strandboard, plywood and engineered wood products, are typically consumed in wood-frame construction and home renovations.
Market pulp	Hardwood and softwood pulp are used as fiber input to manufacture paper, paperboard and tissue. Hardwood pulp consists of shorter fibers, which provide characteristics such as opacity and smoothness. Softwood pulp consists of longer fibers, which typically provide strength. Fluff pulp is a higher purity softwood pulp used for absorbent applications such as diapers and feminine hygiene products. Dissolving pulp is the highest purity pulp, used to produce textile fibers such as rayon and for specialty applications to produce items like cigarette filters, LCD screens, impact-resistant plastics and thickening agents.

## Appendix: List of Rated Companies

(All financial information is for the 12 months ended September 30, 2017 unless otherwise stated.)

Exhibit 19

### PAPER PACKAGING AND TISSUE

Company Name	Domicile	Rating	Outlook	Revenues (USD Bn's)	EBITDA Margin	RCF/Adj Debt	Adj Debt/ EBITDA	EBITDA/ Interest
Georgia-Pacific LLC	USA	A3	Stable					Private Company
Mondi Plc*	Europe	Baa1	Stable	\$7.6	20%	44%	1.4x	13.1x
International Paper Company**	USA	Baa2	Stable	\$21.7	19%	19%	3.3x	4.8x
Packaging Corporation of America**	USA	Baa2	Stable	\$6.4	23%	26%	2.3x	11.5x
Sonoco Products Company**	USA	Baa2	Stable	\$5.0	15%	20%	2.8x	8.8x
WestRock Company**	USA	Baa2	Stable	\$15.3	17%	21%	2.8x	8.3x
Graphic Packaging International, LLC**	USA	Ba1	Stable	\$4.4	17%	20%	3.4x	7.0x
Metsa Board Corporation**	Europe	Ba1	Stable	\$2.1	13%	22%	2.6x	9.5x
Smurfit Kappa Group plc	Europe	Ba1	Stable	\$9.3	15%	16%	3.6x	5.6x
Cascades Inc.	Canada	Ba2	Stable	\$3.2	10%	18%	3.7x	3.9x
Clearwater Paper Corporation	USA	Ba2	Stable	\$1.7	12%	23%	3.6x	5.6x
WEPA Hygieneprodukte GmbH	Europe	Ba3	Stable	\$1.1	13%	10%	4.8x	5.1x
Carta Goias Industria e Comercio de Papeis Brazil		B2	Stable					Private Company
Caraustar Industries, Inc.	USA	B3	Stable					Private Company

\*Financial results as of June 2017

\*\*Financial results as of December 2017

Source: Moody's Financial Metrics

## Exhibit 20

## PRINTING AND WRITING PAPER

Company Name	Domicile	Rating	Outlook	Revenues (USD Bn's)	EBITDA Margin	RCF/Adj Debt	Adj Debt/ EBITDA	EBITDA/ Interest
UPM-Kymmene	Europe	Baa2	Stable	\$11.0	17%	36%	1.6x	16.2x
Domtar Corporation**	Canada	Baa3	Stable	\$5.2	11%	25%	2.4x	7.7x
P. H. Glatfelter Company**	USA	Ba1	Stable	\$1.6	10%	20%	3.6x	6.7x
Stora Enso Oyj	Europe	Ba1	Positive	\$11.0	13%	18%	3.4x	5.8x
Neenah Paper, Inc.**	USA	Ba2	Stable	\$1.0	15%	30%	2.4x	8.7x
Sappi Limited**	Europe	Ba2	Positive	\$5.3	15%	24%	2.9x	7.2x
The Navigator Company	Europe	Ba2	Stable	\$1.8	24%	5%	2.3x	24.9x
Resolute Forest Products Inc.	Canada	B1	Stable	\$3.5	8%	11%	7.1x	2.4x
Lecta S.A.	Europe	B2	Stable	\$1.6	8%	7%	6.8x	2.3x
Xerium Technologies, Inc.	USA	B2	Stable	\$0.5	21%	6%	6.2x	1.7x
Norske Skogindustrier ASA	Europe	Caa3	Stable	\$1.4	4%	3%	18.4x	0.5x

\*\*Financial results as of December 2017

Source: Moody's Financial Metrics

## Exhibit 21

## WOOD PRODUCTS

Company Name	Domicile	Rating	Outlook	Revenues (USD Bn's)	EBITDA Margin	RCF/Adj Debt	Adj Debt/ EBITDA	EBITDA/ Interest
Weyerhaeuser Company**	USA	Baa2	Stable	\$7.2	30%	6%	3.5x	4.8x
Rayonier Inc.**	USA	Baa3	Stable	\$0.7	41%	13%	3.6x	8.3x
West Fraser Timber Co. Ltd.	Canada	Baa3	Stable	\$3.7	20%	92%	0.8x	31.1x
PotlatchDeltic Corporation**	USA	Ba1	Rating(s) Under Review	\$0.7	30%	14%	3.2x	6.5x
Louisiana-Pacific Corporation**	USA	Ba1	Stable	\$2.7	25%	111%	0.7x	25.0x
Norbord Inc.**	Canada	Ba1	Stable	\$2.2	31%	74%	0.9x	16.6x
Boise Cascade Company**	USA	Ba2	Stable	\$4.4	5%	32%	2.5x	7.2x

\*\*Financial results as of December 2017

Source: Moody's Financial Metrics

## Exhibit 22

## MARKET PULP

Company Name	Domicile	Rating	Outlook	Revenues (USD Bn's)	EBITDA Margin	RCF/Adj Debt	Adj Debt/ EBITDA	EBITDA/ Interest
Celulosa Arauco y Constitucion S.A.	Chile	Baa3	Stable	\$5.1	24%	21%	3.4x	6.5x
Inversiones CMPC S.A.**	Chile	Baa3	Stable	\$5.1	22%	20%	3.9x	4.9x
Fibria Celulose S.A.**	Brazil	Ba1	Negative	\$3.7	45%	18%	3.7x	4.5x
Suzano Papel e Celulose S.A.**	Brazil	Ba1	Negative	\$3.3	46%	23%	2.7x	3.9x
ENCE Energia y Celulosa, S.A.	Europe	Ba3	Stable	\$0.8	27%	24%	2.8x	7.0x
Mercer International Inc.**	Canada	Ba3	Stable	\$1.2	22%	17%	3.9x	4.6x
Rayonier A.M. Products Inc.**	USA	Ba3	Stable	\$1.0	24%	9%	6.4x	4.7x

\*\*Financial results as of December 2017

Source: Moody's Financial Metrics

## Moody's Related Research

### Issuer In-Depth:

- » [Graphic Packaging International, LLC: FAQ on combination with International Paper's consumer packaging business, February 2018](#)

### Industry Outlooks:

- » [2018 Global Outlook - Paper and Forest Products - 2018 outlook stable as growth from wood products and paper packaging offsets commodity paper decline \(Presentation\), December 2017](#)
- » [2018 Latin America Outlook - Oil & Gas, Steel & Base Metals, and Pulp & Paper - Latin America: 2018 Outlook stable as commodity prices hold steady \(Presentation\), December 2017](#)

### Sectors In-Depth:

- » [Wood Products - North America: US duties push up lumber prices, credit positive for all lumber producers, November 2017](#)
- » [Pulp & Paper - Europe: Portugal's wildfire is unlikely to materially push up costs for Iberian producers, June 2017](#)

### Rating Methodology:

- » [Paper and Forest Products Industry, March 2018](#)

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