



2019 ANNUAL REPORT

2019 Letter to Stockholders

Fellow Stockholders:

There is no other way to say it: 2019 was a very disappointing year for Rayonier Advanced Materials, our stockholders, management team and Board of Directors. We faced the impact of global trade disputes and tariffs, collapsing markets for our commodity products, widening currency advantages benefiting global competitors and, in the early part of 2019, operational issues at our Temiscaming and Jesup facilities. The net result was very disappointing financial performance for the Company and a significant decline in our stock price.

The challenges were almost unprecedented. Driven by a variety of factors including the slowing of the Chinese economy and the resultant economic fall-out in manufacturing felt around the world, declines in prices alone impacted our EBITDA by \$162 million, representing more than 71% of the decline relative to 2018. Viscose pulp prices, the key material to produce rayon fabrics, crashed to lows not seen in decades. Paper pulp prices, a key benchmark for both our high-yield and fluff pulps, also plummeted as global inventories more than doubled to levels never seen before. Chinese tariffs directly claimed \$8 million of EBITDA on our Cellulose Specialties sales, and U.S. tariffs on Canadian lumber cost us another \$23 million.

While I am disappointed in our 2019 numbers and the performance of our stock, I am very proud of our team and how we managed very difficult business conditions and acted decisively to respond to them. For example:

- We actively solicited frank feedback from our stockholders; our Board of Directors spoke to roughly half of our stockholders (by share ownership) and solicited their opinions. These meetings included hearing their concerns in response to our May 2019 failed Say-on-Pay vote and their views about our strategies in the face of our current situation. And we are incorporating their advice, as discussed below and in more detail in our 2020 proxy statement, into our plans as we move forward.
- Our declining EBITDA and cash flows led to concerns about covenant compliance with our bank debt. We quickly recognized that our challenges might worsen before they improved. So, we took the time needed to develop solid data and forecasts to ensure that we got the best possible deal with our lenders, which was signed in September, to provide us the freeboard we need to navigate the challenging markets we face.
- We announced and implemented a new Go-To-Market Strategy for our Cellulose Specialties business, which we expect will increase our margins through realignment of our manufacturing facilities and improved pricing that reflects our value proposition to our customers. Despite declining volumes in some sectors due to global economic conditions, we are already seeing benefits from this strategic change.
- We commenced a portfolio evaluation process that ultimately resulted in a sale of our Matane high yield pulp facility for \$175 million, a price representing over ten times annual earnings over the cycle for this commodity mill. While proposals for other assets were not compelling, we will continue to evaluate opportunities for asset monetization throughout 2020.
- We repaid \$106 million of debt in 2019, reducing our debt by 13% since the end of 2017, which strengthened our capital structure.
- We implemented aggressive actions to improve our EBITDA and cash position, including:

- o Reduced working capital (AR, Inventory and AP) across the Company by \$41 million from prior year
- o Reduced Capex by \$26 million from prior year
- o Suspended the common stock dividend to preserve \$18 million of cash annually
- After extensive outreach to and discussions with our stockholders in 2019, we are taking several governance-related actions, more fully described in our 2020 proxy statement, including:
 - o Refreshment of our Board of Directors through the addition of two new directors
 - o Splitting the roles of Chairman and CEO and appointing the Company's first independent Chairman
 - o Again, proposing our stockholders approve the declassification of our Board of Directors, and elimination of supermajority voting provisions in our charter and bylaws
 - o Significantly restructuring our LTIP plan to be very aligned with stockholders

Through these initiatives and others, we have responded to the challenges and difficulties we faced by taking strong action on the matters we can control and doing all we can to ride out those we cannot, like trade disputes, tariffs, currency and extreme commodity market fluctuations. In 2020, we will continue to aggressively work to manage and reduce cost, preserve and generate cash and never lose focus on keeping our well-earned reputation of providing the highest quality products and level of service to our customers.

Given global concern surrounding COVID-19, I want to address our active response to the outbreak. Of course, the safety of our employees, our neighbors in the communities we live and work in, and the employees of our customers and suppliers, and all of their families, are paramount. We are following all governmental requirements in the countries in which we operate and guidance of the public health authorities. Currently, all our High Purity Cellulose, Paperboard and pulp facilities are operating at customary levels and our lumber and newsprint production will be adjusted with market conditions. The impact on our business so far has not been material, even as we managed through the initial outbreak in China, where we have significant sales. While we do not know how long this health crisis will last and we cannot yet fully appreciate how our customers, suppliers and supply chains will be impacted, we remain firmly intent on managing through it safely and successfully.

We have been the industry leader in Cellulose Specialties for decades and, in good and bad markets alike, our objective remains the same: Building value for our stockholders for the long term. We are confident we can ride out the current storm and achieve the levels of performance and value creation we expect from our businesses. We appreciate the input, support and patience of our investors as we manage through the challenges of today while preparing for a growing future tomorrow.



Sincerely,

A handwritten signature in black ink, appearing to read "Paul G. Boynton". The signature is stylized and written in cursive.

PAUL G. BOYNTON
Chairman, President and
Chief Executive Officer

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number 001-36285



RAYONIER ADVANCED MATERIALS INC.
Incorporated in the State of Delaware
I.R.S. Employer Identification No. 46-4559529
1301 RIVERPLACE BOULEVARD, SUITE 2300
JACKSONVILLE, FL 32207
(Principal Executive Office)
Telephone Number: (904) 357-4600

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common stock, par value \$0.01 per share	RYAM	New York Stock Exchange

Securities to be registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

YES NO

The aggregate market value of the Common Stock of the registrant held by non-affiliates at the close of business on June 29, 2019 was \$313,912,248 based on the closing sale price as reported on the New York Stock Exchange.

The registrant had 63,171,700 shares of Common Stock, \$.01 par value per share, outstanding as of February 25, 2020.

Portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission in connection with the 2019 annual meeting of the stockholders are incorporated by reference in Part III hereof. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2019.

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Note About Forward-Looking Statements

Certain statements in this Annual Report on Form 10-K (this “Report”) regarding anticipated financial, business, legal or other outcomes including business and market conditions, outlook and other similar statements relating to Rayonier Advanced Materials’ (“the Company”) future events, developments, or financial or operational performance or results, are “forward-looking statements” made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. These forward-looking statements are identified by the use of words such as “may,” “will,” “should,” “expect,” “estimate,” “believe,” “intend,” “forecast,” “anticipate” “guidance” and other similar language. However, the absence of these or similar words or expressions does not mean a statement is not forward-looking. While we believe these forward-looking statements are reasonable when made, forward-looking statements are not guarantees of future performance or events and undue reliance should not be placed on these statements. Although we believe the expectations reflected in any forward-looking statements are based on reasonable assumptions, we can give no assurance these expectations will be attained, and it is possible actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. The following risk factors and those contained in Item 1A — *Risk Factors*, among others, could cause actual results or events to differ materially from the Company’s historical experience and those expressed in forward-looking statements made in this document.

Amounts contained in this Report may not always add due to rounding.

Part I

When we refer to “we,” “us,” “our,” “the Company,” or “Rayonier Advanced Materials” we mean Rayonier Advanced Materials Inc. and its consolidated subsidiaries. References herein to “Notes to Financial Statements” refer to the Notes to the Consolidated Financial Statements of Rayonier Advanced Materials Inc. included in Item 8 of this Report.

Business and Operating Risks

- The businesses we operate are highly competitive and many of them are cyclical, which may result in fluctuations in pricing and volume that can adversely impact our business, financial condition and results of operations.
- Our ten largest customers represent approximately 33 percent of our 2019 sales, and the loss of all or a substantial portion of our revenue from these large customers could have a material adverse effect on our business.
- A material disruption at one of our major manufacturing facilities could prevent us from meeting customer demand, reduce our sales and profitability, increase our cost of production and capital needs, or otherwise adversely affect our business, financial condition and results of operation.
- Changes in raw material and energy availability and prices could affect our business, financial condition and results of operations.
- The availability of, and prices for, wood fiber could materially impact our business, results of operations and financial condition.
- We are subject to risks associated with doing business outside of the United States.
- Our operations require substantial capital.
- Currency fluctuations may have a negative impact on our business, financial condition and results of operations.
- Restrictions on trade through tariffs, countervailing and anti-dumping duties, quotas and other trade barriers, in the United States and internationally, especially with respect to China, Canada and as a result of “Brexit”, could adversely affect our ability to access certain markets and otherwise impact our results of operations.
- We depend on third parties for transportation services and increases in costs and the availability of transportation could adversely affect our business.
- Our business is subject to extensive environmental laws, regulations and permits that may restrict or adversely affect our financial results and how we conduct business.
- The potential longer-term impacts of climate related risks remain uncertain at this time.
- Our failure to maintain satisfactory labor relations could have a material adverse effect on our business.
- We are dependent upon attracting and retaining key personnel, the loss of whom could adversely affect our business.
- Failure to develop new products or discover new applications for our existing products, or our inability to protect the intellectual property underlying such new products or applications, could have a negative impact on our business.
- The risk of loss of the Company’s intellectual property and sensitive business information, or disruption of its manufacturing operations, in each case due to cyberattacks or cybersecurity breaches, could adversely impact the Company.
- We may need to make significant additional cash contributions to our retirement benefit plans if investment returns on pension assets are lower than expected or interest rates decline, and/or due to changes to regulatory, accounting and actuarial requirements.

Debt-Related Risks

- We have entered into an amendment (the “Amendment”) to our Senior Secured Credit Facilities (as amended by the Amendment, the “Credit Agreement”) to address the risk of potential non-compliance with certain covenants at the end of the third quarter of 2019, there can be no assurances that we will continue in full compliance with the amended covenants provided in the Credit Amendment through December 31, 2021, which is the date covenant relief granted under the Amendment expires.
- We have significant debt obligations that could adversely affect our business and our ability to meet our obligations.
- The phase-out of the London Inter Bank Office Rate (“LIBOR”) as an interest rate benchmark could result in an increase to our borrowing costs.
- Challenges in the commercial and credit environments may materially adversely affect our future access to capital.
- We may need additional financing in the future to meet our capital needs or to make acquisitions, and such financing may not be available on favorable terms, if at all, and may be dilutive to existing stockholders.

Risks Related to the Company’s Common Stock and Certain Corporate Matters

- Your percentage of ownership in the Company may be diluted in the future.
- Certain provisions in our amended and restated certificate of incorporation and bylaws, and of Delaware law, could prevent or delay an acquisition of the Company, which could decrease the price of our common stock.

Forward-looking statements are only as of the date they are made, and the Company undertakes no duty to update its forward-looking statements except as required by law. You are advised, however, to review any further disclosures we have made or may make in our filings and other submissions to the U.S. Securities and Exchange Commission (the “SEC”), including those on Forms 10-Q, 10-K, 8-K and other reports. Details on each of the above risk factors are more specifically described in Item 1A - *Risk Factors*.

Note About Non-GAAP Financial Measures

A “non-GAAP financial measure” is generally defined as a numerical measure of a company’s historical or future performance that excludes or includes amounts, or is subject to adjustments, so as to be different from the most directly comparable measure calculated and presented in accordance with U.S. Generally Accepted Accounting Principles (“GAAP”). This Report contains certain non-GAAP financial measures, including Earnings Before Interest, Taxes, Depreciation and Amortization (“EBITDA”), adjusted EBITDA, and adjusted free cash flows. These non-GAAP measures are reconciled to each of their respective most directly comparable GAAP financial measures in Item 7 — *Management’s Discussion and Analysis of Financial Condition and Results of Operations*.

We believe these non-GAAP measures provide useful information to our Board of Directors, management and investors regarding certain trends relating to our financial condition and results of operations. Our management uses these non-GAAP measures to compare our performance to that of prior periods for trend analyses, purposes of determining management incentive compensation and budgeting, forecasting and planning purposes.

We do not consider non-GAAP measures an alternative to financial measures determined in accordance with GAAP. The principal limitation of these non-GAAP financial measures is they may exclude significant expense and income items that are required by GAAP to be recognized in our consolidated financial statements. In addition, they reflect the exercise of management’s judgment about which expense and income items are excluded or included in determining these non-GAAP financial measures. In order to compensate for these limitations, reconciliations of the non-GAAP financial measures we use to their most directly comparable GAAP measures are provided. Non-GAAP financial measures should not be relied upon, in whole or part, in evaluating the financial condition, results of operations or future prospects of the Company.

Item 1. Business

We are a global leader of cellulose-based technologies, including high purity cellulose specialties, a natural polymer commonly used in the production of cell phone and computer screens, filters and pharmaceuticals. Starting from a tree and building upon more than 90 years of experience in cellulose chemistry, we provide high quality high-purity cellulose pulp products that make up the essential building blocks for our customers’ products while providing exceptional service and value. In addition, we produce lumber, paperboard, newsprint and high-yield pulp for the use in consumer products.

Prior to June 27, 2014, we consisted of Rayonier Inc.'s ("Rayonier's") wholly-owned performance fibers business which was engaged primarily in the production of cellulose specialties. On that date, holders of Rayonier common shares received one share of our common stock for every three Rayonier common shares held on the record date. This resulted in our separation from Rayonier and the start of our business as an independent, publicly traded company.

In November 2017, we completed the acquisition of Tembec Inc. (the "Acquisition") which manufactured cellulose specialties, as well as lumber, paperboard, newsprint and high-yield pulp. The Acquisition created a combined company with leading positions across the cellulose specialties product spectrum, including acetate, ethers, high-strength viscose, filtration and other cellulose specialties, as well as adding complementary assets in the forest products, paperboard, high-yield pulp and newsprint businesses.

In November 2019, we sold the Matane pulp mill (the "Matane Mill"), which was acquired in the Acquisition, to Sappi Limited, a global diversified wood fiber company, for \$175 million with net cash proceeds of approximately \$158 million after expenses and other adjustments. The Matane Mill produces approximately 270,000 metric tons of high-yield pulp for use in manufacturing paperboard, packaging, and printing and writing paper. As a result of the sale, we have reclassified the Matane Mill's prior year operating results as discontinued operations and assets and liabilities as held for sale. See Note 3 — *Discontinued Operations* of our consolidated financial statements for additional information.

Following the sale of the Matane Mill, we now report the following business segments:

- High Purity Cellulose
- Forest Products
- Paperboard
- Pulp & Newsprint

All prior period disclosures have been conformed to the new segment structure. See Note 21 — *Segment and Geographical Information* of our consolidated financial statements for more information.

As our businesses are moving through the bottom of the cycle, our financial goals for 2020 will be to aggressively control costs and preserve cash to remain compliant with debt covenants. We expect \$60 to \$70 million of benefits to increase EBITDA and cover fixed costs. Actions will include:

- Operating Costs Improvements: \$15 million primarily through efficiencies in supply chain and execution on continuous improvement projects in our facilities.
- Corporate Cost Eliminations: \$10 to \$15 million reduction of administrative support cost structure to align with the current business environment
- Capital Expenditure Reductions: \$10 to \$15 million reduction of capital expenditures with a focus on maintaining assets
- Working Capital Improvements: \$25 million benefit from reducing inventory levels and improving payment terms

If these actions are not sufficient, we will evaluate further opportunities to manage through the economic cycle. These actions may include asset sales, workforce reductions, temporary production curtailments and permanent closures.

We believe that we can manage our business through the bottom of the cycle and materially increase EBITDA through these actions to ensure that we emerge a much stronger company.

High Purity Cellulose

The High Purity Cellulose segment, and in particular the cellulose specialties product line, is the primary driver of our profitability. Cellulose specialties are natural polymers, used as raw materials to manufacture a broad range of consumer-oriented products such as cigarette filters, liquid crystal displays, impact-resistant plastics, thickeners for food products, pharmaceuticals, cosmetics, high-tenacity rayon yarn for tires and industrial hoses, food casings, paints and lacquers. We manufacture products tailored to the precise and demanding chemical and physical specifications of our customers, achieving industry-leading purity and product functionality. Our ability to consistently manufacture high-quality cellulose specialties products is the result of our proprietary production processes, intellectual property, and more than 90 years of technical expertise and knowledge of cellulosic chemistry.

Additionally, a significant portion of our production capacity is dedicated to manufacturing high-purity commodity products for viscose and absorbent materials applications. Commodity viscose is a raw material required for the manufacture of viscose staple fibers which are used in woven applications such as rayon textiles for clothing and other fabrics, and in non-woven applications such as baby wipes, cosmetic and personal wipes, industrial wipes and mattress ticking. Absorbent materials, typically referred to as fluff fibers, are used as an absorbent medium in products such as disposable baby diapers, feminine hygiene products, incontinence pads, convalescent bed pads, industrial towels and wipes and non-woven fabrics. Cellulose specialties typically contain over 95 percent cellulose, while commodity products typically contain less than 95 percent cellulose.

Products

Cellulose Specialties

Cellulose specialties are a natural polymer primarily derived from either wood or cotton and are used as a principal raw material to manufacture a broad range of products. Cellulose specialties generally command a price premium and earn higher margins relative to other commodity wood pulp products. Cellulose specialties are a dissolving wood pulp product which target a combination of high purity and high viscosity. Unlike other wood pulps used for their physical properties, cellulose specialties are sought after for the unique chemical properties they impart on downstream products.

Derived from wood, our cellulose specialties require high levels of purity, consistency and process knowledge. Our products play a significant role in our customers' manufacturing processes, which require cellulose specialties of high purity and uniformity for efficient production. Therefore, our customers demand products of the highest quality. As a result, our products are custom-engineered and manufactured to each customer's unique specifications and require a stringent qualification process; our quality and consistency allow our customers to operate more efficiently and cost-effectively.

One of our key competitive advantages is our unique ability to leverage our global manufacturing asset base to provide our customers greater supply chain security for cellulose specialties fibers. With our four facilities and five manufacturing lines capable of producing cellulose specialties, we are the only cellulose specialties producer in the world with flexibility to use both hardwood and softwood fibers, kraft and sulfite cooking processes, and a variety of proprietary chemical treatments to provide customized product functionality. Additionally, we possess significant process knowledge: the understanding of wood fiber properties and their modification under a sequence of chemical processes, accumulated and developed over 90 years of practical application to satisfy a variety of customer needs. This process knowledge, combined with our manufacturing scale and flexibility and knowledge of customers' applications and specifications, makes us the industry's most adaptable modifier of cellulose fibers.

Commodity Products

We can shift our High Purity Cellulose segment manufacturing assets between commodity viscose and absorbent materials production. Historically we have opted to participate in both markets and fluctuate production to take advantage of market conditions and generate the most attractive margins.

Commodity viscose is primarily sold to producers of viscose staple fibers which in turn are used to manufacture rayon fibers which are widely used in the clothing and textile industries. Shifts in fashion styles and textile fiber blending have increased demand for viscose staple fibers. Additionally, variability in cotton linter supply and increasing environmental concerns about cotton production have resulted in viscose staple producers shifting volume away from cotton linter pulp to wood-based dissolving pulp.

Absorbent materials, or fluff fibers, are typically used in consumer products such as baby diapers. These fibers provide a medium for fluid acquisition, distribution and retention in the products in which they are incorporated. Pricing for commodity products is typically referenced to published indexes or based on publicly available spot market prices.

Competition

Cellulose Specialties

Significant intellectual property, capital investment and technical expertise are needed to design and manufacture customized cellulose specialties fibers to exacting customer specifications. The product must be formulated to achieve the desired characteristics including parameters for purity, viscosity, brightness, reactivity and other physical properties. Product qualification time can be lengthy, extending six to twenty-four months. Resulting customer relationships are typically long-term and are based on an understanding of our customers' production processes and technical expertise which we utilize to help solve our customers' production issues and support new product development. Further, establishing a production line and obtaining the necessary production technologies requires substantial capital and ongoing maintenance expenditures.

Product performance, technical service and price are principal methods of competition in cellulose specialties. Product performance is primarily determined by the chemical attributes of the pulp, including purity, viscosity and uniformity of the cellulose specialties. Our processes, which are a key element of our intellectual property, are capable of generating cellulose specialties purity levels in excess of 98 percent as well as the highest levels of viscosity derived from wood pulp. Typically, product pricing is set annually in the fourth quarter for the following year based on discussions with customers and the terms of contractual arrangements.

We compete with both domestic and foreign producers in cellulose specialties. Competitors include GP Cellulose, Borregaard, Bracell, Sappi, Nippon, Cosmo Specialty Fibers and Aditya Birla Group. Some competitors use both wood and cotton linter fibers, as a source of cellulose fibers. Our multiple manufacturing lines, processes and intellectual property allow us to compete in more segments of the cellulose specialties market than any of our competitors.

Commodity Products

The principal method of competition in commodity products is price, as purity and uniformity are less critical differentiators. We compete with both domestic and foreign producers of commodity products.

For commodity viscose, many competitors derive their commodity viscose from either wood or cotton. Although cellulose specialties can generally be sold to meet commodity viscose demand, the reverse is not typically true. However, in recent years commodity viscose has continued to supplant cotton as the preferred raw material input for viscose staple fiber production. For commodity viscose, major competitors include Sappi, Aditya Birla Group, Lenzing, Austrocell, Fortress Paper and Bracell.

For absorbent materials, major competitors include GP Cellulose, Domtar and International Paper.

Forest Products

We manufacture and market high-quality construction-grade softwood lumber, both stud and random lengths, in North America through our seven sawmills located in Canada.

In 2019, approximately 65 percent of our 2019 lumber sales were exported from Canada to the U.S. On December 28, 2017, the United States Department of Commerce (“USDOC”) issued a determination for countervailing and anti-dumping duties (collectively, the “Duties”) of approximately 20 percent on imports of softwood lumber from Canada. On January 3, 2018, the USDOC issued orders to the United States Customs and Border Protection to collect the Duties on softwood lumber imports from Canada. Through year-end 2019, we have paid approximately \$59 million of Duties. On February 3, 2020, the USDOC issued a preliminary determination that the Duties on softwood lumber would fall to 8.2 percent from 20.2 percent, as it relates to the Company. A final determination is expected in August 2020.

Products

We manufacture finished dimensional lumber (2 by 4’s, 2 by 8’s, etc.) primarily made of spruce, pine, or fir, used in the construction of residential and multi-family homes, light industrial and commercial facilities, and the home repair and remodel markets. Wood chips, a by-product of the lumber manufacturing process, are used as raw materials in our High Purity Cellulose, Pulp and Newsprint facilities in Canada. Additionally, bark and sawdust are used for fuel in several of our operations.

Competition

The principal method of competition in the Forest Products segment is price, which is based on individual sawmill efficiency, the availability of competitively-priced raw materials, demand for wood products used in the construction of residential and multi-family homes as well as demand from the repair and remodel of existing homes. Residential and multi-family home construction is influenced by demographic factors such as population growth, employment, consumer confidence, consumer income, availability of financing and interest rate levels, and the supply and pricing of existing homes on the market. Repair and remodel activity is affected by the size and age of existing housing inventory and access to home equity financing and other credit.

Our significant competitors include West Fraser Timber Ltd., Resolute Forest Products, Weyerhaeuser, Georgia Pacific, Interfor, Canfor, Eacom and other producers of softwood lumber in North America.

Paperboard

We manufacture paperboard in the Temiscaming plant in Quebec. Paperboard is used for printing documents, brochures, promotional materials, packaging, paperback book or catalog covers, file folders, tags, and tickets. Pricing for paperboard is

typically referenced to published indices and marketed through our internal sales team. Our production facility has the capacity to annually produce 180,000 metric tons of paperboard.

Products

Products in the Paperboard business include packaging, printing documents, brochures, promotional materials, paperback book or catalog covers, file folders, tags and tickets.

Competition

The principal method of competition in the Paperboard segment is price and product performance. Price is impacted by the balance between supply and demand as affected by global economic conditions, changes in consumption and capacity, the level of customer and producer inventories, and fluctuations in currency exchange rates. Product performance is determined based on the physical attributes of our products in our customers manufacturing processes. To a lesser extent, quality and service are also considered competitive determinants.

For paperboard, our significant competitors include Westrock, Metsa, Clearwater, and Sappi.

Pulp & Newsprint

We manufacture and market high-yield pulp and newsprint. High-yield pulp, produced in the Temiscaming plant in Quebec, is used by paper manufacturers to produce paperboard, packaging, printing and writing papers and a variety of other paper products. Newsprint, produced in the Kapuskasing plant in Ontario, is a paper grade product used for newspapers, advertising materials and other publications.

Pricing for high-yield pulp and newsprint is typically referenced to published indices marketed through our internal sales team. Our production facilities located in Canada have the capacity to annually produce 300,000 metric tons of high-yield pulp and 205,000 metric tons of newsprint.

Products

We produce high-yield pulp at our Temiscaming plant in Quebec, primarily from hardwood aspen and maple species. These pulps are used by paper manufacturers to produce paperboard products, printing and writing papers and a variety of other paper grades. Approximately 65,000 metric tons are used internally for production of Paperboard.

Newsprint, produced in the Kapuskasing plant in Ontario, is a paper grade used for newspapers, advertising materials and other publications. Newsprint pricing is typically referenced to published indices and marketed through our internal sales team.

Competition

The principal method of competition in the Pulp & Newsprint segment is price. Price is impacted by the balance between supply and demand as affected by global economic conditions, changes in consumption and capacity, the level of customer and producer inventories, and fluctuations in currency exchange rates. To a lesser extent, quality and service are also considered competitive determinants.

Significant Pulp competitors include Millar Western, West Fraser, Paper Excellence, Estonia Cell and Winstone.

Significant Newsprint competitors include Resolute Forest Products, White Birch Paper, Kruger, as well as independent producers.

Raw Materials and Input Costs

All our manufacturing operations require significant amounts of wood fiber, in the form of logs or wood chips, as a raw material and energy to produce our products. Additionally, our High Purity Cellulose and Pulp & Newsprint segments' manufacturing processes require significant amounts of chemicals. These raw materials and input costs are subject to significant changes in prices as a result of weather conditions, supply and demand. To control cost, we continually pursue reductions in usage and costs of key supplies, services and raw materials. We do not foresee any material constraints in the near term from pricing or availability.

Wood

Our Canadian Forest Products operations rely on the consistent supply of substantial quantities of logs. Substantially all timberlands in Canada are government-owned and the right to harvest timber is acquired through provincially-granted licenses. Licenses grant the holder the right to harvest, for a fee, up to a specified quantity of timber annually. Government objectives in

granting licenses include responsible management of timber, soils, wildlife, water and fish resources and the preservation of biodiversity and the protection of cultural values. The objectives also include achieving the fullest possible economic utilization of the forest resources and employment in local communities. In addition, license holders are required to replant the trees harvested to ensure re-establishment of the forest after harvesting. Reforestation projects are planned and supervised by our forest resource management staff and subject to approval by relevant government authorities. Our timber harvesting operations are performed directly or carried out by independent contractors under our forest resource management supervision.

In Canada, the High Purity Cellulose and Pulp & Newsprint plants are supplied with wood chips produced as a by-product from the lumber manufacturing process.

In the U.S. and France, we supply wood chips to our High Purity Cellulose plants through the purchase of chips from lumber producers or produce chips through our wood chipping facilities.

Chemicals

Chemicals, which include caustic soda (sodium hydroxide), sulfuric acid, ammonia, sodium chlorate and various specialty chemicals, are purchased under negotiated supply agreements with third parties. The prices for these products are impacted by various factors including supply and demand, environmental regulation, energy prices and overall economic conditions.

Energy

Our energy is primarily produced through the burning of lignin and other residual biomass in recovery and power boilers located at our plants. However, our manufacturing facilities still utilize significant amounts of fuel oil, natural gas and purchased electricity to supplement their energy requirements. In addition, energy prices impact our transportation costs for delivery of raw materials to our manufacturing facilities and delivery of our finished products to customers.

Intellectual Property

Substantially all of our intellectual property relates to our High Purity Cellulose segment. We own patents, trademarks and trade secrets, and have developed significant know-how, particularly in the production of high purity cellulose, which we deem important to our operations. We intend to protect our intellectual property, including, when appropriate, filing patent applications for inventions that we deem important to our business and operations. Our U.S. patents generally have a duration of 20 years from the date of filing. We also require key employees to enter into non-compete agreements as appropriate.

Seasonality

Our operating results are not significantly affected by seasonal changes. However, working capital is affected by the Canadian wood harvest which occurs primarily in the winter months.

Customers

No single customer accounted for more than 10 percent of our consolidated net sales during the year ended December 31, 2019.

Research and Development

Research and development capabilities and activities are focused on the High Purity Cellulose segment. The quality and consistency of our cellulose specialties and research and development capabilities create a significant competitive advantage; they are important factors in achieving an optimal value for our cellulose specialties products. Our research and development efforts are primarily directed at further developing products and technologies, improving the quality of cellulose fiber grades, improving manufacturing efficiency and environmental controls and reducing fossil fuel consumption. We continue to focus our research and development activities to develop and market additional new products and applications.

We spent \$6 million, \$6 million and \$4 million on research and development for the years ended December 31, 2019, 2018 and 2017, respectively.

Environmental Matters

Our manufacturing operations are subject to significant federal, state, provincial and local environmental regulations. For a more detailed discussion, see Item 1A — *Risk Factors*, Item 3 — *Legal Proceedings*, Item 7 — *Management's Discussion and Analysis of Financial Condition and Results of Operations — Environmental Regulation*. Additionally, see Note 11 — *Environmental Liabilities* and Note 22 — *Commitments and Contingencies* of our consolidated financial statements for more information.

Employee Relations

We currently employ approximately 4,000 people in the United States, Canada and France. We believe relations with our employees are satisfactory. See Note 22 — *Commitments and Contingencies* of our consolidated financial statements for more information.

Availability of Reports and Other Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and amendments to those reports filed or furnished pursuant to Sections 13(a) or 14 of the Securities Exchange Act of 1934 are made available to the public free of charge in the Investor Relations section of our website www.rayonieram.com, shortly after we electronically file such material with, or furnish them to, the SEC. All reports we file with or furnish to the SEC are also available free of charge on the SEC's website, <https://www.sec.gov>. Our corporate governance guidelines and charters of all committees of our board of directors are also available on our website.

Item 1A. Risk Factors

Our operations are subject to a number of risks and potential adverse events including, but not limited to, those listed below. When considering an investment in our securities, you should carefully read and consider these risks, together with all other information in this Report and our other filings and submissions to the SEC. If any of the events described in the following risk factors actually occur, our business, financial condition or operating results, as well as the market price of our securities, could be materially adversely affected.

Business and Operating Risks

The businesses we operate are highly competitive and many of them are cyclical, which may result in fluctuations in pricing and volume that can adversely affect our business, financial condition and results of operations.

Competition, demand fluctuations and cyclicity are the most significant drivers of sales volumes and pricing for our products. We face significant competition from domestic and foreign producers in virtually all of our businesses. For example, in our cellulose specialties product line, increased cellulose specialties production capacity from our competitors, some of whom have lower raw material, wood and production costs than us, combined with demand weakness, particularly in the acetate and viscose grades, have collectively contributed to substantially lower cellulose specialties sales prices over the past several years. Likewise, volumes have declined meaningfully over the past two years due to these factors. Our high-purity commodity products for viscose and absorbent materials applications are also highly cyclical, and in 2019 were at extremely low levels. There can be no assurance these declines will not continue into the near future.

With respect to demand for cellulose specialties, and in particular our acetate grades, the majority of these acetate grades are used to manufacture acetate tow, which is used to make the filter component of a cigarette. Significant increases in cigarette costs and potential actions taken by the United States and other countries to discourage smoking, such as tax increases on tobacco products, policy changes and future legislation, may have a material adverse effect on the demand for tobacco products. For example, actions by the Chinese government to curb corruption and limit smoking in public buildings have had some impact on cigarette consumption. Additionally, increased use of e-cigarettes, electronically heated tobacco products and smokeless tobacco products, by way of example, may affect demand for traditional cigarettes.

In addition, some of the industries in which our end-use customers participate, such as construction, home building, publishing, packaging, automotive and textiles, are cyclical in nature, thus posing risks to us which are beyond our control. These industries are highly competitive and may experience overcapacity and reductions in end use demand, each of which may affect demand for and pricing of our products. The consequences of this could include the reduction, delay or cancellation of customer orders.

Our lumber, paper, high yield pulp and paper-related commodity businesses are highly cyclical and influenced by a variety of factors. These include periods of excess product supply due to industry capacity increases, periods of decreased demand due to reduced economic activity or market conditions, inventory de-stocking by customers and fluctuations in currency exchange rates. These factors may cause significant price changes over a short period, as we saw in the second half of 2018 and continuing into 2019, in our lumber business. To address these factors, we have in the past, and may in the future, elect to schedule production curtailments and shutdowns to address, for example, unfavorable economic conditions, reduced demand for our products or the end products of our customers, lack of economically viable fiber in Canada, reduced market prices and other factors. In particular, our lumber, newsprint and high yield pulp businesses have been the subject of curtailments and shutdowns in 2019 in reaction to market conditions.

In sum, continued competitive pressures and demand weakness, as well as the cyclical nature of our commodity businesses, may have a material impact on our future sales prices and volumes and, therefore, our business, financial condition and results of operations.

Our ten largest customers represent approximately 33 percent of our 2019 revenue, and the loss of all or a substantial portion of our revenue from these large customers could have a material adverse effect on our business.

While we are not dependent on any single customer or group of customers, our ten largest customers accounted for approximately 33 percent of revenue in 2019. Due to the highly competitive nature of our businesses, we regularly bid for new business and to retain/renew existing business and, as such, we are subject to the potential for meaningful revenue and volume gains and losses.

We are also subject to credit risk associated with these customers. If one or more of our ten largest customers were to become bankrupt, insolvent or otherwise were unable to pay for its products, we may incur significant write-offs of accounts that may have a material adverse effect on our business, financial condition and results of operations.

Although we continue to strive to broaden and diversify our customer base, a significant portion of our revenue is derived from these ten customers, and the loss of all or a substantial portion of sales to any of these customers, or significant, unfavorable changes to pricing or terms contained in contracts with them, could materially affect our business, financial condition or results of operations. See Note 21 — *Segment and Geographical Information* of our consolidated financial statements for more information on our major customers.

A material disruption at one of our major manufacturing facilities could prevent us from meeting customer demand, reduce our sales and profitability, increase our cost of production and capital needs, or otherwise adversely affect our business, financial condition and results of operation.

Any of our major manufacturing facilities, or a significant portion of any of these facilities, could cease operations unexpectedly or suffer a material disruption to all or a portion of its operations due to a number of adverse events, including:

- unscheduled outages or downtime due to the need for unexpected maintenance or equipment failure, such as for portions of our facilities that produce steam and electricity (such as boilers and turbines), pollution control equipment, and equipment directly used to manufacture our products, such as the reliability issues during the first quarter of 2019 at the Temiscaming, Quebec plant;
- prolonged power interruptions or failures;
- explosion of boilers or other pressure vessels;
- interruptions in the supply of raw materials, including chemicals and wood fiber;
- disruptions to or failures of the transportation infrastructure, such as roads, bridges, railroad tracks and tunnels, as well as lack of availability of rail, trucking and ocean shipping equipment and service from third party transportation providers;
- interruption or material reduction of water supply;
- a chemical spill or release or other event causing risks to the environment or human health and safety;
- information technology system failures and cybersecurity incidents;
- fires, floods, windstorms, earthquakes, hurricanes or other similar catastrophes, such as the hurricanes which impacted our Jesup, Georgia and Fernandina Beach, Florida plants in 2017;
- labor interruptions, such as the strike at our Temiscaming, Quebec facility in 2014 and short duration walk-outs in 2019 at our site in Tartas, France;
- terrorism or threats of terrorism; and
- other operational problems resulting from these and other risks.

Some of these matters are discussed in more detail in other sections of this Item 1A-*Risk Factors*. Depending on the nature, extent and length of any operational interruption, the event could materially affect our business, financial condition and results of operations.

Changes in raw material and energy availability and prices could affect our results of operations and financial condition.

Raw material costs and energy, such as chemicals, oil and natural gas and electricity are a significant operating expense. The cost of these inputs can be volatile and are susceptible to rapid and substantial increases due to factors beyond our control, such as lack of availability, changing economic and weather conditions, political or other unrest or instability in energy-producing nations, and supply and demand considerations. For example, caustic soda, a key manufacturing input in our high purity cellulose business, has historically had significant price volatility. Similarly, the price of oil and natural gas (including its pipeline transportation element) is subject to fluctuations based on market and other factors. In contracts for certain of our products, pricing

is set annually or otherwise not subject to change for a contractually-agreed period of time, so in some cases we may have limited ability to pass along fluctuations in these input costs once the contract price for the relevant period has been established. In addition, industrial and other policies of the governments and governmental agencies having jurisdiction over our facilities may change, due to changes in political leadership or otherwise, which also could adversely impact the cost of energy and its transportation. While we often use various strategies to mitigate the potential impact of this pricing volatility, such as long term contracting and the purchase of derivative commodity contracts, the impact of raw material and energy pricing increases could materially adversely affect our business, financial condition and results of operations.

The availability of, and prices for, wood fiber may significantly impact our business, results of operations and financial condition.

Wood fiber is the single largest raw material in the manufacturing process for virtually all of our products. Many factors can impact its availability and pricing: One key factor is whether the land on which the timber is grown is owned by private parties or governmental entities. For example, fiber for our U.S. and French facilities is primarily harvested from privately-held lands, while fiber for our Canadian facilities is primarily harvested from lands owned or controlled by the governments of the provinces of Ontario and Quebec, referred to as “Crown lands”. In 2019, approximately 90 percent of the Company’s fiber requirements in Canada were sourced from Crown lands. The Company’s current agreements with provincial authorities grant timber “tenures” for terms varying from five to 20 years and may be subject to renewals every five years. In Canada, the Company currently manages approximately 25 million acres (ten million hectares) of Crown lands for timber production. The price and availability of this Canadian fiber depends, in large part, on the Company’s ability to replace or renew these agreements on acceptable terms or enter into acceptable alternative fiber supply arrangements with provincial authorities. The terms of any replacement, renewal or alternative arrangement are based on legislative and regulatory provisions as well as governmental policy. Therefore, changes in legislation, regulatory regimes or policy in the provinces in which we operate may reduce the availability of fiber and increase costs through the imposition of additional and more stringent harvesting, rehabilitation and silvicultural standards or the alteration of fee structures. Although we expect these agreements to be extended in the ordinary course as they come up for renewal, there can be no assurance that they will be renewed, extended or replaced in the future on acceptable terms, or at all, or that the amount of timber that the Company is permitted to harvest will not decrease.

Also, Aboriginal communities in Canada, often referred to as “First Nations”, have Aboriginal or treaty rights on most timberlands in Canada. Canadian courts have recognized that Aboriginal people may possess rights in respect of land used or occupied by their ancestors and have encouraged the federal and provincial governments and Aboriginal people to resolve rights claims through the negotiation of treaties. We operate in territories in which a spectrum of non-treaty and treaty rights exist. To mitigate risks and accommodate the traditional activities of these communities during forestry planning and operations, the Company has concluded agreements, and is currently negotiating other agreements, with many First Nations communities to achieve Aboriginal community acceptance for our forestry operations plans. These agreements support an approach of active engagement with Aboriginal communities that serves to ensure the identification of issues and facilitates constructive problem-solving.

Regulatory developments and environmental litigation also have caused, and may cause in the future, significant reductions in the amount of timber available for commercial harvest from non-Crown lands in Canada and privately-owned lands in the U.S. and France, thereby increasing prices for these sources of wood fiber. In Canada, for example, future legislation and policy changes, litigation advanced by environmental groups and Aboriginal communities concerning rights and limitations on harvesting and use of timberlands, the protection of endangered species, the promotion of forest diversity, control over insect and disease infestations, and the response to and prevention of wildfires could also affect wood fiber supply, pricing and availability.

In addition, much of the wood fiber we use is sourced by or from third party contractors who harvest, chip and/or truck the fiber to our manufacturing facilities, either as logs for lumber and chipping, or as chips directly to our manufacturing facilities. Another key factor in fiber supply and pricing is the availability of experienced logging and fiber transportation contractors in the areas in which our manufacturing facilities are located. Moreover, to the extent that fiber must be sourced from greater distances from our facilities due to unavailability of more proximate fiber, this could also impact pricing due to additional transportation cost. Significant reduction in the availability of experienced contractors could also impact wood fiber supply, pricing and availability.

Finally, natural conditions, such as weather, timber growth cycles and restrictions on access to timberlands for harvesting (for example, due to prolonged wet or cold conditions) may also limit the availability, and increase the price, of wood, as may other factors, including damage by fire, insect infestation, disease, prolonged drought and natural disasters such as wind storms and hurricanes. For example, during the past two years we have seen more frequent wet weather in the Southeastern U.S. region from which we source our fiber, which can result in reduced availability of supply and higher prices, especially for hardwoods. It is unclear whether these conditions will persist into the future.

In sum, any sustained decrease in harvestable lands or wood supply, or increase in fiber prices, whether sourced from Crown lands in Canada or from private parties in Canada, the U.S. or France, or changes in the logging and transportation supply base, or significant changes to historically customary natural conditions, could materially increase our costs and thereby materially impact our business, financial condition and results of operations.

We are subject to risks associated with doing business outside of the United States.

We have significant manufacturing facilities in Canada and France, and a significant portion of our sales are to customers and customer locations outside of the United States, including Canada, China, Japan, South Korea, the European Union and other international markets. Sales to customers outside of the United States made up approximately 61 percent of our revenue in 2019. The manufacture and sale of our products in non-U.S. markets results in risks that are inherent in conducting business under international laws, regulations and customs. We expect international sales will continue to contribute significantly to our financial condition and future growth. The risks associated with our business outside the United States include:

- maintaining and governing international subsidiaries and managing international operations;
- the need to comply with, changes in and reinterpretations of, the laws, regulations and enforcement priorities of the countries in which we manufacture and sell our products;
- responsibility to comply with anti-bribery laws such as the U.S. Foreign Corrupt Practices Act and similar anti-bribery laws in other jurisdictions;
- trade protection laws, policies and measures and other regulatory requirements affecting trade and investment, including loss or modification of exemptions for taxes and tariffs, imposition of new tariffs and duties and import and export licensing requirements, as discussed below in more detail;
- repatriating cash from foreign countries to the United States;
- changes in tax laws and their interpretations in the countries in which we do business, including the potential impact on the value of recorded or future deferred tax assets and liabilities;
- product damage or losses incurred during shipping;
- political instability and actual or anticipated military or political conflicts;
- economic instability, inflation, recessions and interest rate and currency exchange rate fluctuations, as discussed below in more detail;
- uncertainties regarding non-U.S. judicial systems, rules and procedures; and
- minimal or limited protection of intellectual property in some countries.

These and other risks of doing business outside of the United States could adversely affect our business, financial condition and results of operations.

Our operations require substantial capital.

We operate capital intensive businesses and require substantial capital for ongoing maintenance, repair and replacement of existing facilities and equipment. Although we maintain our production equipment with regular scheduled maintenance, key pieces of equipment and systems, some of which are large in scale, may need to be repaired or replaced periodically. Moreover, some of the facilities we acquired as part of the Tembec acquisition in 2017 have deferred capital expenditures due to Tembec's cash flows limitations in recent years, which may require the Company to make additional investments. The costs of repairing or replacing such equipment and the associated downtime of the affected production line could adversely affect our financial condition and results of operations. In addition, new or existing environmental regulations at times require additional capital expenditures for compliance. We believe our capital resources are currently adequate to meet our current projected operating needs, capital expenditures and other cash requirements. However, if for any reason we are unable to provide for our operating needs, capital expenditures and other cash requirements on reasonable economic terms, we could experience an adverse effect on our business, financial condition and results of operations.

Currency fluctuations may have a negative impact on our business, financial condition and results of operations.

We have manufacturing operations in the United States, Canada and France. The Company also sells its products all over the world, in either U.S. dollars, Canadian dollars or Euros. As a result, the Company is exposed to movements in foreign currency exchange rates, and its earnings are affected by increases or decreases in the value of the U.S. dollar and in the value of the Canadian dollar and Euro relative to the U.S. dollar. For example, a strengthening U.S. dollar or a weakening home currency of the countries in which certain of our international competitors manufacture products can adversely impact the Company's competitive position versus these competitors. In addition to ordinary course currency fluctuations, specific events such as Brexit have had, and could in the future have, impact on currency valuation. The Company's risk management policy allows management, with oversight from the Audit Committee of its Board of Directors, to hedge a significant portion of its exposure to fluctuations in foreign currency exchange rates. To accomplish this, the Company has used, and may in the future continue to use, derivative instruments, such as

currency options and foreign exchange forward contracts, to mitigate its exposure to fluctuations in foreign currency exchange rates, but there can be no assurance that the Company will be protected against substantial foreign currency fluctuations or that such fluctuations will not have a material adverse impact on our business, financial condition and results of operations.

Restrictions on trade through tariffs, countervailing and anti-dumping duties, quotas and other trade barriers, in the United States and internationally, could adversely affect our ability to access certain markets.

We manufacture our products in the United States, Canada and France, and sell them into more than 40 countries. Our financial results are highly dependent on our ability to sell our products globally. Trade barriers such as tariffs, countervailing and dumping duties, quotas and similar restrictions on trade have in the past, and could in the future, result in materially reduced revenues and profitability. Examples of the effects of such restrictions on trade and tariffs on our business in China, Canada and as a result of “Brexit” are set forth below.

China

In 2019, the Company had total sales of \$328 million of products shipped to customers in China and, of this amount, \$229 million were of products manufactured in the United States. The continuing uncertainty, volatility and trade tensions, tariffs and negotiations between China and the U.S. have impacted our business in China and could do so in the future. On September 24, 2018, in retaliation for U.S. tariffs, China announced a five percent tariff on approximately \$60 billion in U.S. products exported to China, which includes all wood pulp sold by the Company from the U.S. into China. There is also the potential for additional retaliation in response to the U.S. tariffs, which could take the form of additional tariffs on U.S. products exported by the Company into China, or other actions such as quotas or other limitations on Chinese purchases from U.S.-based companies, including the Company. Failure of the U.S. and Chinese governments to reach acceptable agreements regarding trade, as well as continued trade volatility and additional trade-related actions by the Chinese government, could have a material impact on our business, financial condition and results of operations.

Canada

The Company operates six softwood lumber mills in Ontario and Quebec, Canada and, in 2019, sold approximately \$160 million of softwood lumber into the United States from Canada. The United States and Canada have a history dating to the early 1980s of trade disputes relating to the export of softwood lumber from Canada into the United States. Each dispute has been resolved via agreement or litigation, which generally involved some combination of duties and/or quotas as well as a return of all or most of the duties previously paid by Canadian softwood lumber producers. In October of 2015, a ten-year Softwood Lumber Agreement (the “SLA”) between the United States and Canada, which resolved the 2001-2006 lumber dispute between the countries, expired. No agreement was reached to extend or renew it, and as a result, after a one-year cooling off period the United States commenced a dumping investigation of lumber exports from Canada into the U.S. In 2017, anti-dumping and countervailing duties were assessed by the United States Department of Commerce (“Commerce”) on lumber exported into the United States, with the Company being assigned an anti-dumping duty rate of 6 percent and a countervailing duty rate of 14 percent. These duties are being legally challenged by Canada under both the North American Free Trade Agreement (“NAFTA”) and World Trade Organization (“WTO”) dispute resolution processes. The Company has paid approximately \$59 million in lumber duties to date, but expects to eventually receive most of these duties back in the event of a favorable ruling under the NAFTA or WTO process or a settlement of the dispute. No assurances can be given that the duties will be overturned or repaid through the legal process or a negotiated settlement, or that lumber pricing will be sufficient to substantially offset their impact.

“Brexit”

The Company does not currently operate any manufacturing facilities, have any significant sales to customers, or have any major supply chain relationships, in Great Britain. As such, with respect to the exit of Great Britain from the European Union (“EU”), the Company does not expect Brexit to have a material impact on its business, financial condition or results of operations. However, the Company does have manufacturing facilities in the EU (in France) and in 2019 had \$268 million of sales to customers in the EU, so to the extent that Brexit impacts the EU’s economy generally, specific regions of the EU or specific companies located in the EU, no assurances can be given that such events would not have a material impact on the Company’s business, financial condition or results of operations.

We depend on third parties for transportation services and increases in costs and the availability of transportation could adversely affect our business.

Our business depends on transportation services provided by third parties, both domestically and internationally. We rely on these providers for transportation of the products we manufacture as well as delivery of raw materials to our manufacturing facilities. A significant portion of the products we manufacture and raw materials we use are transported by railroad or trucks, and internationally by ship.

If any of our transportation providers were to fail to deliver the goods we manufacture in a timely manner, or damaged them during transport, we may be unable to sell those products at full value, or at all. Similarly, if any of these providers were to fail to deliver raw materials to us in a timely manner, we may be unable to timely manufacture our products in response to customer demand. In addition, the cost of energy, and specifically fuel, may adversely impact the cost of transporting our products. Finally, if any of the ports we commonly use for international shipping, or the port system generally, were to suffer work stoppages, slowdowns or strikes, we could be adversely impacted.

Our business is subject to extensive environmental laws, regulations and permits that may restrict or adversely affect how we conduct business and our financial results.

Our plants are subject to stringent environmental laws, regulations and permits that may cause us to incur significant capital to enable compliance, or which could limit operations and production. Many of our operations are subject to stringent environmental laws, regulations and permits that contain conditions governing how we operate our facilities including how much and, in some cases, what types of products we can produce. These laws, regulations and permits, now and in the future, may restrict our current production, limit our ability to increase production and impose significant costs on our operations with respect to environmental compliance. It is expected that, overall, compliance-related capital and operating costs will likely increase over time as environmental laws, regulations and permit conditions become more stringent, and as the expectations of the communities in which we operate become more demanding.

Environmental laws, regulations and permits are constantly changing and are generally becoming more restrictive. Laws, regulations, permits and related judicial decisions and administrative interpretations affecting our business are subject to change, and new laws and regulations are frequently enacted. These laws and regulations may limit, prohibit or affect, among other things, air emissions, wastewater discharges, receiving water quality, remedial standards for contaminated property and groundwater, and the type of chemicals we use in our manufacturing processes. Over time, the complexity and stringency of these laws and regulations have increased and the enforcement of these laws and regulations has intensified. Environmental regulatory authorities have pursued a number of initiatives which, if implemented, could impose additional operational and pollution control obligations on industrial facilities like ours, especially in the area of air emissions and wastewater and storm water control. See Item 7 - *Management's Discussion and Analysis of Financial Condition and Results of Operations - Environmental Regulation* for further information. Environmental laws and regulations will likely continue to become more restrictive and over time could adversely affect our business, financial condition and results of operations.

Environmental groups, Aboriginal communities (in Canada) and interested individuals may seek to delay or prevent a variety of operations. We expect that environmental groups, Aboriginal communities and interested individuals will intervene with increasing frequency in the regulatory processes in areas where we operate plants and manage and operate timberlands. External engagement with these groups and communities is a requirement of our licenses to manage and operate timberlands in Quebec and Ontario. Consultation with indigenous communities may also be required during the environmental permitting process for renewal of existing permits and expansions or modifications of our manufacturing operations in these provinces. Delays, restrictions and increased cost caused by the intervention of these groups or interested individuals could adversely affect our operating results. In addition to intervention in regulatory proceedings, interested groups and individuals may file or threaten to file lawsuits that seek to prevent us from obtaining permits, implementing capital improvements or pursuing operating plans. For example, in March 2014, litigation was commenced in federal court by the Altamaha Riverkeeper ("ARK") alleging violations of federal and state environmental laws relating to permitted wastewater discharges from our Jesup plant (although it was dismissed by the court on summary judgment in 2015), and in January of 2016 the same group brought an action in the Georgia Office of Administrative Hearings against the Georgia Environmental Protection Division of the Natural Resources ("EPD") in opposition to the issuance by EPD of a renewed wastewater treatment permit for our Jesup plant. While these proceedings have been decided, to date, largely in the Company's favor, we expect continuing attempts at legal intervention by ARK and others. See Item 3 - *Legal Proceedings* for a description of the pending legal proceedings with ARK.

We currently own or may acquire properties that require environmental remediation or otherwise are subject to environmental and other liabilities. We currently own, may have liability at formerly operated manufacturing facilities that we do not currently own, and may acquire additional facilities in the future, which are subject to environmental liabilities, such as remediation of soil, sediment and groundwater contamination and other liabilities. The cost of assessment and remediation of contaminated properties could be substantial and adversely affect financial results. These costs could include, without limitation, costs of investigation and assessment, corrective measures, installation of pollution control equipment and other remediation and closure costs, as well as third-party claims for property damage and personal injury as a result of alleged violations of, or liabilities arising out of, environmental laws and regulations. Although we believe we currently have adequate liabilities recorded, legal requirements relating to assessment and remediation of contaminated properties continue to become more stringent and there can be no assurance actual expenditures will not exceed current liabilities and forecasts, or that other presently unknown liabilities will not be discovered

in the future. See Item 7 - *Management's Discussion and Analysis of Financial Condition and Results of Operations - Environmental Regulation* and Note 11 - *Environmental Liabilities*.

The potential longer-term impacts of climate-related risks remain uncertain at this time.

In 2019, focus and attention to climate-related risks and opportunities continued to increase in importance to our customers, investors and other stakeholders. Certain investors have expressed a desire for issuers to improve their climate-related disclosures and have advocated for use of a disclosure framework created by the Task Force on Climate-Related Financial Disclosures (TCFD). While the Company is endeavoring to model, quantify and disclose climate-related risks similarly to the TCFD requirements, it has also made meaningful information available on its Company website and expects to develop specific climate-related disclosures in alignment with the TCFD requirements over the 12-18 months. At this time, the Company does not expect climate-related issues to have a material adverse impact on its business, financial condition or results of operations in the near term.

The Company considers and evaluates climate-related risks in three general categories; Regulatory, Transition to a low-carbon economy, and Physical risks related to climate-change.

Regulatory. There are numerous international, federal and state-level initiatives and proposals to address domestic and global climate issues. Within the United States, Canada and France, where the Company has operations, most of these initiatives and proposals would or currently regulate and/or tax, in one fashion or another, the production of carbon dioxide and other “greenhouse gases” (GHGs) to facilitate the reduction of carbon compound emissions to the atmosphere, and provide tax and other incentives to produce and use more “clean energy.” Initiatives that could materially impact purchased electricity prices could increase our manufacturing costs, especially in our Canadian operations, because our operations in Canada use more purchased electricity (on a percentage basis) than those in our U.S. facilities, which generate most of their own electricity needs. In addition, the federal government of Canada has indicated its intent to regulate priority air pollutants and GHGs under the *Clean Air Act* and the *Canadian Environmental Protection Act*. Under the proposed targets, the Company’s Canadian pulp and paper mills may be required to reduce air pollutants, such as particulate matter (PM), sulphur oxides (SOx) emissions, nitrogen oxides (NOx) and GHGs. While industry consultations are ongoing with the federal government, the cost of making any such reductions is currently unknown; however, the requirements associated with PM, SOx and NOx are not expected to be material to the Company given its current operations and pollution control systems.

Under the provisions of the Canadian federal programs, which permit the provinces to implement their own GHG reduction programs in lieu of the federal ones, both Ontario and Quebec have implemented “cap and trade” programs for GHGs and, at this time, only the Company’s Temiscaming site in Québec was a net purchaser of credits under these programs in 2019. However, in July of 2018, the then-newly elected provincial government in Ontario terminated Ontario’s cap and trade program, which as a result subjected the province to the federal Canadian requirements. To date, the cost of GHG credits under cap and trade programs purchased by our business and incorporated into the overall cost of our purchased wood fiber has not been material, though no assurances can be given that they will not substantially increase in the future, and especially in Canada after 2022 (when the current programs expire) because the future state of the law and cost of GHG credits after such date is currently not known.

Transition. The transition to a low carbon economy, as predicted by many investors and other stakeholders, poses both risks and opportunities for the Company that are, as yet, not quantified. Similar to other manufacturers in our sector, we use biomass, natural gas, liquid fossil fuels and purchased electricity to power our plants. Changes in policy, regulation or technology related to fuels that we use, or our electricity providers use, could increase our costs.

At the same time our main product lines (cellulose specialties and viscose grade commodity dissolving wood pulps) as well as all of our other products, are made from wood as their primary raw material, which is a renewable, natural raw material. In addition, our cellulose specialty products are natural polymers that potentially can be used as an effective, more climate-friendly substitute for certain applications which currently use fossil fuel-based products. However, these opportunities, as well as their attendant risks, are not fully known or understood at this time.

Physical. The potential impacts of extreme weather which could result from the impacts of climate change, such as hurricanes, blizzards, and heavy rain, are factored into our enterprise risk assessment process and the mitigation measures we currently take to protect our assets and business. It is not clear whether increased frequency of these or similar events would materially change our risk profile, analyses or mitigation measures, but there can be no assurance that they would not require additional expenditures which could be material.

In sum, additional business and regulatory initiatives may be implemented to address GHG emissions and other climate-change-related concerns. If such initiatives are implemented, we may be required to incur additional capital expenditures, increased operating costs for wood fiber or raw materials, and/or mitigating expenses, such as carbon taxes or other charges, to address and

comply with any such initiatives. No assurance can be given that the increased costs associated with compliance of future GHG-related requirements will not have a material adverse effect on our business, financial condition and results of operations.

Our failure to maintain satisfactory labor relations could have a material adverse effect on our business.

As of December 31, 2019, approximately 74 percent of our global work force is unionized. As a result, we are required to negotiate the wages, benefits and other terms of employment with these employees collectively. Our financial results could be adversely affected if labor negotiations resulted in substantially higher compensation costs or materially restricted how we run our operations. In addition, our inability to negotiate acceptable contracts with any of these unions as existing agreements expire could result in strikes or work stoppages by the affected workers. While we do not expect any labor interruptions of significant duration, if our unionized employees were to engage in a strike or other work stoppage at one or more of our major facilities, we could experience a significant disruption of our operations, which could materially affect our business, financial condition and results of operations.

We are dependent upon attracting and retaining key personnel, the loss of whom could adversely affect our business.

We believe our success depends, to a significant extent, upon our ability to attract and retain key senior management and operations management personnel. Changing demographics and labor work force trends may result in the loss of knowledge and skills as experienced workers retire. Furthermore, some of our facilities are in relatively remote locations, which can adversely impact our ability to recruit and retain employees. Our failure to retain these key personnel and recruit qualified replacements for retiring employees could adversely affect our business, financial condition or results of operations.

Failure to develop new products or discover new applications for our existing products, or our inability to protect the intellectual property underlying such new products or applications, could have a negative impact on our business.

We have an active research and development program to develop new products and new applications for our existing products. However, there can be no assurance this program will be successful, either from a product development or commercialization perspective, or that any particular invention, product or development, or the program as a whole, will lead to significant revenue or profit generation. Moreover, some of our new products and new applications may not contain intellectual property that can be protected under applicable law. Failure to generate meaningful revenue and profit from our research and product development efforts could adversely affect our business, financial condition and results of operations in the future.

The risk of loss of the Company's intellectual property and sensitive business information, or disruption of its manufacturing operations, in each case due to cyberattacks or cybersecurity breaches, could adversely impact the Company.

Like most companies, the Company has been, and expects in the future to continue to be, subject to attempted cyberattacks. Cyberattacks or cybersecurity breaches could compromise the Company's intellectual property and confidential business information, cause a disruption to the Company's operations, or harm the Company's reputation. The Company's information technology systems, some of which are dependent on services provided by third parties, serve an important role in the efficient operation of its business. This role includes ordering and managing equipment, parts and raw materials from suppliers, managing inventory, managing the processes we use to produce finished products, facilitating order entry and fulfillment and processing of transactions, summarizing and reporting financial results, facilitating internal and external communications, administering human resources functions, retaining certain personal information and providing other processes necessary to manage our business. While the Company has implemented and maintains what it believes to be appropriate cybersecurity policies, programs, controls and systems, there can be no assurance a cyberattack would not be successful, or that such a cybersecurity breach will not occur. Such an event could have a material adverse impact on the Company's results of operations and financial condition.

We may need to make significant additional cash contributions to our retirement benefit plans if investment returns on pension assets are lower than expected or interest rates decline, and/or due to changes to regulatory, accounting and actuarial requirements.

We have a qualified non-contributory defined benefit pension plan, which covers many of our salaried and hourly employees in the United States. The Federal Pension Protection Act of 2006 requires certain capitalization levels be maintained in each of these benefit plans. Our non-U.S. pension plans, while currently adequately funded, will also require periodic contributions to ensure that applicable legal requirements are met. Because it is unknown what the investment return on pension assets will be in future years or what interest rates may be at any point in time, no assurances can be given that applicable law will not require us to make future material plan contributions. In addition, it is possible new or additional accounting rules and changes to actuarial requirements (for example, if life expectancy assumptions for participants are increased) may also result in the need for additional contributions to the plans. Any such contributions could adversely affect our financial condition. See Item 7 - *Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Policies and Use of Estimates* for additional information about these plans, including funding status.

Debt-Related Risks

While the Company has entered into an amendment (the “Amendment”) to its Senior Secured Credit Facilities (as amended by the Amendment, the “Credit Agreement”) to address the risk of potential non-compliance with certain covenants at the end of the third quarter of 2019, there can be no assurances that the Company will continue in full compliance with the amended covenants provided in the Credit Amendment through December 31, 2021, which is the date covenant relief granted under the Amendment expires.

Cash flows from operations, primarily driven by operating results, have historically been our primary source of liquidity and capital resources. Primarily as a result of significant decreases over the past 18 months in the market prices for our commodity products, and specifically viscose and fluff pulps, high-yield pulp, lumber, paperboard and newsprint, our financial results have materially declined requiring us to amend the financial covenants and other provisions of our Senior Secured Credit Facilities. On September 30, 2019, the Company entered into an Amendment of its Senior Secured Credit Facilities reducing the restrictions of its first lien secured net leverage ratio and the interest coverage ratio tests through the year ended December 31, 2021. The Company is in compliance with the financial covenants and other terms of the Senior Secured Credit Facilities, as amended, as of December 31, 2019, although there can be no assurance given of future compliance or that additional amendments to the credit facilities will not be necessary.

We have debt obligations that could adversely affect our business and our ability to meet our obligations.

As of December 31, 2019, our total combined indebtedness was approximately \$1.1 billion. This significant amount of debt could have important consequences to us and our investors, including:

- requiring a substantial portion of our cash flows from operations to make interest payments on this debt;
- making it more difficult to satisfy debt service and other obligations;
- increasing the risk of a future credit ratings downgrade of our debt, which could increase future debt costs and limit the future availability of debt financing;
- increasing our vulnerability to general adverse economic and industry conditions;
- reducing the cash flows available to fund capital expenditures and other corporate purposes and to grow our business;
- limiting our flexibility in planning for, or reacting to, market or other changes in our businesses and industry;
- placing us at a competitive disadvantage to our competitors that may not be as highly leveraged with debt; and
- limiting our ability to borrow additional funds as needed or take advantage of business opportunities as they arise, pay cash dividends or repurchase common stock.

To the extent we incur additional indebtedness, the risks described above could increase. In addition, our actual cash requirements in the future may be greater than expected. Our cash flows from operations may not be sufficient to repay all of the outstanding debt as it becomes due, and we may not be able to borrow money, sell assets or otherwise raise funds on acceptable terms, or at all, to refinance our debt.

The phase-out of LIBOR as an interest rate benchmark in 2021 may impact our borrowing costs.

The reporting of financial information used to determine LIBOR is scheduled to cease in 2021. As of December 31, 2019, we had approximately \$499 million in term loan indebtedness with interest payment terms based on LIBOR, which matures in either 2022 or 2024, as applicable, after the phase-out of LIBOR. Under the terms of these loans, if LIBOR is no longer calculated, interest on the loans would be determined by using a comparable or successor widely-published alternative rate designated by the administrative agent. We have not yet been advised by the administrative agent of its selected alternative rate. While we do not believe that a change from LIBOR to an alternative rate will have a material impact on our borrowing costs or ability to access capital, no assurances relating to the potential impact can be provided at this time.

Challenges in the commercial and credit environments may materially adversely affect our future access to capital.

Our ability to issue debt or equity or enter into other financing arrangements on acceptable terms could be materially adversely affected if there continues to be a material decline in the pricing or sales volume for our products, or if significantly unfavorable changes in economic conditions occur. Volatility in the world financial markets could increase borrowing or other costs of capital or affect our ability to gain access to the capital markets, which could have a material adverse effect on our competitive position, business, financial condition, results of operations and cash flows.

We may need additional financing in the future to meet our capital needs or to make acquisitions, and such financing may not be available on favorable terms, if at all, and may be dilutive to existing stockholders.

We may need to seek additional financing for general corporate purposes. For example, we may need to increase our investment in research and development activities, make strategic investments in our facilities or require funding to invest in joint ventures or make acquisitions. We may be unable to obtain desired additional financing on terms favorable to us, if at all. For example, during periods of volatile credit markets, there is a risk that lenders, even those with strong balance sheets and sound lending practices, could fail or refuse to honor their credit commitments and obligations, including but not limited to extending credit up to the maximum permitted by a credit facility and otherwise accessing capital and/or honoring loan commitments. If our lenders are unable to fund borrowings under their loan commitments or we are unable to borrow, it could be difficult to replace such loan commitments on similar terms or at all. If adequate funds are not available on acceptable terms, we may be unable to fund growth opportunities, successfully develop or enhance products or respond to competitive pressures, any of which could negatively affect our business. If we raise additional funds through the issuance of equity securities, our stockholders will experience dilution of their ownership interest. If we raise additional funds by issuing debt, the terms of such debt may subject us to limitations on our operations and ability to pay dividends due to restrictive covenants in addition to those that are expected to be in place pursuant to our existing indebtedness.

Risks Related to the Company's Common Stock and Certain Corporate Matters

Your percentage of ownership in the Company may be diluted in the future.

In the future, your percentage ownership in the Company may be diluted because of equity issuances for acquisitions, capital market transactions or other corporate purposes, including equity awards we will grant to our directors, officers and employees. Our employees have options to purchase shares of our common stock and we anticipate our compensation committee will grant additional stock options or other stock-based awards to our employees. Such awards will have a dilutive effect on our earnings per share, which could adversely affect the market price of our common stock. From time to time, we will issue additional options or other stock-based awards to our employees under our employee benefits plans.

Certain provisions in our amended and restated certificate of incorporation and bylaws, and of Delaware law, could prevent or delay an acquisition of the Company, which could decrease the price of our common stock.

In addition, our amended and restated certificate of incorporation authorizes us to issue, without the approval of our stockholders, one or more classes or series of preferred stock having such designation, powers, preferences and relative, participating, optional and other special rights, including preferences over our common stock respecting dividends and distributions, as our board of directors generally may determine. The terms of one or more classes or series of preferred stock could dilute the voting power or reduce the value of our common stock. For example, we could grant the holders of preferred stock the right to elect some number of our directors in all events or on the happening of specified events or the right to veto specified transactions. Similarly, the repurchase or redemption rights or liquidation preferences we could assign to holders of preferred stock could affect the residual value of the common stock. In particular, note that, on August 10, 2016, the Company issued 1,725,000 shares of Mandatory Convertible Preferred Stock, Series A (the "Preferred Stock"), as more fully described in that certain Registration Statement on Form S-3 (File No. 333-209747) and Prospectus filed with the SEC on February 26, 2016, as amended by that certain Prospectus Supplement dated August 4, 2016 (the "Prospectus Supplement"). As a result of this offering, each share of the Preferred Stock automatically converted into shares of common stock on August 15, 2019. The number of shares of common stock issued at conversion was determined based on the volume-weighted average price of the Company's common stock over the 20-trading day period immediately prior to the mandatory conversion date ("Applicable Market Value"). The Applicable Market Value for our common stock was less than \$12.91, resulting in a conversion rate per share of 7.7459, resulting in approximately 13.4 million shares of common stock being issued on August 15, 2019. See Note 14 - *Stockholders' Equity* of our consolidated financial statements for more information on the Preferred Stock.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The following table details the material properties we owned or leased at December 31, 2019:

<u>Segment/Location</u>	<u>Annual Production Capacity</u>	<u>Owned/Leased</u>
High Purity Cellulose Facilities (a):		
Jesup, Georgia, United States	330,000 metric tons of cellulose specialties or commodity products 245,000 metric tons of commodity products	Owned
Fernandina Beach, Florida, United States	155,000 metric tons of cellulose specialties or commodity products	Owned
Temiscaming, Quebec, Canada	150,000 metric tons of cellulose specialties or commodity products	Owned
Tartas, France	140,000 metric tons of cellulose specialties or commodity products	Owned
Forest Products Facilities (b):		
La Sarre, Quebec, Canada	135,000 thousand board feet of lumber	Owned
Bearn, Quebec, Canada	110,000 thousand board feet of lumber	Owned
Chapleau, Ontario, Canada	135,000 thousand board feet of lumber	Owned
Cochrane, Ontario, Canada	160,000 thousand board feet of lumber	Owned
Hearst, Ontario, Canada	110,000 thousand board feet of lumber	Owned
Huntsville, Ontario, Canada	15,000 thousand board feet of lumber	Owned
Kapuskasing, Ontario, Canada	105,000 thousand board feet of lumber	Owned
Paperboard Facilities (a):		
Temiscaming, Quebec, Canada	180,000 metric tons of paperboard	Owned
Pulp & Newsprint Facilities (a):		
Kapuskasing, Ontario, Canada	205,000 metric tons of newspaper	Owned
Temiscaming, Quebec, Canada	300,000 metric tons of high-yield pulp	Owned
Corporate and Other:		
Jacksonville, Florida, United States	Corporate Headquarters	Leased
Montreal, Quebec, Canada	Corporate Office	Leased
Toronto, Ontario, Canada	Corporate Office	Leased

(a) Capacity is based on historic average production and is not adjusted for 2019 market related downtime and/or reliability issues.

(b) Capacity represents targeted production for these facilities. On average, these facilities produce at approximately 80 percent of capacity due to economic conditions, wood availability, and downtime.

Our manufacturing facilities are maintained through ongoing capital investments, regular maintenance and equipment upgrades. As a result, production capacities may vary from the amounts listed above.

Item 3. Legal Proceedings

The Company is engaged in various legal and regulatory actions and proceedings, and has been named as a defendant in various lawsuits and claims arising in the ordinary course of its business. While the Company has procured reasonable and customary insurance covering risks normally occurring in connection with its businesses, the Company has in certain cases retained some risk through the operation of self-insurance, primarily in the areas of workers' compensation, property insurance, business interruption and general liability. While there can be no assurance, the ultimate outcome of these actions, either individually or in the aggregate, is not expected to have a material adverse effect on the Company's financial position, results of operations or cash flows, except as may be noted below.

Jesup Plant Permit

On January 27, 2016, the Altamaha Riverkeeper (“ARK”) filed a Petition for Hearing in the Office of Administrative Hearings for the State of Georgia, captioned Altamaha Riverkeeper, Inc. v. Environmental Protection Division (the “EPD”), Georgia Department of Natural Resources, in which ARK appealed the issuance by the EPD to the Company of a new permit for the treatment and discharge of waste water from the Jesup mill, which was to go into effect March 1, 2016. In the petition, ARK claims, among other things, that the issuance of the permit by the EPD would violate Georgia’s narrative water quality standard, a rule promulgated by the Georgia Department of Natural Resources Board pursuant to certain provisions of the Clean Water Act and the Georgia Water Quality Control Act. The petition seeks to have the permit invalidated and modified as demanded by ARK. On February 16, 2016, the Company moved to legally intervene, as a party-in-interest, in this matter (because the EPD, as the permit issuer, is the named defendant) and its petition was granted by the administrative law judge (“ALJ”). The trial was held in June of 2016, and on September 30, 2016 the ALJ issued her decision. While the ALJ rejected many of ARK’s claims, she held there existed a reasonable potential for the Company’s treated effluent discharged to the Altamaha River to cause a violation of Georgia’s narrative water quality standard, but only under low (rather than “normal”) river flow conditions. As such, the ALJ reversed the issuance of the new permit by EPD and remanded the matter back to the EPD for consideration and issuance of a permit that comports with this ruling.

The Company strongly disagreed with the decision and appealed it, as did the EPD. The appeal was heard in the Superior Court of Wayne County, Georgia and on March 17, 2017 the Superior Court Judge issued an order reversing ALJ’s decision and ordering the permit affirmed as issued by the EPD. ARK appealed this decision to the Georgia Court of Appeals. Before the Court of Appeals ruled, on March 27, 2018 the Georgia Department of Natural Resources Board (the “Board”) voted to clarify the language of the narrative water quality standard at issue in this litigation. The language clarification adopted by the Board confirmed and essentially ratified the Superior Court’s decision. On June 13, 2018, the Court of Appeals issued its opinion affirming the Superior Court’s decision, and remanded the case to the ALJ to apply the standard advocated by the Company and articulated by the Superior Court, as affirmed by the Court of Appeals, to the issuance of the Permit. To provide certainty to the Company while this matter is on remand to the ALJ, the Company and the EPD have entered into a consent order requiring the Company to continue to operate under the conditions of the Permit.

ARK filed a petition asking the Georgia Supreme Court to hear its appeal of the Court of Appeals decision, and the Company and EPD have filed papers opposing the petition. Granting of certiorari in this case is discretionary on the part of the Georgia Supreme Court and, on August 5, 2019, the Court declined ARK’s certiorari petition, which left in place the decisions of both the Superior Court and Court of Appeals. As such, this matter has now been remanded back to the ALJ for action consistent with the legal standard and instructions articulated in the Court of Appeals decision.

Stockholder Lawsuit

On August 17, 2017, the City of Warren General Employees’ Retirement System filed a putative class action complaint against the Company, Paul Boynton, our CEO, and Frank Ruperto, our CFO, in the United States District Court, Middle District of Tennessee, Nashville Division. The plaintiffs allege the Company made false statements in filings with the U.S. Securities and Exchange Commission (“SEC”) and other public statements related to certain litigation with Eastman Chemical, a customer of the Company, in third quarter and fourth quarter 2015, in violation of §§10(b) and 20(a) of the Securities Exchange Act of 1934, causing unspecified damages to stockholders of the Company who purchased stock in the Company between October 29, 2014 and August 19, 2015. The applicable Eastman litigation was resolved via settlement in 2015. The Company was served with the complaint on August 28, 2017. On November 13, 2017, the Court appointed the Michigan Carpenters’ Pension Fund and Local 295 IBT Employer Group Pension Trust Fund as lead plaintiff, and a law firm to act as lead counsel. On January 10, 2018, the Company and the individual defendants filed a motion to dismiss the case for improper venue or, in the alternative, asked the court to transfer it to the U. S. District Court for the Middle District of Florida. Per the court scheduling order, the lead plaintiff filed a consolidated amended complaint (the “CAC”) on January 12, 2018. The CAC added Benson Woo, former CFO of the Company, as an additional defendant.

On June 15, 2018, the U.S. District Court for the Middle District of Tennessee granted the Company’s motion to transfer the case to the Middle District of Florida, and on July 16, 2018 the Company filed a motion to dismiss the case. On March 29, 2019, the Court issued an order of judgment and dismissal, with prejudice, of the plaintiffs’ complaint. Plaintiffs and their counsel elected not to appeal the dismissal and this matter is now concluded.

In a related matter, on August 16, 2018, the Company received a derivative demand letter on behalf of Russell K. Carlisle, a purported stockholder, demanding that the Company’s Board of Directors investigate and take action on behalf of the Company against the individual defendants named in the City of Warren lawsuit and certain current and former members of the Board of Directors of the Company. The demand alleges substantially similar facts as those set forth in the City of Warren action, and claims them to be breaches of fiduciary duties owed to the Company by the individual defendants in City of Warren and members of the

Company's Board of Directors during the alleged class period described in the case. The Company, the individuals named and Mr. Carlisle have agreed to toll any action on the derivative claim pending the decision of the U.S. District Court on the Company's motion to dismiss the City of Warren suit. Given the March 29, 2019 order of judgment and dismissal of the City of Warren lawsuit by the U.S. District Court for the Middle District of Florida, it is anticipated that Mr. Carlisle and his counsel will no longer pursue this derivative claim.

Item 4. Mine Safety Disclosures

Not applicable.

Part II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock is traded on the New York Stock Exchange under the trading symbol "RYAM".

Holder

The number of record holders of our common stock at February 25, 2020 was 4,166.

Dividends

Dividends per share data can be found in Item 6 — *Selected Financial Data* and Note 14 — *Stockholders' Equity* of our consolidated financial statements.

Issuer Purchases of Equity Securities

The following table provides information regarding our purchases of Rayonier Advanced Materials common stock during the quarter ended December 31, 2019:

<u>Period</u>	<u>Total Number of Shares Purchased</u>	<u>Average Price Paid per Share</u>	<u>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs</u>	<u>Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (a)</u>
September 29 to November 2	—	\$ —	—	\$ 60,294,000
November 3 to November 30	—	\$ —	—	\$ 60,294,000
December 1 to December 31 (b)	71,805	\$ 14.10	—	\$ 60,294,000
Total	<u>71,805</u>		<u>—</u>	

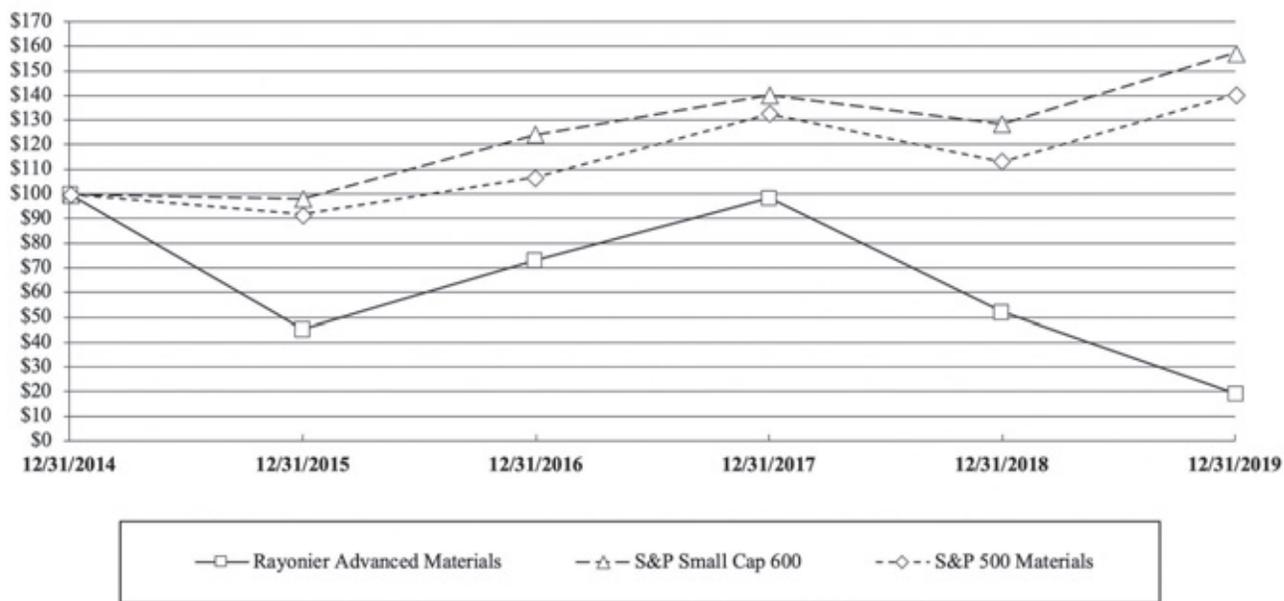
- (a) As of December 31, 2019, approximately \$60 million of share repurchase authorization remains under the authorization declared by the Board of Directors on January 29, 2018. Refer to Note 14 — *Stockholders' Equity* for additional information.
- (b) Due to an administrative error, insufficient shares were withheld on March 1, 2019 to cover the taxes for the Performance Share and Restricted Stock awards that vested on March 1, 2019 for certain individuals. Therefore, in December 2019, additional shares were withheld to cover taxes.

Securities Authorized for Issuance under Equity Compensation Plans

See Part III, Item 12 of this report for information relating to our equity compensation plans.

Stock Performance Graph

The following graph compares the performance of Rayonier Advanced Material’s common stock (assuming reinvestment of dividends) with a broad-based market index, Standard & Poor’s (“S&P”) Small Cap 600, and an industry-specific index, the S&P 500 Materials Index. The table and related information shall not be deemed to be “soliciting material” or to be “filed” with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, except to the extent that we specifically incorporate it by reference into such filing.



The data in the following table was used to create the previous graph:

	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019
Rayonier Advanced Materials...	\$ 100	\$ 45	\$ 73	\$ 98	\$ 52	\$ 19
S&P Small Cap 600	\$ 100	\$ 98	\$ 124	\$ 140	\$ 128	\$ 157
S&P 500 Materials Index.....	\$ 100	\$ 92	\$ 107	\$ 132	\$ 112	\$ 141

Sales of Unregistered Securities

During 2019, we did not issue or sell any unregistered securities.

Item 6. Selected Financial Data

The following financial data should be read in conjunction with our consolidated financial statements. Amounts presented for the years ended December 31, 2019, 2018 and 2017 exclude the Matane Mill which was sold in November 2019. The Matane Mill was initially acquired as part of the November 2017 acquisition of Tembec.

(millions of dollars except per share amounts)	<u>2019</u>	<u>2018</u>	<u>2017 (c)</u>	<u>2016</u>	<u>2015</u>
Statement of Income Data:					
Net Sales	\$ 1,775	\$ 1,957	\$ 940	\$ 869	\$ 941
Gross margin	54	291	141	186	209
Operating income (loss)	(83)	148	59	143	127
Income (loss) from continuing operations	(119)	99	323	73	55
Diluted income (loss) from continuing operations per share of common stock (a)	\$ (2.33)	\$ 1.52	\$ 5.78	\$ 1.55	\$ 1.30
Dividends declared per share of common stock	\$ 0.14	\$ 0.28	\$ 0.28	\$ 0.28	\$ 0.28
Balance Sheet Data:					
Total assets	\$ 2,480	\$ 2,679	\$ 2,643	\$ 1,422	\$ 1,279
Property, plant and equipment, net	1,316	1,364	1,391	801	804
Total debt	1,082	1,188	1,241	783	858
Stockholders' equity (deficit)	683	707	694	212	(17)
Statement of Cash Flows Data:					
Cash provided by operating activities	\$ 42	\$ 247	\$ 130	\$ 232	\$ 202
Cash used for investing activities	53	(116)	(277)	(87)	(78)
Cash provided by (used in) financing activities	(138)	(116)	(84)	80	(89)
Capital expenditures (d)	(103)	(129)	(75)	(89)	(78)
Non-GAAP Measures (b):					
EBITDA	\$ 65	\$ 327	\$ 477	\$ 235	\$ 209
Adjusted EBITDA	\$ 76	\$ 311	\$ 209	\$ 226	\$ 238
Adjusted Free Cash Flows	\$ (53)	\$ 130	\$ 62	\$ 147	\$ 124

- (a) For the years ended December 31, 2019, 2018, 2017 and 2016, basic and diluted earnings per share include the impact of the Company's Preferred Stock. See Note 14—*Stockholders' Equity* of our consolidated financial statements for more information.
- (b) EBITDA, adjusted EBITDA and adjusted free cash flows are non-GAAP measures. See “Note about Non-GAAP Financial Measures” on page 2 for limitations associated with non-GAAP measures. Also see Item 7 — *Management's Discussion and Analysis of Financial Condition and Results of Operations — Performance and Liquidity Indicators* for definitions of these non-GAAP measures as well as a reconciliation of EBITDA, adjusted EBITDA and adjusted free cash flows to their most directly comparable GAAP financial measure.
- (c) On November 17, 2017, the Company acquired all of the outstanding common shares of Tembec for an aggregate purchase price of approximately \$317 million Canadian dollars cash and 8.4 million shares of the Company's common stock, par value \$0.01 per share. See Note 4 — *Tembec Acquisition*, for the unaudited pro forma net income for the year ended December 31, 2017.
- (d) Capital expenditures for the years ended December 31, 2019, 2018 and 2017 exclude the capital spending of the Matane Mill, which was sold in November 2019.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview

We are a diversified forest products business that operates in the following business segments:

- High Purity Cellulose
- Forest Products
- Paperboard
- Pulp & Newsprint

Our High Purity Cellulose business has leading positions in the acetate and ethers high purity cellulose end-use markets. In addition, our other business segments provide a more diversified earnings stream.

As our businesses are moving through the bottom of the cycle, our financial goals for 2020 will be to aggressively control costs and preserve cash to remain compliant with debt covenants. We expect \$60 to \$70 million of benefits to increase EBITDA and cover fixed costs. Actions will include:

- Operating Costs Improvements: \$15 million primarily through efficiencies in supply chain and execution on continuous improvement projects in our facilities.
- Corporate Cost Eliminations: \$10 to \$15 million reduction of administrative support cost structure to align with the current business environment
- Capital Expenditure Reductions: \$10 to \$15 million reduction of capital expenditures with a focus on maintaining assets
- Working Capital Improvements: \$25 million benefit from reducing inventory levels and improving payment terms

If these actions are not sufficient, we will evaluate further opportunities to manage through the economic cycle. These actions may include asset sales, workforce reductions, temporary production curtailments and permanent closures.

We believe that we can manage our business through the bottom of the cycle and materially increase EBITDA through these actions to ensure that we emerge a much stronger company.

The following significant events occurred in 2019, 2018 and 2017:

- In November 2019, we completed the sale of the Matane Mill for \$175 million, resulting in net cash proceeds to the Company of approximately \$158 million after expenses and other adjustments. We recognized an after-tax gain on sale of approximately \$84 million and used \$100 million of the proceeds to repay borrowings under our Senior Secured Credit Facilities. Included in discontinued operations is allocated interest expense, due to the required loan payments, and professional fees to sell the operation. As a result of the sale, the Matane Mill's operating results have been classified as discontinued operations and we reorganized our operating and reportable segments to align with our new management reporting structure. See Note 3 — *Discontinued Operations* of our consolidated financial statements for additional information.
- In October 2019, we settled certain Canadian pension liabilities through the purchase of annuity contracts with an insurance company. The settlement resulted in the recognition of approximately \$9 million in settlement expenses which were recognized in "Other components of net periodic benefit costs" in our financial statements. See Note 18 — *Employee Benefit Plans* of our consolidated financial statements for additional information.
- In September 2019, as a result of the significant decreases in the market prices for commodity products, primarily viscose, fluff, high-yield pulp, lumber, paperboard and newsprint, we amended our Senior Secured Credit Facilities. As a result of the amendment, the restrictions of our first lien secured net leverage and the interest coverage ratio tests were eased through the year ended December 31, 2021. We believe the amendment provides the runway to manage the business through these challenging economic conditions enabling us to emerge financially stronger and able to realize the earnings potential of the business. See Note 10 — *Debt and Finance Leases* of our consolidated financial statements for additional information.

- In September 2019, we announced our Board of Directors determined to suspend the quarterly common stock dividend to improve cash flow.
- In September 2018, we sold our resins business for \$17 million. The sale of the resins business allowed us to divest a non-core asset and redeploy its capital. The business was originally acquired as part of our acquisition of Tembec and its results were included in our High Purity Cellulose segment. The resulting gain on sale of \$7 million was treated as an adjustment to the bargain purchase gain in 2018.
- In November 2017, we acquired Tembec (the “Acquisition”) which was engaged in the manufacture of cellulose specialties, commodity products, forest products, paperboard and pulp & newsprint. In 2017, the acquisition resulted in an initial gain on bargain purchase of \$317 million primarily as a result of the elimination of Tembec’s valuation allowance associated with certain deferred tax assets. In 2018, the finalization of the purchase price allocation increased the bargain gain on purchase \$20 million. The operating results of the Acquisition have been included in our results beginning November 2017. See Note 4 — *Tembec Acquisition* of our consolidated financial statements for additional information.

High Purity Cellulose

We manufacture and market high purity cellulose, which is sold as either cellulose specialties or commodity products. We are the leading global producer of cellulose specialties, which are primarily used in dissolving chemical applications that require a highly purified form of cellulose. Pricing for our cellulose specialties products is typically set by contract for a duration of at least one year based on discussions with customers. Our commodity products primarily consist of commodity viscose and absorbent materials. Commodity viscose is a raw material required for the manufacture of viscose staple fibers which are used in woven and non-woven applications. Absorbent materials, typically referred to as fluff fibers, are used as an absorbent medium in consumer products. Pricing for commodity products is typically referenced to published indexes or based on publicly available spot market prices. Sales of chemicals and energy, a majority of which are by-products, are included in the high purity cellulose segment.

Our four production facilities, located in the U.S., Canada and France, have a combined annual production capacity of approximately 775,000 metric tons of cellulose specialties or commodity products. Additionally, we have dedicated approximately 245,000 metric tons of annual production to commodity products.

Wood fiber, chemicals, and energy represent approximately 28 percent, 14 percent and 6 percent, respectively, of the per metric ton cost of sales. Labor, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Forest Products

We manufacture and market high-quality construction-grade lumber in North America. The lumber, primarily spruce, pine, or fir, is used in the construction of residential and multi-family homes, light industrial and commercial facilities, and the home repair and remodel markets. The chips, manufactured as a by-product of the lumber manufacturing process, are used in our Canadian High Purity Cellulose, Pulp and Newsprint plants. Pricing for lumber is typically referenced to published indexes marketed through our internal sales team. Our seven production facilities located in Canada have a targeted annual production capacity of approximately 770 million board feet of lumber.

Wood pulp and energy represents approximately 45 percent and 5 percent, respectively, of the per million board feet cost of sales. Labor, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Paperboard

We manufacture and market paperboard that is used for printing documents, brochures, promotional materials, paperback book or catalog covers, file folders, tags, and tickets.

Pricing for paperboard is typically referenced to published indices and marketed through our internal sales team. Our production facility located in Canada has the capacity to annually produce 180,000 metric tons of paperboard. Wood fiber, chemicals, and energy represent approximately 64 percent, 14 percent and 5 percent, respectively, of the per metric ton cost of sales. Labor, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Pulp & Newsprint

Pulp

We manufacture and market high-yield pulp which is used by paper manufacturers to produce paperboard, packaging, printing and writing papers and a variety of other paper products. Pricing for high-yield pulp is typically referenced to published indexes marketed through our internal sales team. Our production facility located in Canada has the capacity to annually produce 300,000 metric tons of high-yield pulp.

Wood fiber, chemicals, and energy represent approximately 20 percent, 12 percent and 11 percent, respectively, of the per metric ton cost of sales. Labor, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Newsprint

We manufacture newsprint, a paper grade used to print newspapers, advertising materials and other publications. Pricing for newsprint is typically referenced to published indices and marketed through our internal sales team. Our production facility located in Canada has the capacity to annually produce 205,000 metric tons of newsprint.

Wood fiber and chemicals represent approximately 16 percent and 4 percent, respectively, of the per metric ton cost of sales. Labor, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Outlook

Recent Developments

Action on Tariffs on Imported Goods into China

On February 18, the Tariff Commission of the State Council in China announced a notice to eliminate the tariff on certain raw material purchases by accepting application by the relevant Chinese entities for this removal beginning on March 2, 2020. The list of raw materials eligible for such tariff elimination include dissolving wood pulp (including Cellulose Specialties and viscose) and fluff pulp. Based upon our understanding of the notice and process, we believe that tariffs on our products into China will be eliminated by late first or early second quarter of 2020. We had approximately \$230 million of sales from the U.S. to China in 2019.

Coronavirus

In late 2019 and early 2020, a strain of coronavirus was reported in China. In January 2020, in response to human health concerns, Chinese authorities ordered some businesses and ports closed. We have been in regular contact with our customers. To date, we have not seen a slowdown in order volumes, shipments or cash collections for our Cellulose Specialties customers. In high-yield pulp, we have seen some slowdown of orders, which is being offset by sales to other geographic regions. Given the dynamic and fluid nature of this situation, the potential financial impact, if any, cannot be reasonably estimated at this time.

Momentum in Lumber Prices

Lumber prices have seen recent improvements supported by strong housing starts of 1.6 million in December and January, representing the best housing start numbers in over a decade. Lumber index prices have improved by \$45 per thousand board feet since the start of the year and the tone in the market is better. On February 3, the U.S. Department of Commerce announced a preliminary determination that combined anti-dumping and countervailing duties on the Company's softwood lumber would fall to 8.2 percent from 20.2 percent beginning in August, as it relates to the Company, which deposited \$23 million of duties in 2019. A final determination is expected in August.

High Purity Cellulose

For 2020, we expect Cellulose Specialties prices to increase approximately 2 percent on a contractual basis as a result of our decision to enhance product margins. As anticipated, Cellulose Specialties volumes are expected to decline due to a ramp down in certain contractual volumes driven by decisions not to pursue lower margin Cellulose Specialties business, a negative impact expected from sales timing and forecasted weakness in automotive end markets. Driven by the U.S.-China Trade dispute and slowing global economic growth, pricing for commodity products (primarily viscose and fluff pulp) are currently at decades lows. We expect these commodity prices to increase progressively throughout the year but on average be below the average pricing for 2019. Commodity sales volumes are expected to increase materially in 2020 due to improved operations, asset optimization and lower Cellulose Specialties volumes. Total sales volumes for the segment are expected to increase mid-single digits percent with commodity sales volumes anticipated to account for approximately 50 percent of the total sales volume in 2020. Overall, we anticipate segment EBITDA to increase modestly from last year; however, the extent of this improvement will be primarily dependent upon the level of improvement in commodity product pricing and the impact of the current health crisis in China.

Forest Products

U.S. housing starts and remodeling activity are the key drivers for lumber demand. U.S. housing starts were reported at a seasonally adjusted annual rate of 1.6 million in December and January, the highest figure in 13 years. Residential-improvement expenditures were also revised sharply higher to end 2019; as a result, demand on North American lumber mills is rebounding. This increased demand coupled with reduced supply are leading to improved pricing. Duties on lumber sales from Canada into the U.S. will continue to impact financial results. The U.S. Department of Commerce's preliminary determination impacting these duties is expected to significantly reduce these impacts beginning in August. Since the duties started in 2017, we have paid approximately \$59 million of lumber duties. Based on current market conditions and prices, we expect improved results in 2020 from 2019 performance.

Paperboard

Paperboard prices and volumes are expected to remain relatively constant in 2020. On a full year comparable basis, margins should improve as raw material costs for pulp have declined.

Pulp & Newsprint

High-yield pulp prices appear to have reached the bottom in the fourth quarter of 2019. We expect markets to improve gradually from the bottom of the cyclical lows but remain below 2018 realized prices. Newsprint prices remain challenged due to demand weakness; however, sales volumes are expected to increase due to improved productivity. Overall, the segment results are expected to be flat to slightly up in 2020, subject to the assumptions above. In addition, a significant portion of high-yield pulp sales are to China and it is unclear how the current health crisis will impact the business.

Reconciliation of Non-GAAP measures

For a reconciliation of EBITDA to net income, see Item 7 — *Management's Discussion and Analysis of Financial Condition and Results of Operations — Performance and Liquidity Indicators*.

Critical Accounting Policies and Use of Estimates

The preparation of financial statements requires us to make estimates, assumptions and judgments that affect our assets, liabilities, revenues and expenses, and to disclose contingent assets and liabilities in our consolidated financial statements. We base these estimates and assumptions on historical data and trends, current fact patterns, expectations and other sources of information we believe are reasonable. Actual results may differ from these estimates.

New Accounting Pronouncements

See Note 2 — *Summary of Significant Accounting Policies and New Accounting Pronouncements* of our consolidated financial statements for a discussion of recently issued accounting pronouncements that may affect our financial results and disclosures in future periods.

Revenue Recognition and Measurement

Revenue is recognized when performance obligations under the terms of a contract with a customer are satisfied. The majority of our contracts have a single performance obligation to transfer products. Accordingly, we recognize revenue when control has been transferred to the customer. Generally, control transfers upon delivery to a location in accordance with terms and conditions of the sale. Changes in customer contract terms and conditions, as well as the timing of orders and shipments, may have an impact on the timing of revenue recognition.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring our products and is generally based upon contractual arrangements with customers or published indices. We sell our products both directly to customers and through distributors and agents typically under agreements with payment terms less than 90 days.

The nature of our contracts may give rise to variable consideration, which may be constrained, including sales volume-based rebates to customers. We estimate the level of volumes based on anticipated purchases at the beginning of the period and record a rebate accrual for each purchase toward the requisite rebate volume. These estimated rebates are included in the transaction price as a reduction to net sales.

These methodologies are consistent with the manner in which we have historically accounted for the recognition of revenue.

Property, Plant & Equipment

Depreciation expense is computed using the units-of-production method for our High Purity Cellulose, Paperboard, Pulp & Newsprint plant and equipment and the straight-line method for all other property, plant and equipment over the useful economic lives of the assets involved. The total units of production used to calculate depreciation expense is determined by factoring annual production days, based on normal production conditions, by the economic useful life of the asset involved. The physical life of equipment, however, may be shortened by economic obsolescence caused by environmental regulation, competition or other causes. We depreciate our non-production assets, including office, lab, and transportation equipment, using the straight-line depreciation method over 3 to 25 years. Buildings and land improvements are depreciated using the straight-line method over 15 to 35 years and 5 to 30 years, respectively. We believe these depreciation methods are the most appropriate, versus other generally accepted accounting methods, as they most closely match revenues with expenses.

Gains and losses on the retirement of assets are included in operating income. Long-lived assets are reviewed annually for impairment or whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Recoverability of assets that are held and used is measured by net undiscounted cash flows expected to be generated by the asset. Property, plant and equipment are grouped for purposes of evaluating recoverability at the combined plant level, the lowest level for which independent cash flows are identifiable. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying value exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to sell.

Environmental liabilities

At December 31, 2019, we had \$171 million of accrued liabilities for environmental costs relating to disposed operations. Numerous price, quantity, cost and probability assumptions are used in estimating these obligations. Factors affecting these estimates include changes in the nature or extent of contamination, changes in the content or volume of the material discharged or treated in connection with one or more impacted sites, requirements to perform additional or different assessment or remediation, changes in technology that may lead to additional or different environmental remediation strategies, approaches and work-plans, discovery of additional or unanticipated contaminated soil, groundwater or sediment on or off-site, changes in remedy selection, changes in law or interpretation of existing law and the outcome of negotiations with governmental agencies or non-governmental parties. We periodically review our environmental liabilities and also engage third-party consultants to assess our ongoing remediation of contaminated sites. Quarterly, we review our environmental liabilities related to assessment activities and remediation costs and adjust them as necessary. Liabilities for financial assurance, monitoring and maintenance activities and other activities are assessed annually. A significant change in any of these estimates could have a material effect on the results of our operations. See Note 11 — *Environmental Liabilities* of our consolidated financial statements for more information.

Determining the adequacy of pension and other postretirement benefit assets and liabilities

Our defined benefit pension and postretirement plans for employees in the U.S., Canada and France require numerous estimates and assumptions to determine the proper amount of pension and postretirement liabilities and annual expense to record in our financial statements. The key assumptions include discount rate, return on assets, salary increases, health care cost trends, mortality rates, longevity and service lives of employees. Although authoritative guidance on how to select most of these assumptions exists, we exercise some degree of judgment when selecting these assumptions based on input from our actuary and other advisors. Different assumptions, as well as actual versus expected results, would change the periodic benefit cost and funded status of the benefit plans recognized in the financial statements.

Our long-term return plan assets assumption was established based on historical long-term rates of return on broad equity and bond indices, discussions with our actuary and investment advisors and consideration of the actual historical annualized rate of returns. In determining future pension obligations, we select a discount rate based on information supplied by our actuary. The actuarial rates are developed by models which incorporate high-quality (AA rated), long-term corporate bond rates into their calculations. The weighted average discount rate decreased from 3.99 percent at December 31, 2018 to 3.46 percent at December 31, 2019.

Our defined pension plans were underfunded by \$163 million at December 31, 2019. The funded status declined in 2019 due to lower than expected investment performance on our plan assets, increased service and interest costs, partially offset by slightly higher discount rates. In 2020, pension expense is expected to increase due primarily to lower expected return on plan assets and higher amortization of actuarial losses partially offset by an increase in the assumed discount rate. Future pension expense will be impacted by many factors including actual investment performance, changes in discount rates, timing of contributions and other employee related matters. See Note 18 — *Employee Benefit Plans* of our consolidated financial statements for more information.

In October 2019, we purchased annuity contracts from a third-party insurance company who has assumed responsibility for future pension benefits for certain participants in our Canadian defined benefit plans. As required under Accounting Standards Codification (“ASC”) 715 *Compensation-Retirement Benefits*, we recognized a loss of \$9 million in the fourth quarter of 2019 on the settlement and de-recognition of the projected benefit obligation.

In 2019, we made mandatory contributions and benefit payments to plan participants of approximately \$12 million. We expect to make mandatory and discretionary benefit payments to plan participants of approximately \$11 million. Future mandatory contribution requirements will vary depending on actual investment performance, changes in valuation assumptions, interest rates and legal requirements to maintain a certain funding status.

The sensitivity of pension expense and projected benefit obligation related to our pension plans to changes in economic assumptions is highlighted below:

<u>Change in Assumption</u>	Impact on (in millions):	
	Effect on 2020 Pension Expense	Effect on December 31, 2019 Projected Benefit Obligation
	(Decrease)/Increase	Increase (Decrease)
50 bp decrease in discount rate	\$2	\$54
50 bp increase in discount rate	\$(2)	\$(54)
50 bp decrease in long-term return on assets	\$4	
50 bp increase in long-term return on assets	\$(4)	

Realizability of both recorded and unrecorded tax assets and tax liabilities

We have recorded certain deferred tax assets we believe will be realized in future periods. The recognition of these tax assets is based on our analysis of both positive and negative evidence about the future realization of the tax benefit of each existing deductible temporary difference or carryforward. Future realization is based on the existence of sufficient taxable income of the appropriate character, within the appropriate taxing jurisdiction (for example country, state or province), and within the carryback and carryforward periods available under the applicable tax laws. The strongest form of positive evidence is the evaluation of adjusted historical earnings and future earnings projections within the applicable carryforward periods. This evidence supports the realizability of most recorded deferred tax assets. Tax assets are reviewed periodically for realizability. This review requires management to make assumptions and estimates about future profitability affecting the realization of these tax assets. If the review indicates the realizability may be less than likely, a valuation allowance is recorded.

Our income tax returns are subject to examination by U.S. federal and state taxing authorities as well as foreign jurisdictions, including Canada and France. In evaluating the tax benefits associated with various tax filing positions, we record a tax benefit for an uncertain tax position if it is more-likely-than-not to be realized upon ultimate settlement of the issue. We record a liability for an uncertain tax position that does not meet this criterion. The liabilities for unrecognized tax benefits are adjusted in the period in which it is determined the issue is settled with the taxing authorities, the statute of limitations expires for the relevant taxing authority to examine the tax position or when new facts or information become available. See Note 20 — *Income Taxes* of our consolidated financial statements for more information.

Results of Operations

Summary of our results of operations for the three years ended December 31:

Financial Information (in millions, except percentages)	2019	2018	2017
Net Sales	\$ 1,775	\$ 1,957	\$ 940
Cost of Sales	(1,721)	(1,666)	(800)
Gross Margin	54	291	141
Selling, general and administrative expenses	(90)	(105)	(80)
Duties	(22)	(26)	(1)
Other operating expense, net	(25)	(12)	(1)
Operating Income (Loss)	(83)	148	59
Interest expense	(60)	(56)	(40)
Interest income and other, net	—	5	2
Other components of net periodic benefit (expense)	(5)	8	(3)
Gain on bargain purchase	—	20	317
Gain on derivative instrument	—	—	8
Gain on debt extinguishment	—	1	—
Income (Loss) from Continuing Operations before Income Taxes	(148)	126	343
Income Tax (Expense) Benefit	30	(27)	(19)
Income (Loss) from Continuing Operations	\$ (119)	\$ 99	\$ 323
Income from discontinued operations, net of taxes	96	29	2
Net Income	\$ (22)	\$ 128	\$ 325
Gross Margin %	3.1 %	14.9%	15.0%
Operating Margin %	(4.7)%	7.6%	6.3%
Effective Tax Rate %	(20.0)%	21.4%	5.6%

Results of Operations, Year Ended December 31, 2019 versus December 31, 2018

Net sales by segment were as follows:

	2019	2018
Net Sales (in millions)		
High Purity Cellulose	\$ 1,127	\$ 1,192
Forest Products	299	356
Paperboard	200	197
Pulp & Newsprint	215	282
Eliminations	(66)	(70)
Total Net Sales	\$ 1,775	\$ 1,957

Net sales decreased \$182 million or 9 percent, in 2019 compared to 2018. The decrease was primarily driven by lower cellulose specialties, lumber, high-yield pulp and newsprint sales. For further assessment of changes in net sales, see the discussion of operating results by segment.

Operating income by segment was as follows:

	<u>2019</u>	<u>2018</u>
Operating income (in millions)		
High Purity Cellulose	\$ 7	\$ 112
Forest Products	(31)	25
Paperboard	4	4
Pulp & Newsprint	2	72
Corporate	(65)	(65)
Total Operating Income	<u>\$ (83)</u>	<u>\$ 148</u>

Operating income for 2019 decreased \$231 million when compared to the prior year. The decrease was primarily driven by lower sales prices and higher costs. For further assessment of changes of operating income, see the discussion of Operating Results by Segment.

Non-operating Expenses

Interest expense for 2019 increased \$4 million driven by higher debt levels throughout most of 2019, increased interest margin from the amendment to our credit facilities, increased amortization of deferred loan costs from the \$100 million pay-down of Senior Secured Credit Facilities as a result of the Matane Mill sale, partially offset by lower LIBOR rates. For additional information, see Note 10 — *Debt and Finance Leases*.

Interest income and other, net, decreased in 2019 as a result of the reduced impact of foreign exchange on the re-measurement of certain debt instruments as a result of our hedging programs.

Other components of net periodic benefit (expense) changed by \$13 million to \$5 million of expense in 2019 as a result of lower expected long term returns on pension assets and the \$9 million pension settlement loss recorded during the fourth quarter of 2019. See Note 18 — *Employee Benefit Plans*.

We recognized a \$20 million gain on bargain purchase during 2018 primarily from tax-related adjustments and the sale of the resins business as a result of finalizing the purchase price allocation of the Acquisition. See Note 4 — *Tembec Acquisition*.

Income Taxes

The full year 2019 effective tax rate from continuing operations was a benefit of 20 percent compared to an expense of 21 percent for the same period in 2018. The effective tax rate benefit differs from the federal statutory rate of 21 percent primarily due to nondeductible interest expense in the U.S., tax credits, excess tax deductions on vested stock compensation, U.S. Global Intangible Low-Taxed Income, and different statutory tax rates of foreign operations. See Note 20 — *Income Taxes* of our consolidated financial statements for additional information.

Discontinued Operations

Income from discontinued operations increased \$67 million and reflects the \$84 million gain from the sale of the Matane Mill in 2019. Excluding the gain, income from discontinued operations declined \$17 million during 2019 principally driven from lower sales prices and professional fees to sell the operations. See Note 3 — *Discontinued Operations* of our consolidated financial statements for additional information.

Operating Results by Segment

High Purity Cellulose

(\$ in million)	2019	2018
Net Sales	\$ 1,127	\$ 1,192
Operating Income	\$ 7	\$ 112
Average Sales Prices (\$ per metric ton):		
Cellulose Specialties	\$ 1,306	\$ 1,334
Commodity Products	\$ 739	\$ 818
Sales Volumes (thousands of metric tons):		
Cellulose Specialties	586	624
Commodity Products	378	298

Changes in High Purity Cellulose net sales are as follows:

Net Sales (in millions)	2018	Changes Attributable to:		2019
		Price	Volume/Mix	
Cellulose specialties	\$ 832	\$ (16)	\$ (51)	\$ 765
Commodity products and other	244	(33)	69	280
Other sales (a)	116	—	(34)	82
Total Net Sales	<u>\$ 1,192</u>	<u>\$ (49)</u>	<u>\$ (16)</u>	<u>\$ 1,127</u>

(a) Other sales include sales of electricity, resins, lignin and other by-products to third parties. The absence of the resins business in 2019 resulted in the decline of \$26 million in Other sales.

Total net sales decreased \$65 million, or 5 percent, in 2019. Cellulose specialties sales prices declined in 2019 by 2 percent primarily due to duties on products sold in China, in line with expectations. Cellulose specialties sales volumes declined by 6 percent due to weakness in the acetate, automotive and construction markets as a result of global trade issues and was partially offset by the timing of shipments which favorably impacted revenue recognition. Commodity product sales prices decreased 10 percent primarily due to weaker markets a result of global trade issues; however, the decline was more than offset by a 27 percent increase in sales volumes due to lower demand for cellulose specialties, improved commodity product production and contractual changes to the sales terms and conditions with certain customers. Other sales declined as a result of the sale of the resin business in September 2018.

Changes in High Purity Cellulose operating income are as follows:

Operating Income (in millions)	2018	Gross Margin Changes Attributable to:				2019
		Price	Volume/ Sales Mix (a)	Cost	SG&A and other	
Operating Income	\$ 112	\$ (49)	\$ (29)	\$ (31)	\$ 4	\$ 7
Operating Margin %	9.4%	(3.9)%	(2.5)%	(2.8)%	0.4%	0.6%

(a) Volume/Sales Mix computed based on contribution margin.

Operating income decreased \$106 million in 2019. The decrease was driven by lower cellulose specialties sales prices and volumes and a decline in other sales, partially offset by higher commodity sales volumes. Costs increased by \$31 million as overall higher sales volumes, as well as higher wood and maintenance costs were only partially offset by lower chemical prices, primarily caustic and the sale of the resin business. The sale of the resin business negatively impacted operating income \$5 million during 2019. Included in SG&A and other costs is our share of the loss of the lignin joint venture of \$5 million and \$4 million incurred during 2019 and 2018, respectively.

Forest Products

(in millions)		2019	2018
Net Sales	\$	299	\$ 356
Operating income	\$	(31)	\$ 25
Average Sales Prices (\$ per thousand board feet):			
Lumber	\$	373	\$ 471
Sales Volumes (millions of board feet):			
Lumber		617	604

Changes in Forest Products net sales are as follows:

Net Sales (in millions)	Changes Attributable to:			
	2018	Price	Vol/Mix/Other (a)	2019
Lumber	\$ 285	\$ (60)	\$ 5	\$ 230
Other sales (a)	71	—	(2)	69
Total Net Sales	<u>\$ 356</u>	<u>\$ (60)</u>	<u>\$ 3</u>	<u>\$ 299</u>

(a) Other sales include sales of logs, wood chips, and other by-products to third-parties and other segments.

Total net sales declined \$57 million, or 16 percent, in 2019. Lumber sales prices declined 21 percent due to weak demand while lumber sales volumes increased by 2 percent as a result of efforts to reduce inventory levels were partially offset by market downtime taken at the production facilities.

Changes in Forest Products operating income are as follows:

Operating Income (in millions)	Gross Margin Changes Attributable to:					
	2018	Price	Volume/ Sales Mix (a)	Cost	SG&A and other	2019
Operating Income	\$ 25	\$ (60)	\$ —	\$ 3	\$ 1	\$ (31)
Operating Margin %	<u>7.0%</u>	<u>(18.8)%</u>	<u>—%</u>	<u>1.0%</u>	<u>0.3%</u>	<u>(10.5)%</u>

(a) Volume/Sales Mix computed based on contribution margin.

Operating income decreased \$56 million in 2019. The decline was driven by lower lumber sales prices partially offset by higher lumber sales volumes. Lower costs were driven by lower wood costs and the reversal of the net realizable inventory reserve of \$6 million partially offset by higher depreciation, transportation and energy costs. SG&A and other costs improved due to lower softwood lumber duties as a result of lower lumber sales prices. The years ended December 31, 2019 and 2018 included \$23 million and \$26 million in softwood lumber duties, respectively.

Paperboard

(in millions)		2019	2018
Net Sales	\$	200	\$ 197
Operating income	\$	4	\$ 4
Average Sales Prices (\$ per metric tons) (a):			
Paperboard	\$	1,103	\$ 1,130
Sales Volumes (in thousands of metric tons) (a):			
Paperboard		181	174

Changes in Paperboard net sales are as follows:

Net Sales (in millions)	2018	Changes Attributable to:		2019
		Price	Volume/Mix	
Paperboard	\$ 197	\$ (5)	\$ 8	\$ 200

Total net sales declined \$3 million, or 2 percent in 2019. Paperboard sales prices declined 2 percent due to increased competition. Paperboard sales volumes increased 4 percent primarily due to efforts to reduce inventories.

Changes in Paperboard operating income are as follows:

Operating Income (in millions)	2018	Gross Margin Changes Attributable to:				2019
		Price	Volume/ Sales Mix (a)	Cost	SG&A and other	
Operating Income	\$ 4	\$ (5)	\$ 3	\$ 2	\$ —	\$ 4
Operating Margin %	2.0%	(2.5)%	1.5%	1.0%	—%	2.0%

(a) Computed based on contribution margin.

Operating income was flat in 2019. Paperboard prices declined by 2 percent, partially offset by higher paperboard sales volumes. Costs decreased due to lower pulp raw material prices partially offset by higher transportation and warehousing costs.

Pulp & Newsprint

(in millions)	2019		2018	
Net Sales	\$	215	\$	282
Operating income	\$	2	\$	72
Average Sales Prices (\$ per metric ton):				
Pulp	\$	499	\$	669
Newsprint	\$	524	\$	592
Sales Volumes (in metric tons):				
Pulp		207		214
Newsprint		166		191

Changes in Pulp & Newsprint net sales are as follows:

Net Sales (in millions)	2018	Changes Attributable to:		2019
		Price	Volume/Mix	
Pulp	\$ 169	\$ (37)	\$ (4)	\$ 128
Newsprint	113	(11)	(15)	87
Total Net Sales	\$ 282	\$ (48)	\$ (19)	\$ 215

(a) Average sales prices and volumes for external sales only. The Pulp segment sold approximately 66 thousand MTs and 65 thousand MTs of high-yield pulp for \$25 million and \$26 million to the Paperboard segment for the production of paperboard during 2019 and 2018, respectively.

Total net sales declined \$67 million, or 24 percent, in 2019. Average pulp sales prices declined 25 percent due to weak demand as a result of global trade issues. Pulp sales volumes decreased 3 percent due to market downtime and production reliability issues at the Temiscaming mill. Newsprint sales prices and volumes declined 11 percent and 13 percent, respectively. The decrease in prices are primarily due to the effects of the removal of duties on newsprint imported into the U.S. and the continued decline in demand. The newsprint volume decline was primarily as a result of reliability issues at the Kapuskasing mill.

Changes in Pulp & Newsprint operating income are as follows:

Operating Income (in millions)	Gross Margin Changes Attributable to:					
	2018	Price	Volume/ Sales Mix (a)	Cost	SG&A and other	2019
Operating Income.....	\$ 72	\$ (48)	\$ (11)	\$ (10)	\$ (1)	\$ 2
Operating Margin %.....	25.5%	(15.3)%	(4.2)%	(4.7)%	(0.5)%	0.8%

(a) Computed based on contribution margin.

Operating income for Pulp & Newsprint decreased \$70 million during 2019. This was driven by lower pulp sales prices and volumes as well as decreases in newsprint sales prices and volumes. Costs increased due to the lower newsprint production levels, higher maintenance and transportation costs.

Corporate

(in millions)	2019	2018
Operating loss	\$ (65)	\$ (65)

The operating loss for Corporate remained flat at \$65 million in 2019, when compared to 2018, due to lower incentive compensation expense, higher insurance recoveries and the absence of severance expense that is reflected in 2018, offset by higher legal and administrative costs incurred from the loan amendment that was finalized during the fourth quarter of 2019, and unfavorable currency changes. In addition, 2019 had higher environmental expenses from changes to the Port Angeles remediation project and higher cost assumptions for financial assurance on the environmental projects as a result of the increase in our perceived credit risk.

Results of Operations, Year Ended December 31, 2018 versus December 31, 2017

Net Sales (in millions)	2018	2017
High Purity Cellulose.....	\$ 1,192	\$ 867
Forest Products.....	356	34
Paperboard	197	19
Pulp & Newsprint.....	282	28
Eliminations	(70)	(7)
Total Net Sales	\$ 1,957	\$ 940

Net sales increased \$1,017 million, or 108 percent, in 2018 compared to 2017. The increase was primarily due to the inclusion of Tembec's operations for the full year in 2018, compared to approximately a month and a half during 2017. For further assessment of changes in net sales, see the discussion of operation results by segment.

Operating income by segment was as follows:

	2018	2017
Operating Income (in millions)		
High Purity Cellulose	\$ 112	\$ 120
Forest Products	25	—
Paperboard	4	(1)
Pulp & Newsprint	72	2
Corporate	(65)	(62)
Total Operating Income	\$ 148	\$ 59

Operating income for 2018 increased \$89 million, or 151 percent, over the prior year period. The increase was primarily due to the inclusion of Tembec's operations for the full year in 2018, compared to approximately a month and a half during 2017. For further assessment of changes of operating income, see the discussion of Operating Results by Segment discussion below.

Non-operating Expenses

Interest expense for 2018 increased \$16 million over the same prior year period. The increase was due to realizing a full year of interest expense from the debt acquired to finance the Tembec acquisition in addition to slightly higher LIBOR rates on our variable-rate debt. For additional information, see Note 10 — *Debt and Finance Leases*. of our consolidated financial statements for additional information.

Interest income and other, net, increased during the year ended December 31, 2018 due to the foreign exchange gain on the re-measurement of certain debt instruments.

Other components of net periodic benefit costs improved due to the impact of the Tembec benefit plans for the full year in 2018. See Note 18 — *Employee Benefit Plans* of our consolidated financial statements for additional information.

We recognized a \$20 million gain on bargain purchase during 2018 primarily from tax-related adjustments from finalizing the purchase price allocation of Tembec acquisition and the gain on sale of the resins business. See Note 4 — *Tembec Acquisition*. of our consolidated financial statements for additional information.

Income Taxes

Our effective tax rate for the years ended December 31, 2018 and 2017 was 21 percent and 6 percent, respectively. The increase in 2018 is due primarily to higher taxable income and the \$317 million of nontaxable bargain purchase gain recorded in 2017. See Note 20 — *Income Taxes* of our consolidated financial statements for more information.

Discontinued Operations

Income from discontinued operations increased \$27 million during 2018 primarily due to the Acquisition. See Note 3 — *Discontinued Operations* of our consolidated financial statements for additional information.

Operating Results by Segment

High Purity Cellulose

(\$ in million)	2018	2017
Net Sales	\$ 1,192	\$ 867
Operating Income	\$ 112	\$ 120
Average Sales Prices (\$ per metric ton):		
Cellulose Specialties	\$ 1,334	\$ 1,460
Commodity Products	\$ 818	\$ 733
Sales Volumes (thousands of metric tons):		
Cellulose Specialties	624	453
Commodity Products	298	250

Changes in High Purity Cellulose net sales are as follows:

<u>Net Sales (in millions)</u>	<u>Changes Attributable to:</u>				<u>2018</u>
	<u>2017</u>	<u>Price</u>	<u>Volume/Mix</u>	<u>Acquisition</u>	
Cellulose specialties	\$ 662	\$ (51)	\$ 8	\$ 213	\$ 832
Commodity products and other	183	16	6	39	244
Other sales (a)	22	—	(1)	95	116
Total Net Sales	<u>\$ 867</u>	<u>\$ (35)</u>	<u>\$ 13</u>	<u>\$ 347</u>	<u>\$ 1,192</u>

(a) Other sales include sales of electricity, resins, lignin and other by-products to third parties.

Excluding the Acquisition, cellulose specialties sales prices declined in 2018 approximately 4 percent due to lower contracted pricing, as expected. Cellulose specialties and commodity product sales volume, excluding the impact of the Acquisition, increased primarily due to the timing of revenue recognition.

Changes in operating income are as follows:

<u>Operating Income (in millions)</u>	<u>Gross Margin Changes Attributable to:</u>					<u>SG&A and other</u>	<u>2018</u>
	<u>2017</u>	<u>Price</u>	<u>Volume/Sales Mix (a)</u>	<u>Cost</u>	<u>Acquisition</u>		
Operating Income.....	\$ 120	\$ (35)	\$ 13	\$ (11)	\$ 44	\$ (19)	\$ 112
Operating Margin %.	13.8%	(3.6)%	1.4%	(1.3)%	0.7%	(1.6)%	9.4%

(a) Volume/Sales Mix computed based on contribution margin.

Operating income decreased \$8 million or 7 percent in 2018 as the Acquisition and increased sales volumes were more than offset by lower sales prices and higher costs. Costs increased \$11 million in 2018 due to higher, one-time energy costs caused by the unusually cold weather in the southeastern U.S. in January, higher wood and chemical costs, and lower production. These costs were partially offset by lower depreciation, lower costs to achieve Cost Transformation savings and the impact of the inventory write-up to fair market value of \$6 million. Additionally, 2017 was negatively impacted by \$5 million of higher costs for the idling of our production facilities in the southeast U.S. from Hurricane Irma. Selling, general and administrative and other costs increased due to the Acquisition and our share of the loss related to the start-up the lignin joint-venture of \$4 million.

Forest Products

(in millions)	<u>2018</u>	<u>2017</u>
Net Sales	\$ 356	\$ 34
Operating income	\$ 25	\$ —
Average Sales Prices (\$ per thousand board feet):		
Lumber	\$ 471	\$ 460
Sales Volumes (millions of board feet):		
Lumber	604	56

Changes in Forest Products net sales are as follows:

<u>Net Sales (in millions)</u>	<u>Changes Attributable to:</u>				
	<u>2017</u>	<u>Price</u>	<u>Vol/Mix/Other (a)</u>	<u>Acquisition</u>	<u>2018</u>
Lumber	\$ 26	\$ (5)	\$ 2	\$ 262	\$ 285
Other sales (a).....	8	—	4	59	71
Total Net Sales	<u>\$ 34</u>	<u>\$ (5)</u>	<u>\$ 6</u>	<u>\$ 321</u>	<u>\$ 356</u>

(a) Other sales include sales of logs, wood chips, and other by-products to third-parties and other segments.

Net sales increased during 2018 primarily due to the Acquisition. In addition, prices declined due to lower demand in the latter part of the year offset by slightly higher volumes.

Changes in Forest Products operating income are as follows:

<u>Operating Income (in millions)</u>	<u>Gross Margin Changes Attributable to:</u>						
	<u>2017</u>	<u>Price</u>	<u>Volume/Sales Mix (a)</u>	<u>Cost</u>	<u>Acquisition</u>	<u>SG&A and other</u>	<u>2018</u>
Operating Income.....	\$ —	\$ (5)	\$ 2	\$ 2	\$ 55	\$ (29)	\$ 25
Operating Margin %.....	—%	(17.2)%	8.6%	5.7%	18.0%	(8.1)%	7.0%

(a) Volume/Sales Mix computed based on contribution margin.

Operating income for Forest Products increased \$25 million during 2018 primarily due to the Acquisition's impact on gross margin of \$55 million. Excluding the impact of the Acquisition on gross margin, prices declined as a result of demand weakness in the lumber market, partially offset by slightly higher sales volumes. Costs were lower as the absence of the 2017 inventory write-up to fair value of \$5 million was partially offset by higher costs from the market-related downtime and the write-down of inventories to current net realizable value as a result of lower sales prices in December 2018. The change in SG&A and other is a result of the increase of duties paid for lumber sold into the United States of approximately \$26 million in 2018 and higher costs as a result of the Acquisition.

Paperboard

(in millions)

	<u>2018</u>	<u>2017</u>
Net Sales	\$ 197	\$ 19
Operating income	\$ 4	\$ (1)
Average Sales Prices (\$ per metric tons) (a):		
Paperboard	\$ 1,130	\$ 1,132
Sales Volumes (in thousands of metric tons) (a):		
Paperboard	174	17

Changes in Paperboard net sales are as follows:

<u>Net Sales (in millions)</u>	<u>Changes Attributable to:</u>				
	<u>2017</u>	<u>Price</u>	<u>Volume/Mix</u>	<u>Acquisition</u>	<u>2018</u>
Paperboard	<u>\$ 19</u>	<u>\$ —</u>	<u>\$ 2</u>	<u>\$ 176</u>	<u>\$ 197</u>

Net sales for Paperboard increased during 2018 primarily due to the Acquisition.

Changes in Paperboard operating income are as follows:

<u>Operating Income (in millions)</u>	<u>Gross Margin Changes Attributable to:</u>						<u>2018</u>
	<u>2017</u>	<u>Price</u>	<u>Volume/ Sales Mix (a)</u>	<u>Cost</u>	<u>Acquisition</u>	<u>SG&A and other</u>	
Operating Income.....	\$ (1)	\$ —	\$ 1	\$ —	\$ 14	\$ (10)	\$ 4
Operating Margin %	(5.3)%	—%	5.3%	—%	7.1%	(5.1)%	2.0%

(a) Computed based on contribution margin.

Operating income for Paperboard increased \$5 million in 2018 primarily due to the Acquisition. SG&A costs were higher in 2018 due to intangible asset amortization also resulting from the Acquisition.

Pulp & Newsprint

(in millions)	<u>2018</u>	<u>2017</u>
Net Sales	\$ 282	\$ 28
Operating income	\$ 72	\$ 2
Average Sales Prices (\$ per metric ton):		
Pulp.....	\$ 669	\$ 598
Newsprint	\$ 592	\$ 513
Sales Volumes (in metric tons):		
Pulp.....	214	25
Newsprint	191	21

(a) Average sales prices and volumes for external sales only. The Pulp & Newsprint segment sold approximately 65 thousand MTs of high-yield pulp for \$26 million to the Paper segment for the production of paperboard during 2018.

Changes in Pulp & Newsprint net sales are as follows:

<u>Net Sales (in millions)</u>	<u>2017</u>	<u>Changes Attributable to:</u>			<u>2018</u>
		<u>Price</u>	<u>Volume/Mix</u>	<u>Acquisition</u>	
Pulp.....	\$ 17	\$ 1	\$ (3)	\$ 153	\$ 169
Newsprint	11	2	(1)	102	113
Total Net Sales	\$ 28	\$ 3	\$ (4)	\$ 255	\$ 282

Net sales for Pulp & Newsprint increased during 2018 due primarily to the Acquisition.

Changes in Pulp & Newsprint operating income are as follows:

<u>Operating Income (in millions)</u>	<u>Gross Margin Changes Attributable to:</u>						<u>2018</u>
	<u>2017</u>	<u>Price</u>	<u>Volume/ Sales Mix (a)</u>	<u>Cost</u>	<u>Acquisition</u>	<u>SG&A and other</u>	
Operating Income.....	\$ 2	\$ 3	\$ (2)	\$ (11)	\$ 86	\$ (6)	\$ 72
Operating Margin %.....	7.1%	9.0%	(4.6)%	(42.3)%	58.4%	(2.1)%	25.5%

(a) Computed based on contribution margin.

Operating income for Pulp & Newsprint increased \$70 million in 2018 primarily due to the Acquisition. Excluding the impact of the Acquisition, prices increased primarily as a result of duties on newsprint imported into the U.S. and pulp price increases as a result of higher demand for virgin fiber as a result of reduced recycled fiber imports in China. These increases were partially offset by lower sales volumes as the markets weakened in December 2018. Costs were lower as the absence of the 2017 inventory write-up to fair value of \$6 million was partially offset by higher costs from lower production. The change in SG&A and other is primarily a result of the Acquisition.

Corporate

(in millions)

	2018	2017
Operating loss	\$ (65)	\$ (62)

The operating loss for Corporate increased \$3 million from 2017. Excluding the \$34 million in one-time acquisition related costs in 2017, the loss increased \$37 million in 2018 primarily as a result of the inclusion of the Acquisition for the full year.

Liquidity and Capital Resources

Cash flows from operations, primarily driven by operating results, have historically been our primary source of liquidity and capital resources. As a result of significant decreases in the market prices for commodity products, primarily viscose, fluff, high-yield pulp, lumber, paperboard and newsprint, during the year ended December 31, 2019, our operating results declined significantly, requiring us to amend our Senior Secured Credit Facilities. On September 30, 2019 we entered into an amendment of our Senior Secured Credit Facilities (the “Amendment”) reducing the restrictions of our first lien secured net leverage ratio and the interest coverage ratio tests through the year ended December 31, 2021. In addition, the Amendment increased the interest rate margin by a maximum of 1.25 percent, subject to the operation of a pricing grid which also provides for reduced rate margins when our leverage ratios improve; required additional collateral for the lenders; and required availability be maintained on the revolving credit facility to reflect the seasonality of the business. The lenders under the Credit Facilities have a first priority security interest in substantially all present and future material U.S. and Canadian assets, excluding the assets of certain non-guarantor subsidiaries. The non-guarantor subsidiaries had assets of \$1,781 million, revenue of \$218 million, covenant EBITDA of \$5 million and liabilities of \$1,309 million as of and for the year ended December 31, 2019. See Note 10 — *Debt and Finance Leases* of our consolidated financial statements for additional information.

Under the amended Senior Secured Credit Facilities, we are in compliance with the financial and other customary covenants as of December 31, 2019. We continue to believe our future cash flows from operations and availability under our revolving credit facility, as well as our ability to access the capital markets, if necessary or desirable, will be adequate to fund our operations and anticipated long-term funding requirements, including capital expenditures, defined benefit plan contributions, and repayment of debt maturities.

During 2019, our Board of Directors declared, and we paid, cash dividends on our Preferred Stock of approximately \$10 million. Additionally, our Board of Directors declared, and we paid, quarterly cash dividends on our common stock of \$0.07 per share, for the first two quarters ended June 28, 2019, for a total of \$9 million. On September 6, 2019, our Board of Directors suspended our quarterly common stock dividend to use the cash flow to pay down debt and fund capital investments as well as working capital needs. The declaration and payment of future common stock dividends, if any, will be at the discretion of the Board of Directors and will be dependent upon our financial condition, results of operations, capital requirements and other factors the Board of Directors deem relevant. In addition, our revised debt facilities restrict the declaration and payment of future dividends.

On January 29, 2018, the Board of Directors authorized a \$100 million common stock share buyback. For the year ended December 31, 2019, we did not repurchase any common shares under this buyback program. We do not expect to utilize any further authorization in the near future. During 2018, we repurchased and retired 2,570,449 shares of common stock under this buyback program at an average price of \$15.44 per share, excluding commissions, for an aggregate purchase price of approximately \$40 million.

A summary of liquidity and capital resources is shown below (in millions of dollars):

	As of December 31,		
	2019	2018	2017
Cash and cash equivalents (a)	\$ 64	\$ 109	\$ 96
Availability under the Revolving Credit Facility (b)	87	217	216
Total debt (c)	1,082	1,188	1,241
Stockholders' equity	683	707	694
Total capitalization (total debt plus equity)	1,765	1,895	1,935
Debt to capital ratio	61%	63%	64%

- (a) Cash and cash equivalents consisted of cash, money market deposits and time deposits with original maturities of 90 days or less.
- (b) Amounts available under the revolving credit facility have been reduced by standby letters of credit of approximately \$33 million, \$33 million and \$34 million at December 31, 2019, 2018 and 2017, respectively. See Note 22 — *Commitments and Contingencies* of our consolidated financial statements for additional information. Additionally, we are required to maintain between \$80 million and \$90 million of availability on our revolving credit facility, therefore we show this as a reduction to availability.
- (c) See Note 10 — *Debt and Finance Leases* of our consolidated financial statements for more information.

Cash Flows (in millions of dollars)

The following table summarizes our cash flows from operating, investing and financing activities for each of the three years ended December 31:

<u>Cash Provided by (Used for):</u>	2019	2018	2017
Operating activities	\$ 42	\$ 247	\$ 130
Investing activities	\$ 53	\$ (116)	\$ (277)
Financing activities	\$ (138)	\$ (116)	\$ (84)

Cash Provided by Operating Activities

Cash provided by operating activities of continuing operations during 2019 decreased \$205 million compared to the prior year period, due to a decline in our operating results mostly from lower prices across all segments, partially offset by a decrease in environmental spending in 2019. Included in cash provided by operating activities for the year ended December 31, 2019 and 2018 is \$20 million and \$25 million, of cash provided by discontinued operations, respectively.

Cash provided by operating activities of continuing operations in 2018 increased \$96 million when compared to the prior year primarily due to increased net income from an entire year of the Tembec acquisition, excluding the impact of the gain on bargain purchase due to the Acquisition, and from the timing of accounts payable payments. The increases were partially offset by higher inventories and accounts receivable. Included in cash provided by operating activities for the year ended December 31, 2018 and 2017 was cash provided by discontinued operations of \$25 million and \$3 million, respectively.

Cash Provided by (Used for) Investing Activities

Cash provided by investing activities of \$53 million during 2019 included proceeds of \$158 million that were received from the sale of the Matane mill that was sold in November 2019. Proceeds of \$16 million were received in 2018 for the sale of the resins business. Capital expenditures decreased \$26 million during the year ended December 31, 2019 when compared to the same prior year period. Included in cash provided by investing activities during each of the years ended December 31, 2019 and 2018 was capital expenditures for discontinued operations of \$3 million.

Cash used for investing activities of continuing operations during 2018 decreased \$165 million when compared to the prior year as a result of the absence of the proceeds used to fund the Tembec Acquisition, partly offset by an increase in capital spending. The year ended December 31, 2017 included \$8 million from a gain on derivative instrument. Included in cash used for investing activities for the years ended December 31, 2018 was \$3 million of capital spending from discontinued operations.

Cash Provided by (Used for) Financing Activities

Cash used for financing activities increased \$22 million primarily due to a \$64 million increase in our net long-term debt payments during 2019 when compared to the year ended December 31, 2018. Common stock dividends paid decreased by \$6 million due to the suspension of the quarterly \$0.07 dividend starting in the third quarter of 2019. In addition the preferred stock dividend was also lower during the year ended December 31, 2019 by \$3 million as the preferred stock automatically converted to common stock in August 2019. During 2019, the Company incurred \$4 million of debt issuance costs from the amendment of our Senior Secured Credit Facilities. Common shares repurchased decreased by \$36 million during 2019 when compared to the same prior year period due to the absence of the share repurchases under the buyback program.

Cash used for financing activities during 2018 increased \$32 million when compared to the prior year primarily due to \$40 million of common stock that was repurchased under the Company's share repurchase authorization of up to \$100 million, which was declared by the Board of Directors on January 29, 2018. In addition, approximately \$3 million was used to pay employee minimum tax withholding requirements in lieu of receiving common shares from incentive stock plans. These increases were partially offset by lower debt repayments in 2018 when compared to the debt repayments, net of new borrowings, during 2017. In addition, debt issuance costs of \$7 million were incurred in 2017. See Note 10 — *Debt and Finance Leases* and Note 14 — *Stockholders' Equity* for additional information. Dividends were approximately \$2 million higher in 2018 due to the inclusion of the 8.4 million shares issued in connection with the November 2017 Tembec acquisition.

Performance and Liquidity Indicators

The discussion below is presented to enhance the reader's understanding of our operating performance, liquidity, ability to generate cash and satisfy rating agency and creditor requirements. This information includes the following measures of financial results: EBITDA, adjusted EBITDA and adjusted free cash flows. These measures are not defined by U.S. Generally Accepted Accounting Principles ("GAAP") and the discussion of EBITDA, adjusted EBITDA and adjusted free cash flows is not intended to conflict with or change any of the GAAP disclosures described above. We consider these measures, in addition to operating income, to be important to estimate the enterprise and stockholder values of the Company, and for making strategic and operating decisions. In addition, analysts, investors and creditors use these measures when analyzing our operating performance, financial condition and cash generating ability. We use EBITDA and adjusted EBITDA as performance measures and adjusted free cash flows as a liquidity measure. See "Note about Non-GAAP Financial Measures" on page 2 for limitations associated with non-GAAP measures.

EBITDA is defined by SEC rules as earnings from continuing operations before interest, taxes, depreciation and amortization. Adjusted EBITDA is defined by the Company as EBITDA before the pension settlement loss, insurance recoveries, loan amendment costs, non-recurring expenses related to the Company's review of its commodity asset portfolio, severance expense, gain on bargain purchase, acquisition related costs, inventory write-up to fair value, gain on derivative instrument, gain on debt extinguishment, non-cash impairment, and one-time separation and legal costs. EBITDA and adjusted EBITDA are not necessarily indicative of results that may be generated in future periods.

Below is a reconciliation of Income (Loss) from Continuing Operations to EBITDA and Adjusted EBITDA for the five years ended December 31 (in millions of dollars):

Income (Loss) from Continuing Operations to EBITDA and Adjusted EBITDA Reconciliations

	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Income (loss) from continuing operations	\$ (118)	\$ 99	\$ 323	\$ 73	\$ 55
Depreciation and amortization	153	146	97	88	89
Interest expense, net	60	55	38	35	37
Income tax expense	(30)	27	19	39	28
EBITDA	<u>65</u>	<u>327</u>	<u>477</u>	<u>235</u>	<u>209</u>
Pension settlement loss	9	—	—	—	—
Insurance recovery	(4)	—	—	—	(1)
Loan amendment costs	4	—	—	—	—
Non-recurring expense (a)	1	—	—	—	—
Severance expense	1	4	—	—	—
Gain on bargain purchase	—	(20)	(317)	—	—
Acquisition related costs	—	—	34	—	—
Inventory write-up to fair value	—	—	23	—	—
Gain on derivative instrument	—	—	(8)	—	—
Gain on debt extinguishment	—	—	—	(9)	—
Non-cash impairment charge	—	—	—	—	28
One-time separation and legal costs	—	—	—	—	2
Adjusted EBITDA	<u>\$ 76</u>	<u>\$ 311</u>	<u>\$ 209</u>	<u>\$ 226</u>	<u>\$ 238</u>

(a) Non-recurring expenses are related to the Company's review of its commodity asset portfolio.

EBITDA and Adjusted EBITDA for 2019 decreased from 2018 primarily due to lower earnings from operations as a result of lower sales prices on all our products. EBITDA and Adjusted EBITDA for 2018 increased from the 2017 period primarily due to higher earnings from operations as a result of the Acquisition. For additional information regarding operating results see *Results of Operations* section of Item 7 — *Management Discussion and Analysis*.

Adjusted free cash flows is defined as cash provided by operating activities of continuing operations adjusted for capital expenditures excluding strategic capital expenditures. Adjusted free cash flows, as defined by the Company, is a non-GAAP measure of cash generated during a period which is available for debt reduction, strategic capital expenditures and acquisitions and repurchase of the Company's common stock. Adjusted free cash flows is not necessarily indicative of the adjusted free cash flows that may be generated in future periods.

Below is a reconciliation of cash flows from operations to adjusted free cash flows for the five years ended December 31 (in millions of dollars):

Cash Flows from Operations to Adjusted Free Cash Flows Reconciliation

	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Cash provided by operating activities-continuing operations	\$ 22	\$ 222	\$ 126	\$ 232	\$ 202
Capital expenditures (a)	(75)	(92)	(64)	(85)	(78)
Adjusted free cash flows	<u>\$ (53)</u>	<u>\$ 130</u>	<u>\$ 62</u>	<u>\$ 147</u>	<u>\$ 124</u>

(a) Capital expenditures exclude strategic capital expenditures which we deem discretionary. Strategic capital for the years ended December 31, 2019, 2018, 2017 and 2016 were \$27 million, \$37 million, \$11 million and \$4 million, respectively. There were no strategic capital expenditures for the year ended December 31, 2015.

Adjusted free cash flows in 2019 decreased from 2018 primarily due lower cash from operating activities driven by lower earnings as a result of lower sales prices on all our products. This was partially offset by our actions to decrease capital expenditures to preserve cash flow.

Adjusted free cash flows in 2018 increased from 2017 primarily from higher cash provided by operating activities, partly offset by increased capital expenditure requirements from the Acquisition.

Off Balance Sheet Arrangements

We utilize off-balance sheet arrangements to provide credit support for certain suppliers and vendors in case of their default on critical obligations, collateral for certain of our self-insurance programs and guarantees for the completion of our remediation of environmental liabilities. These arrangements consist of standby letters of credit and surety bonds. As part of our ongoing operations, we also periodically issue guarantees to third parties. Off-balance sheet arrangements are not considered a source of liquidity or capital resources and do not expose us to material risks or material unfavorable financial impacts. See Note 22 — *Commitments and Contingencies* of our consolidated financial statements for more information.

Contractual Financial Obligations

Information regarding the letters of credit, surety bonds and other guarantees as of December 31, 2019 is hereby incorporated by reference to Note 22 — *Commitments and Contingencies* of our consolidated financial statements.

The following table aggregates our contractual financial obligations as of December 31, 2019 and anticipated cash spending by period:

Contractual Financial Obligations (in millions)	Total	Payments Due by Period			
		2020	2021-2022	2023-2024	Thereafter
Long-term debt, including current maturities	\$ 1,085	\$ 18	\$ 169	\$ 876	\$ 22
Interest payments on long-term debt and finance lease obligations (a).....	253	59	114	79	1
Purchase obligations (b).....	307	75	90	40	102
Postretirement obligations (c).....	27	3	6	6	12
Finance lease obligations.....	3	—	1	1	1
Operating leases (d)	27	7	12	6	2
Total contractual cash obligations.....	<u>\$ 1,702</u>	<u>\$ 162</u>	<u>\$ 392</u>	<u>\$ 1,008</u>	<u>\$ 140</u>

- (a) Projected interest payments for variable-rate debt were calculated based on outstanding principal amounts and interest rates as of December 31, 2019. See Note 10 — *Debt and Finance Leases* for additional information.
- (b) Purchase obligations primarily consist of payments expected to be made on natural gas, steam energy and wood chip purchase contracts. Purchase obligations exclude arrangements the Company can cancel without penalty.
- (c) Amounts include estimated postretirement benefit payments and do not include pension funding obligations. See Note 18 — *Employee Benefit Plans*, for additional information on our pension and postretirement benefit plans.
- (d) See Note 5 — *Leases* for additional information.

Environmental Regulation

We are subject to stringent environmental laws and regulations concerning air emissions, wastewater discharges, waste handling and disposal, and assessment and remediation of environmental contamination, which impact both our current ongoing operations and about 20 former operating facilities or third party-owned sites classified as disposed operations. These include the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and similar state laws and regulations impacting U.S. facilities, as well as requirements relating to ancillary matters such as financial assurance of our legal obligations for facility closure and post-closure care. Similar laws and legal requirements also impact current and former operating sites in Canada and France, respectively. Management closely monitors our environmental responsibilities and believes we are in material compliance with current requirements. In addition to ongoing compliance with laws and regulations, our facilities operate in accordance with various permits, which are issued by state and federal environmental agencies. Many of these permits impose operating conditions on us which require significant expenditures to ensure compliance. Upon renewal and renegotiation of these permits, the issuing agencies often seek to impose new or additional conditions in response to new environmental laws and regulations, or more stringent interpretations

of existing laws and regulations. In addition, under many federal environmental laws, private citizens and organizations, such as environmental advocacy groups, have the right to legally challenge permitting and other decisions made by regulatory agencies.

Our operations are subject to constantly changing environmental requirements, and interpretations of existing requirements, which are often impacted by new policy initiatives, new and amended legislation and regulation, negotiations involving state and federal governmental agencies and various other stakeholders, as well as, at times, litigation. For additional information, see Item 1A—*Risk Factors* for a discussion of the potential impact of environmental risks on our business, and Item 3—*Legal Proceedings*, for a discussion of any environmental-related litigation.

Our future spending requirements in the area of environmental compliance could change significantly based on the passage of new environmental laws and regulations.

Environmental Liabilities

For information and details relating to our estimated environmental liabilities, see Item 1A—*Risk Factors* and Note 11—*Environmental Liabilities* of our consolidated financial statements for more information.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Market and Other Economic Risks

We are exposed to various market risks, primarily changes in interest rates, currency and commodity prices. Our objective is to minimize the economic impact of these market risks. We use derivatives in accordance with policies and procedures approved by the Audit Committee of our Board of Directors. Derivatives are managed by a senior executive committee whose responsibilities include initiating, managing and monitoring resulting exposures. See Note 12—*Derivative Instruments* for additional information.

We manage our foreign currency exposures by balancing certain assets and liabilities denominated in foreign currencies and through the use of foreign currency forward contracts. The principal objective of such contracts is to minimize the potential volatility and financial impact of changes in foreign currency exchange rates. The counterparties to these contractual agreements are major financial institutions with which we generally have other financial relationships. We are exposed to credit losses in the event of nonperformance by these counterparties. However, given their size and financial strength, we do not anticipate nonperformance by the counterparties. We do not utilize financial instruments for trading or other speculative purposes.

The prices, sales volumes and margins of the commodity products of our High Purity Cellulose segment and all the products of the Forest Products, Pulp and Newsprint segments have historically been cyclically affected by economic and market shifts, fluctuations in capacity, and changes in foreign currency exchange rates. In general, these products are commodities that are widely available from other producers; because these products have few distinguishing qualities from producer to producer, competition is based primarily on price, which is determined by supply relative to demand. The overall levels of demand for the products we manufacture, and consequently our sales and profitability, reflect fluctuations in end user demand. Our cellulose specialties product prices are impacted by market supply and demand, raw material and processing costs, changes in global currencies and other factors. They are not directly correlated to commodity paper pulp prices. In addition, a majority of our cellulose specialties products are under multi-year contracts that expire between 2021 and 2023.

As of December 31, 2019, we had \$499 million of variable rate debt which is subject to interest rate risk. At this borrowing level, a hypothetical one-percentage point increase/decrease in interest rates would result in a corresponding increase/decrease of approximately \$5 million in interest payments and expense over a 12-month period. Our primary interest rate exposure on variable rate debt results from changes in LIBOR. We have entered into interest rate swap agreements to reduce the volatility of financing costs, achieve a desired proportion of fixed-rate versus floating-rate debt and to hedge the variability in cash flows attributable to interest rate risks caused by changes in the LIBOR benchmark.

The fair market value of our long-term fixed interest rate debt is also subject to interest rate risk. However, we intend to hold most of our debt until maturity. The estimated fair value of our fixed-rate debt at December 31, 2019 was \$465 million compared to the \$586 million principal amount. We use quoted market prices to estimate the fair value of our fixed-rate debt. Generally, the fair market value of fixed-rate debt will increase as interest rates fall and decrease as interest rates rise.

We may periodically enter into commodity forward contracts to fix some of our energy costs that are subject to price volatility caused by weather, supply conditions, political and economic variables and other unpredictable factors. Such forward contracts partially mitigate the risk of changes to our gross margins resulting from an increase or decrease in these costs. Forward contracts which are derivative instruments are reported in the consolidated balance sheets at their fair values, unless they qualify for the normal purchase normal sale ("NPNS") exception and such exception has been elected. If the NPNS exception is elected, the fair values of such contracts are not recognized on the balance sheet.

Item 8. Financial Statements and Supplementary Data

Our consolidated financial statements and related financial statement schedule, together with the report of independent registered accounting firm, appear at pages F-1 through F-49 of this Annual Report on Form 10-K for the year ended December 31, 2019.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

Rayonier Advanced Materials management is responsible for establishing and maintaining adequate disclosure controls and procedures. Disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934 (the “Exchange Act”)) are designed with the objective of ensuring that information required to be disclosed in reports filed under the Exchange Act, such as this annual report on Form 10-K, is (1) recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and (2) accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Because of the inherent limitations in all control systems, no control evaluation can provide absolute assurance all control exceptions and instances of fraud have been prevented or detected on a timely basis. Even systems determined to be effective can provide only reasonable assurance their objectives are achieved.

Based on an evaluation of our disclosure controls and procedures as of the end of the period covered by this annual report on Form 10-K, our management, including the Chief Executive Officer and Chief Financial Officer, concluded the design and operation of the disclosure controls and procedures were effective as of December 31, 2019.

Internal Control over Financial Reporting

With regard to our internal control over financial reporting as defined in paragraph (f) of Rule 13a-15(f), see Management’s Report on Internal Control over Financial Reporting on page F-2, followed by the Reports of Independent Registered Public Accounting Firm on page F-3, included in Item 8 — *Financial Statements and Supplementary Data* of this annual report on Form 10-K.

For the year ended December 31, 2019, based upon the evaluation required by paragraph (d) of Rule 13a-15, there were no changes in our internal control over financial reporting that would materially affect or are reasonably likely to materially affect our internal control over financial reporting.

Item 9B. Other Information

None.

Part III

Certain information required by Part III is incorporated by reference from the Company's definitive Proxy Statement to be filed with the SEC in connection with the solicitation of proxies for the Company's 2020 Annual Meeting of Stockholders (the "Proxy Statement"). We will make the Proxy Statement available on our website at www.rayonieram.com as soon as it is filed with the SEC.

Item 10. Information about our Directors, Executive Officers and Corporate Governance

The information required by this Item with respect to directors, executive officers and corporate governance is incorporated by reference from the sections entitled "Commitment to Best Practices in Corporate Governance," and "Election of Directors," and the subsections entitled "Executive Compensation Tables and Related Information-Executive Officers and Delinquent Section 16(a) Reports" and "Ratification of the Appointment of Independent Registered Public Accounting Firm-Audit Committee Financial Experts" in the Proxy Statement. The information required by this Item with respect to disclosure of any known late filing or failure by an insider to file a report required by Section 16 of the Exchange Act is incorporated by reference to the section entitled "Delinquent Section 16(a) Reports" in the Proxy Statement.

Our Standard of Ethics and Code of Corporate Conduct, which is applicable to our principal executive officer and financial and accounting officers, is available on our website, www.rayonieram.com. Any amendments to or waivers of the Standard of Ethics and Code of Corporate Conduct will also be disclosed on our website.

Item 11. Executive Compensation

The information called for by Item 11 is incorporated herein by reference from the sections entitled "Compensation Discussion & Analysis," "Report of the Compensation and Management Development Committee" and "Executive Compensation Tables and Related Information," and the subsection entitled "Commitment to Best Practices in Corporate Governance-Director Compensation," in the Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information called for by Item 12 is incorporated herein by reference from the subsections entitled "Executive Compensation Tables and Related Information-Stock Ownership of Directors and Executive Officers, Security Ownership of Certain Beneficial Owners and Equity Compensation Plan Information" in the Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information called for by Item 13 is incorporated herein by reference from the section entitled "Election of Directors," and the subsections entitled "Commitment to Best Practices in Corporate Governance-Corporate Governance Principles, Director Independence and Related Person Transactions" in the Proxy Statement.

Item 14. Principal Accounting Fees and Services

The information called for by Item 14 is incorporated herein by reference from the subsection entitled "Ratification of the Appointment of Independent Registered Public Accounting Firm-Information Regarding Independent Registered Public Accounting Firm" in the Proxy Statement.

Part IV

Item 15. Exhibits, Financial Statement Schedules

(a) 1. Consolidated Financial Statements.

For a list of the consolidated financial information included herein, see page F-1.

2. Financial Statement Schedules.

All other schedules have been omitted as the required information is not applicable or the information is presented in the Consolidated Financial Statements or notes thereto under Item 8 herein. The following consolidated financial statement schedule is included in Item 8:

Schedule II-Valuation and Qualifying Accounts

3. List of Exhibits.

(b) Exhibits.

See Item 15(a)(3).

(c) Financial Statement Schedule.

See Item 15(a)(2).

<u>Exhibit No.</u>	<u>Description</u>	<u>Location</u>
2.1	Separation and Distribution Agreement between Rayonier Advanced Materials Inc. and Rayonier Inc., dated as of May 28, 2014	Incorporated herein by reference to Exhibit 2.1 to the Registrant's Amendment No. 4 to the Registration Statement on Form 10 filed on May 29, 2014
2.2	Arrangement Agreement by and between Tembec Inc. and Rayonier Advanced Materials Inc. dated as of May 24, 2017*	Incorporated herein by reference to Exhibit 2.1 to the Registrant's Form 8-K filed on May 25, 2017
2.3	Amending Agreement, dated as of July 23, 2017, to the Arrangement Agreement by and between Tembec Inc. and Rayonier Advanced Materials Inc. dated as of May 24, 2017	Incorporated herein by reference to Exhibit 2.1 to the Registrant's Form 8-K filed on July 24, 2017
3.1	Amended and Restated Certificate of Incorporation of Rayonier Advanced Materials Inc.	Incorporated herein by reference to Exhibit 3.1 to the Registrant's Form 8-K filed on June 30, 2014
3.2	Certificate of Designations of 8.00% Series A Mandatory Convertible Preferred Stock of Rayonier Advanced Materials Inc., filed with the Secretary of State of the State of Delaware and effective August 10, 2016	Incorporated herein by reference to Exhibit 3.1 to the Registrant's Form 8-K filed on August 10, 2016
3.3	Amended and Restated Bylaws of Rayonier Advanced Materials Inc.	Incorporated herein by reference to Exhibit 3.2 to the Registrant's Form 8-K filed on June 30, 2014
4.1	Indenture among Rayonier A.M. Products Inc., the guarantors party thereto from time to time and Wells Fargo Bank, National Association, as Trustee, dated as of May 22, 2014	Incorporated herein by reference to Exhibit 4.1 to the Registrant's Amendment No. 4 to Registration Statement on Form 10 filed on May 29, 2014
4.2	Description of Common Stock	Filed herewith

<u>Exhibit No.</u>	<u>Description</u>	<u>Location</u>
10.1	Transition Services Agreement, dated as of June 27, 2014, by and between Rayonier Inc. and Rayonier Advanced Materials Inc.	Incorporated herein by reference to Exhibit 10.1 to the Registrant's Form 8-K filed on June 30, 2014
10.2	Tax Matters Agreement, dated as of June 27, 2014, by and among Rayonier Inc., Rayonier Advanced Materials Inc., Rayonier TRS Holdings Inc. and Rayonier A.M. Products Inc.	Incorporated herein by reference to Exhibit 10.2 to the Registrant's Form 8-K filed on June 30, 2014
10.3	Employee Matters Agreement, dated as of June 27, 2014, by and between Rayonier Inc. and Rayonier Advanced Materials Inc.	Incorporated herein by reference to Exhibit 10.3 to the Registrant's Form 8-K filed on June 30, 2014
10.4	Intellectual Property Agreement, dated as of June 27, 2014, by and between Rayonier Inc. and Rayonier Advanced Materials Inc.	Incorporated herein by reference to Exhibit 10.4 to the Registrant's Form 8-K filed on June 30, 2014
10.5	Credit Agreement, dated as of June 24, 2014, among Rayonier A.M. Products Inc., Rayonier Advanced Materials Inc. (following its joinder thereto), the subsidiary loan parties from time to time party thereto (following their joinder thereto), the lenders from time to time party thereto and Bank of America, N.A., as administrative agent	Incorporated herein by reference to Exhibit 10.5 to the Registrant's Form 8-K filed on June 30, 2014
10.6	First Amendment, dated as of June 5, 2017, among Rayonier A.M. Products Inc., as Borrower, Rayonier Advanced Materials Inc., as Designated Borrower, Holdings and as a Guarantor, th10.6e Subsidiary Loan Parties party thereto, the Lenders party thereto, and Bank of America, N.A., as administrative agent and collateral agent	Incorporated herein by reference to Exhibit 10.1 to the Registrant's Form 8-K filed on June 6, 2017
10.7	First Restatement Agreement, dated as of August 17, 2017, among Rayonier Advanced Materials Inc., as Holdings, Rayonier A.M. Products Inc. and Rayonier Performance Fibers, LLC, as Borrowers, certain subsidiaries of Rayonier Advanced Materials Inc. party thereto, the lenders and L/C issuers party thereto and Bank of America, N.A., as Administrative Agent	Incorporated herein by referenced to Exhibit 10.1 to the Registrant's Form 8-K filed on August 18, 2017
10.8	First Amendment to Amended and Restated Credit Agreement, dated as of September 30, 2019, among Rayonier Advanced Materials Inc., as Holdings, Rayonier A.M. Products Inc. and Rayonier Performance Fibers, LLC, as Borrowers, certain subsidiaries of Rayonier Advanced Materials Inc. party thereto, the lenders and L/C issuers party thereto and Bank of America, N.A., as Administrative Agent	Incorporated herein by reference to Exhibit 10.1 to the Registrant's Form 8-K filed on October 2, 2019
10.9	Rayonier Advanced Materials Inc. Incentive Stock Plan, as amended effective May 23, 2016**	Incorporated herein by reference to Appendix C to the Registrant's Proxy Statement filed on April 8, 2016
10.10	Rayonier Advanced Materials Inc. 2017 Incentive Stock Plan, effective May 22, 2017**	Incorporated herein by reference to Appendix B to the Registrant's Proxy Statement filed on April 7, 2017
10.11	Rayonier Advanced Materials Inc. 2017 Incentive Stock Plan, effective December 15, 2017**	Incorporated herein by reference to Exhibit 10.10 to the Registrant's Form 10-K filed on March 1, 2018
10.12	Rayonier Advanced Materials Inc. 2017 Incentive Stock Plan (as amended effective December 15, 2017)**	Incorporated herein by reference to Appendix A to the Registrant's Proxy Statement filed on April 6, 2018

<u>Exhibit No.</u>	<u>Description</u>	<u>Location</u>
10.13	First Amendment to the Rayonier Advanced Materials Inc. 2017 Incentive Stock Plan, effective May 22, 2017**	Incorporated herein by reference to Exhibit 10.2 to the Registrant's Form 10-Q filed on November 7, 2019
10.14	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Restricted Stock Award Agreement, effective 2015**	Incorporated herein by reference to Exhibit 10.11 to the Registrant's Form 10-K filed on February 27, 2015
10.15	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Restricted Stock Unit Award Agreement, effective 2017**	Incorporated herein by reference to Exhibit 10.12 to the Registrant's Form 10-K filed on March 1, 2018
10.16	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Supplemental Terms Applicable to the 2018 Equity Award Grant**	Incorporated herein by reference to Exhibit 10.15 to the Registrant's Form 10-K filed on March 1, 2018
10.17	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Supplemental Terms Applicable to the 2019 Equity Award Grant**	Incorporated herein by reference to Exhibit 10.16 to the Registrant's Form 10-K filed on March 1, 2019
10.18	Description of Rayonier Advanced Materials Inc. 2018 Performance Share Award Program**	Incorporated herein by reference to Exhibit 10.18 to the Registrant's Form 10-K filed on March 1, 2018
10.19	Description of Rayonier Advanced Materials Inc. 2019 Performance Share Award Program**	Incorporated herein by reference to Exhibit 10.19 to the Registrant's Form 10-K filed on March 1, 2019
10.20	Rayonier Advanced Materials Inc. Non-Equity Incentive Plan, as amended effective May 23, 2016**	Incorporated herein by reference to Appendix B to the Registrant's Proxy Statement filed on April 8, 2016
10.21	Rayonier Advanced Materials Inc. Executive Severance Pay Plan, Amended and Restated effective October 21, 2019**	Incorporated herein by reference to Exhibit 10.3 to the Registrant's Form 10-Q filed on November 7, 2019
10.22	Rayonier Advanced Materials Inc. Non Change In Control Executive Severance Plan**	Incorporated herein by reference to Exhibit 10.20 to the Registrant's Form 10-K filed on February 26, 2016
10.23	First Amendment to the Rayonier Advanced Materials Inc. Non Change In Control Executive Severance Plan**	Incorporated herein by reference to Exhibit 10.4 to the Registrant's Form 10-Q filed on November 7, 2019
10.24	Trust Agreement for Rayonier Advanced Materials Inc. Legal Resources Trust, dated June 28, 2014, by and between Rayonier Advanced Materials Inc. and Wells Fargo Bank, National Association**	Incorporated herein by reference to Exhibit 10.23 to the Registrant's Form 10-Q/A filed on September 4, 2014
10.25	Rayonier Advanced Materials Inc. Excess Benefit Plan, effective June 27, 2014**	Incorporated herein by reference to Exhibit 10.24 to the Registrant's Form 10-Q/A filed on September 4, 2014
10.26	Rayonier Advanced Materials Inc. Excess Savings and Deferred Compensation Plan, effective June 28, 2014**	Incorporated herein by reference to Exhibit 10.25 to the Registrant's Form 10-Q/A filed on September 4, 2014
10.27	Form of Rayonier Advanced Materials Inc. Excess Savings and Deferred Compensation Plan Agreements, effective June 28, 2014**	Incorporated herein by reference to Exhibit 10.18 to the Registrant's Form 10-K filed on February 27, 2015
10.28	Retirement Plan for Salaried Employees of Rayonier Advanced Materials Inc., effective June 27, 2014 and Amended and Restated as of October 21, 2019**	Incorporated herein by reference to Exhibit 10.5 to the Registrant's Form 10-Q filed on November 7, 2019
10.29	Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective January 1, 2015**	Incorporated herein by reference to Exhibit 10.24 to the Registrant's Form 10-K filed on February 24, 2017

<u>Exhibit No.</u>	<u>Description</u>	<u>Location</u>
10.30	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective January 1, 2015**	Incorporated herein by reference to Exhibit 10.25 to the Registrant's Form 10-K filed on February 24, 2017
10.31	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective January 1, 2016**	Incorporated herein by reference to Exhibit 10.26 to the Registrant's Form 10-K filed on February 24, 2017
10.32	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective January 1, 2016**	Incorporated herein by reference to Exhibit 10.27 to the Registrant's Form 10-K filed on February 24, 2017
10.33	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective October 1, 2016**	Incorporated herein by reference to Exhibit 10.28 to the Registrant's Form 10-K filed on February 24, 2017
10.34	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective February 13, 2017**	Incorporated herein by reference to Exhibit 10.29 to the Registrant's Form 10-K filed on February 24, 2017
10.35	Form of Indemnification Agreement between Rayonier Advanced Materials Inc. and individual directors or officers**	Incorporated herein by reference to Exhibit 10.5 to the Registrant's Amendment No. 4 to the Registration Statement on Form 10 filed on May 29, 2014
10.36	Form of Rayonier Advanced Materials Inc. Outside Directors Compensation Program/Cash Deferral Option Agreement**	Incorporated herein by reference to Exhibit 10.22 to the Registrant's Form 10-K and filed on February 27, 2015
10.37	Asset Purchase Agreement by and between Sappi Canada Enterprises Inc., as purchaser and Sappi Papier Holding GmbH, as Purchaser guarantor, on the one hand, and Rayonier A.M. Canada G.P., Rayonier A.M. Compagnie de Construction Inc. and Rayonier A.M. Enterprises Inc., collectively the Seller, and Rayonier Advanced Materials Inc., as Seller guarantor, dated as of July 31, 2019***	Incorporated herein by reference to Exhibit 10.1 to the Registrant's Form 10-Q filed on August 7, 2019
21	Subsidiaries of the registrant	Filed herewith
23.1	Consent of Grant Thornton LLP	Filed herewith
24	Powers of attorney	Filed herewith
31.1	Chief Executive Officer's Certification Pursuant to Rule 13a-14(a)/15d-14(a) and pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
31.2	Chief Financial Officer's Certification Pursuant to Rule 13a-14(a)/15d-14(a) and pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
32	Certification of Periodic Financial Reports Under Section 906 of the Sarbanes-Oxley Act of 2002	Furnished herewith
101	The following financial information from our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, formatted in Extensible Business Reporting Language ("XBRL"), includes: (i) the Consolidated Statements of Income and Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017; (ii) the Consolidated Balance Sheets as of December 31, 2019 and 2018; (iii) the Consolidated Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017; and (iv) the Notes to the Consolidated Financial Statements	Filed herewith

<u>Exhibit No.</u>	<u>Description</u>	<u>Location</u>
104	Cover Page Interactive Data File - formatted as Inline XBRL and contained in Exhibit 101	

* The exhibits to the Arrangement Agreement have been omitted from this filing pursuant to Item 601(b)(2) of Regulation S-K. The Company will furnish copies of any such schedules and exhibits to the U.S. Securities and Exchange Commission upon request.

** Management contract or compensatory plan.

***Certain confidential portions of this exhibit were omitted by means of marking such portions with asterisks because the identified confidential portions (i) are not material and (ii) would be competitively harmful if publicly disclosed.

Item 16. Form 10-K Summary

None.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Rayonier Advanced Materials Inc.

(Registrant)

By: /s/ MARCUS J. MOELTNER

Marcus J. Moeltner

Chief Financial Officer and

Senior Vice President, Finance

(Duly Authorized Officer and Principal Financial Officer)

Date: March 2, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
/s/ PAUL G. BOYNTON _____ Paul G. Boynton (Principal Executive Officer)	Chairman of the Board, President and Chief Executive Officer	March 2, 2020
/s/ MARCUS J. MOELTNER _____ Marcus J. Moeltner (Principal Financial Officer)	Chief Financial Officer and Senior Vice President, Finance	March 2, 2020
/s/ JOHN P. CARR _____ John P. Carr (Principal Accounting Officer)	Chief Accounting Officer and Vice President, Controller	March 2, 2020
* _____ C. David Brown, II	Lead Director	
* _____ Charles E. Adair	Director	
* _____ DeLyle W. Bloomquist	Director	
* _____ Julie A. Dill	Director	
* _____ Mark E. Gaumont	Director	
* _____ James F. Kirsch	Director	
* _____ Thomas I. Morgan	Director	
* _____ Lisa M. Palumbo	Director	
*By: /s/ MARCUS J. MOELTNER _____ Marcus J. Moeltner (Attorney-In-Fact)		March 2, 2020

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All other financial statement schedules have been omitted because they are not applicable, the required matter is not present, or the required information has been otherwise supplied in the financial statements or the notes thereto.	

Management's Report on Internal Control over Financial Reporting

The management of Rayonier Advanced Materials Inc. and its subsidiaries is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934, as amended). Our system of internal controls over financial reporting is designed to provide reasonable assurance to the Company's management and Board of Directors regarding the preparation and fair presentation of the financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America.

Because of the inherent limitations of internal control over financial reporting, misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Rayonier Advanced Materials Inc.'s management, under the supervision of the Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, we used the framework included in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on our evaluation under the criteria set forth in *Internal Control—Integrated Framework*, management concluded that our internal control over financial reporting was effective as of December 31, 2019.

Grant Thornton LLP, the independent registered public accounting firm that audited the Company's consolidated financial statements, has issued an attestation report on the Company's internal control over financial reporting as of December 31, 2019. The report on the Company's internal control over financial reporting as of December 31, 2019, is on page F-4.

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders Rayonier Advanced Materials Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of Rayonier Advanced Materials Inc. (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of income and comprehensive income, and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule included under Item 15(a) (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in the 2013 *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated March 2, 2020 expressed an unqualified opinion.

Change in accounting principle

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for leases in 2019 due to the adoption of Accounting Standards Codification Topic 842, *Leases*.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2016.

Jacksonville, FL
March 2, 2020

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders Rayonier Advanced Materials Inc.

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of Rayonier Advanced Materials Inc. (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2019, based on criteria established in the 2013 *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in the 2013 *Internal Control-Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements of the Company as of and for the year ended December 31, 2019, and our report dated March 2, 2020 expressed an unqualified opinion on those financial statements.

Basis for opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting ("Management's Report"). Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GRANT THORNTON LLP

Jacksonville, Florida
March 2, 2020

Rayonier Advanced Materials Inc.
Consolidated Statements of Income and Comprehensive Income
For the Years Ended December 31,
(Dollars in thousands, except per share amounts)

	2019	2018	2017
Net Sales	\$ 1,775,392	\$ 1,956,994	\$ 940,416
Cost of Sales	(1,721,235)	(1,665,847)	(799,663)
Gross Margin	54,157	291,147	140,753
Selling, general and administrative expenses	(89,644)	(104,989)	(79,560)
Duties	(22,634)	(25,921)	(939)
Other operating expense, net (Note 19)	(24,997)	(12,422)	(1,274)
Operating Income (Loss)	(83,118)	147,815	58,980
Interest expense	(60,267)	(55,923)	(39,967)
Interest income and other, net	(24)	5,019	2,352
Other components of net periodic benefit income (expense)	(4,875)	8,345	(3,040)
Gain on bargain purchase (Note 4)	—	20,449	316,555
Gain on derivative instrument	—	—	7,780
Gain on debt extinguishment	—	786	—
Income (Loss) from Continuing Operations Before Income Taxes	(148,284)	126,491	342,660
Income tax benefit (expense) (Note 20)	29,676	(27,040)	(19,233)
Income (Loss) from Continuing Operations	(118,608)	99,451	323,427
Income from discontinued operations (Note 3)	96,158	28,965	1,537
Net Income (Loss) Attributable to the Company	(22,450)	128,416	324,964
Mandatory convertible stock dividends	(8,582)	(13,800)	(13,800)
Net Income (Loss) Available to Common Stockholders	\$ (31,032)	\$ 114,616	\$ 311,164
Basic Earnings (Loss) Per Share of Common Stock (Note 16)			
Income (loss) from continuing operations	\$ (2.33)	\$ 1.70	\$ 7.13
Income from discontinued operations	1.76	0.57	0.04
Net income (loss) per common share-basic	\$ (0.57)	\$ 2.27	\$ 7.17
Diluted Earnings (Loss) Per Share of Common Stock (Note 16)			
Income (loss) from continuing operations	\$ (2.33)	\$ 1.52	\$ 5.78
Income from discontinued operations	1.76	0.44	0.03
Net income (loss) per common share-diluted	\$ (0.57)	\$ 1.96	\$ 5.81
Comprehensive Income:			
Net Income (Loss)	\$ (22,450)	\$ 128,416	\$ 324,964
Other Comprehensive Income (Loss), net of tax (Note 15)			
Foreign currency translation adjustments	(5,394)	(13,353)	4,868
Unrealized gain (loss) on derivative instruments	12,912	(12,241)	619
Net gain (loss) from pension and postretirement plans	8,952	(31,527)	28,442
Total other comprehensive income (loss)	16,470	(57,121)	33,929
Comprehensive Income (Loss)	\$ (5,980)	\$ 71,295	\$ 358,893

See Notes to Consolidated Financial Statements.

Rayonier Advanced Materials Inc.
Consolidated Balance Sheets
As of December 31,
(Dollars in thousands, except common share amounts)

	2019	2018
Assets		
Current Assets		
Cash and cash equivalents	\$ 64,025	\$ 108,966
Accounts receivable, net (Note 6)	181,658	199,284
Inventory (Note 7)	251,180	304,028
Prepaid and other current assets	76,964	61,314
Assets of discontinued operations (Note 3)	—	42,500
Total current assets	573,827	716,092
Property, Plant and Equipment, Net (Note 8)	1,316,055	1,363,557
Deferred Tax Assets (Note 20)	384,513	375,471
Intangible Assets, Net	45,451	52,460
Other Assets	160,301	120,299
Assets of discontinued operations (Note 3)	—	\$ 51,207
Total Assets	\$ 2,480,147	\$ 2,679,086
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts payable	\$ 153,181	\$ 181,705
Accrued and other current liabilities (Note 9)	102,178	146,155
Current maturities of long-term debt (Note 10)	19,448	15,012
Current environmental liabilities (Note 11)	11,339	11,310
Liabilities of discontinued operations (Note 3)	—	16,236
Total current liabilities	286,146	370,418
Long-Term Debt (Note 10)	1,062,695	1,173,157
Non-Current Environmental Liabilities (Note 11)	160,037	149,344
Pension and Other Postretirement Benefits (Note 18)	236,625	233,658
Deferred Tax Liabilities (Note 20)	24,847	28,016
Other Non-Current Liabilities	26,999	12,074
Liabilities of discontinued operations (Note 3)	—	5,548
Commitments and Contingencies (Note 22)		
Stockholders' Equity (Note 14)		
Preferred stock, 0 and 10,000,000 shares authorized at \$0.00 and \$0.01 par value, 0 and 1,725,000 issued and outstanding as of December 31, 2019 and December 31, 2018, respectively, aggregate liquidation preference \$0 and \$172,500	—	17
Common stock, 140,000,000 shares authorized at \$0.01 par value, 63,136,129 and 49,291,130 issued and outstanding, as of December 31, 2019 and 2018, respectively	632	493
Additional paid-in capital	399,020	399,490
Retained earnings	422,373	462,568
Accumulated other comprehensive income (loss) (Note 15)	(139,227)	(155,697)
Total Stockholders' Equity	682,798	706,871
Total Liabilities and Stockholders' Equity	\$ 2,480,147	\$ 2,679,086

See Notes to Consolidated Financial Statements.

Rayonier Advanced Materials Inc.
Consolidated Statements of Cash Flows
For the Years Ended December 31, (Dollars in thousands)

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Operating Activities			
Net income (loss)	\$ (22,450)	\$ 128,416	\$ 324,964
Loss (income) from discontinued operations	(96,158)	(28,965)	(1,537)
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	153,275	145,957	96,646
Stock-based incentive compensation expense	6,531	13,007	8,986
Amortization of capitalized debt costs and debt discount	2,292	835	3,377
Deferred income tax (benefit) expense	(25,552)	7,637	29,782
Gain on bargain purchase	—	(19,071)	(316,555)
Increase in environmental liabilities	16,384	7,285	256
Net periodic benefit cost of pension and postretirement plans	16,580	5,063	10,264
Loss from sale/disposal of property, plant and equipment	1,295	3,186	2,032
Loss (gain) on foreign currency exchange	6,574	(12,170)	(2,335)
Other	(3,332)	3,390	(1,304)
Changes in operating assets and liabilities:			
Receivables	14,443	(31,532)	(2,574)
Inventories	52,347	(21,579)	(651)
Accounts payable	(26,025)	30,162	17,629
Accrued liabilities	(20,034)	4,864	(4,299)
All other operating activities	(36,074)	9,597	(18,838)
Payments for pension and other postretirement benefit plans	(11,593)	(12,153)	(13,763)
Expenditures for environmental liabilities	(6,444)	(11,852)	(5,795)
Cash provided by operating activities-continuing operations	<u>22,059</u>	<u>222,077</u>	<u>126,285</u>
Cash provided by operating activities-discontinued operations	<u>19,845</u>	<u>24,867</u>	<u>3,487</u>
Cash Provided by Operating Activities	<u>41,904</u>	<u>246,944</u>	<u>129,772</u>
Investing Activities			
Acquisition of Tembec, net of cash acquired	—	—	(210,164)
Capital expenditures	(102,807)	(128,786)	(74,955)
Proceeds from sale of resins operations	—	16,233	—
Realized gain on derivative instrument	—	—	7,780
Cash used for investing activities-continuing operations	<u>(102,807)</u>	<u>(112,553)</u>	<u>(277,339)</u>
Cash provided by (used for) investing activities-discontinued operations	<u>155,309</u>	<u>(3,413)</u>	<u>(87)</u>
Cash Used for Investing Activities	<u>52,502</u>	<u>(115,966)</u>	<u>(277,426)</u>
Financing Activities			
Revolving credit facility and other borrowings	91,158	—	680,000
Repayments of revolving credit facility	(86,000)	—	—
Repayment of debt	(114,331)	(45,270)	(729,958)
Dividends paid on common stock	(8,569)	(15,058)	(12,693)
Dividends paid on preferred stock	(10,350)	(13,800)	(13,800)
Proceeds from the issuance of common stock	—	451	14
Repurchase of common stock	(6,878)	(42,780)	(157)
Debt issuance costs	(3,514)	—	(7,025)
Cash (Used for) Provided by Financing Activities	<u>(138,484)</u>	<u>(116,457)</u>	<u>(83,619)</u>
Change in cash and cash equivalents	<u>(44,078)</u>	<u>14,521</u>	<u>(231,273)</u>
Net effect of foreign exchange on cash and cash equivalents	(863)	(1,790)	853
Balance, beginning of year	108,966	96,235	326,655
Balance, end of year	<u>\$ 64,025</u>	<u>\$ 108,966</u>	<u>\$ 96,235</u>

See Notes to Consolidated Financial Statements.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements
(Dollar amounts in thousands unless otherwise stated)

1. Nature of Operations and Basis of Presentation

Nature of Operations

Rayonier Advanced Materials Inc. (“the Company”) is a leading manufacturer of high purity cellulose products, lumber, pulp and paper products. The Company operates in the following business segments:

High Purity Cellulose

The Company, through its four production facilities located in the United States (“U.S.”), Canada and France, manufactures and markets high purity cellulose, which is sold as either cellulose specialties or commodity products. Cellulose specialties are primarily used in dissolving chemical applications that require a highly purified form of cellulose. Commodity products are used for commodity viscose and absorbent materials applications. Commodity viscose is a raw material required for the manufacture of viscose staple fibers which are used in woven and non-woven applications. Absorbent materials, typically referred to as fluff fibers, are used as an absorbent medium in consumer products. Sales of resins, chemicals, and energy, a majority of which are by-products of the manufacturing process, are included in the high purity cellulose segment.

Forest Products

The Company, through its seven sawmills in Canada, manufactures and markets high-quality, construction-grade lumber in North America. The lumber, primarily spruce, pine, or fir, is used in the construction of residential and multi-family homes, light industrial and commercial facilities, and the home repair and remodel markets. The wood chips, manufactured as a by-product of the lumber manufacturing process, are used in the Company’s Canadian High Purity Cellulose, Pulp and Paper plants.

Paperboard

The Company, through its production facility in Canada, manufactures and markets paperboard products. Paperboard is used for packaging, printing documents, brochures, promotional materials, paperback book or catalog covers, file folders, tags and tickets.

Pulp & Newsprint

The Company, through its production facilities in Canada, manufactures and markets high-yield pulp and newsprint. High-yield is used by paper manufacturers to produce paperboard, packaging, printer and writing papers and a variety of other paper products. Newsprint is a paper grade used to print newspapers, advertising materials and other publications.

Basis of Presentation

Principles of Consolidation

The consolidated financial statements include the accounts and operations of the Company and its wholly owned, majority owned and controlled subsidiaries. The Company applies the equity method of accounting for investments in which it has an ownership interest from 20 percent to 50 percent or exercises significant influence over the related investee’s operations. All significant intercompany accounts and transactions are eliminated in consolidation.

Discontinued Operations

As a result of the sale its Matane, Quebec, Canada high-yield pulp mill, the Company has reclassified certain prior year amounts to conform to the current year’s presentation for discontinued operations. Unless otherwise stated, information in these notes to consolidated financial statements relates to continuing operations. The Company presents businesses that represent components as discontinued operations when they meet the criteria for held for sale or are sold, and their disposal represents a strategic shift that has, or will have, a major effect on our operations and financial results. See Note 3 - *Discontinued Operations* for additional information.

Reclassifications

Certain amounts in prior periods have been reclassified to conform with current period presentation.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Fiscal Year

The Company's fiscal year end is the last day of the calendar year. For interim reporting periods, the Company uses the last Saturday of the fiscal quarter.

Subsequent Events

Events and transactions subsequent to the balance sheet date have been evaluated for potential recognition and disclosure through March 2, 2020, the date these financial statements were available to be issued. There were no subsequent events warranting disclosure.

2. Summary of Significant Accounting Policies and New Accounting Pronouncements

Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and to disclose contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. There are risks inherent in using estimates and therefore, actual results could differ from those estimates.

Translation of Foreign Currency

Assets and liabilities of consolidated subsidiaries whose functional currency is other than the U.S. dollar are translated into U.S. dollars using currency exchange rates at the balance sheet date. Revenues and expenses are translated using the average currency exchange rates during the period. Foreign currency translation gains and losses are reported as a component of Accumulated Other Comprehensive Income (Loss) ("AOCI"). Gains and losses resulting from foreign currency transactions are included in operating results as incurred.

Cash and Cash Equivalents

Cash and cash equivalents include time deposits and other investments that are highly liquid with original maturities of three months or less when purchased.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at invoiced amounts and do not bear interest. The Company maintains an allowance for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. The Company's allowance is established based on historical patterns of accounts receivable collections and general economic conditions. Outstanding accounts receivable balances are reviewed quarterly or more frequently when circumstances indicate a review is warranted, for example if there is a significant change in the aging of the Company's receivables or a customer's financial condition. Write-offs are recorded at the time a customer receivable is deemed uncollectible and collection efforts have been exhausted.

Inventory

Finished goods, work-in-process and raw materials inventories are valued at the lower of cost, as determined on the first-in, first-out basis, or market. Manufacturing and maintenance supplies are valued at average cost. Inventory costs include material, labor and manufacturing overhead. The need for a provision for estimated losses from obsolete, excess or slow-moving inventories is reviewed periodically.

Property, Plant, Equipment and Depreciation

Property, plant and equipment additions are recorded at cost, including applicable freight, interest, construction and installation costs. The Forest Products segment production related plant and equipment are depreciated using the straight-line method over 3 to 20 years. High Purity Cellulose, Paperboard and Pulp & Newsprint production related plant and equipment are depreciated using the units-of-production method. The total units of production used to calculate depreciation expense is determined by factoring annual production days, based on normal production conditions, by the economic useful life of the asset involved. Production related assets under finance leases are depreciated using the straight-line method over the related lease term. The Company depreciates its non-production assets, including office, lab and transportation equipment, using the straight-line depreciation method over 3 to 25 years. Buildings and land improvements are depreciated using the straight-line method over 15

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

to 35 years and 5 to 30 years, respectively. Depreciation expense reflected in cost of sales in the Consolidated Statements of Income was \$137 million, \$135 million and \$93 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Gains and losses on the retirement of assets are included in operating income. Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Recoverability of assets that are held and used is measured by net undiscounted cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured as the amount by which the carrying value exceeds the fair value of the assets, which is based on a discounted cash flows model. Assets to be disposed of are reported at the lower of the carrying amount or fair value less cost to sell.

Maintenance Costs

The Company performs scheduled inspections, repairs and maintenance of plant machinery and equipment at the Company's High Purity, Paperboard and Pulp & Newsprint manufacturing facilities during a full plant shutdown. Costs associated with these planned outage periods are referred to as shutdown costs and are incurred to ensure the long-term reliability and safety of the manufacturing operations. Shutdown costs are accounted for using the deferral method, under which expenditures related to shutdown are capitalized in other assets when incurred and amortized to production costs on a straight-line basis over the period benefited, or the period of time until the next scheduled shutdown which can generally range from one year to eighteen months. Shutdown costs are classified as working capital in operating activities in the consolidated statements of cash flows. As of December 31, 2019 and 2018 the Company had \$19 million and \$12 million, respectively, in shut down costs capitalized in other current assets.

Intangible Assets

The Company has definite-life intangible assets which it acquired through a business combination. The definite-life intangible assets consist of customer lists and trade-names and are amortized over their estimated useful lives generally for periods ranging from 8 to 15 years. The Company evaluates the recovery of its definite-life intangible assets by comparing the net carrying value of the asset group to the undiscounted net cash flows expected to be generated from the use and eventual disposition of that asset group when events or changes in circumstances indicate that its carrying amount may not be recoverable. If the carrying amount of the asset group is not recoverable, the fair value of the asset group is measured, and, if the carrying amount exceeds the fair value, an impairment loss is recognized.

The Company's definite-lived intangible assets are summarized as follows (in thousands):

December 31, 2019				
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted-Average Remaining Life
Customer Lists	\$ 51,680	\$ (13,613)	\$ 38,067	5.9 years
Trade Names	8,604	(1,220)	7,384	12.9 years
Total Definite-Lived Intangibles	\$ 60,284	\$ (14,833)	\$ 45,451	7.0 years
December 31, 2018				
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted-Average Remaining Life
Customer Lists	\$ 51,680	\$ (7,179)	\$ 44,501	6.9 years
Trade Names	8,604	(645)	7,959	13.9 years
Total Definite-Lived Intangibles	\$ 60,284	\$ (7,824)	\$ 52,460	8.0 years

Total amortization expense related to definite-lived assets was \$7 million, \$7 million and \$1 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, amortization expense for the years ended December 31, 2020 through 2024 is expected to be \$7 million per year and \$10 million for all remaining years thereafter.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Equity Method Investment

The Company holds a 45 percent interest in LignoTech Florida LLC (“LTF”), a joint venture accounted for under the equity method of accounting. Borregaard, a public company in Norway traded on the Oslo Exchange, owns the remaining 55 percent interest. LTF purchases sulfite liquor from the Company’s Fernandina Beach, Florida plant and converts it to purified lignins and ligno-sulfonates which are used in concrete, textile dyes, pesticides, batteries and other products.

The Company recorded \$6 million and \$2 million of lignin sales to the LTF joint venture during the years ended December 31, 2019 and 2018, respectively. The Company records its share of net earnings and losses on the investment within “Other operating expense, net” in the Consolidated Statements of Income and Comprehensive Income. See Note 19 — *Other Operating Expense, Net*

The Company is liable for certain financing agreements related to the entity. See Note 22 — *Commitments and Contingencies* for further discussion.

Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. A three-level hierarchy that prioritizes the inputs used to measure fair value was established as follows:

Level 1 — Quoted prices in active markets for identical assets or liabilities.

Level 2 — Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flows methodologies and similar techniques that use significant unobservable inputs.

Derivative Instruments

Derivatives are recognized on the consolidated balance sheets at fair value and are classified according to their asset or liability position and the expected timing of settlement. Changes in the fair values of derivatives are recorded in net earnings or other comprehensive income based on whether the instrument is designated and effective as a hedge transaction and, if so, the type of hedge transaction. Gains or losses on derivative instruments reported in AOCI are reclassified to earnings in the period the hedged item affects earnings. If the underlying hedged transaction ceases to exist, any associated amounts reported in AOCI are reclassified to earnings at that time. Any ineffectiveness is recognized in earnings in the current period.

Revenue Recognition and Measurement

The Company accounts for revenue in accordance with ASC Topic 606, Revenue from Contracts with Customers, which was adopted on January 1, 2018, using the modified retrospective basis. The core principle of ASC 606 is that a company should recognize revenue when it transfers control of goods or services to customers for an amount that reflects the consideration to which the company expects to be entitled to in exchange for those goods or services.

Revenue is recognized when performance obligations under the terms of a contract with a customer are satisfied. The majority of the Company’s contracts have a single performance obligation to transfer products. Accordingly, it recognizes revenue when control has been transferred to the customer. Generally, control passes upon delivery to a location in accordance with terms and conditions of the sale. Changes in customer contract terms and conditions, as well as the timing of orders and shipments, may have an impact on the timing of revenue recognition.

Revenue is measured as the amount of consideration the Company expects to receive in exchange for transferring its products and is generally based upon contractual arrangements with customers or published indices. The Company sells its products both directly to customers and through distributors and agents typically under agreements with payment terms less than 90 days.

The Company elected to account for shipping and handling as activities to fulfill the promise to transfer the goods. As such, shipping and handling costs incurred are recorded in cost of sales. In addition, the Company has excluded from net sales any value-add, sales and other taxes which we collect concurrent with its revenue-producing activities.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

The nature of the Company's contracts may give rise to variable consideration, which may be constrained, including sales volume-based rebates to customers. The Company estimates the level of sales volumes based on anticipated purchases at the beginning of the period and records a rebate accrual for each purchase toward the requisite rebate volume. These estimated rebates are included in the transaction price as a reduction to net sales.

We have certain contracts which contain performance obligations which are not significant in the context of the contract with the customer and have elected not to assess whether these promised goods or services are performance obligations.

Contract liabilities primarily relate to prepayments received from our customers before revenue is recognized and sales volume rebates payable to customers. These amounts are included in accrued customer incentives and prepayments in the consolidated balance sheets (see Note 9 — *Accrued and Other Current Liabilities*). The Company does not have any material contract assets as of December 31, 2019.

These methodologies are consistent with the manner in which we have historically accounted for the recognition of revenue.

Environmental Costs

The Company has established liabilities to assess, remediate, maintain and monitor sites related to disposed operations from which no current or future benefit is discernible. These obligations are established based on projected spending over the next 20 years and require significant estimates to determine the proper amount at any point in time. The projected period, from 2020 through 2040, reflects the time during which potential future costs are both estimable and probable. As new information becomes available, these cost estimates are updated and the recorded liabilities are adjusted appropriately. Environmental liabilities are accounted for on an undiscounted basis and are reflected in current and non-current liabilities for disposed operations in the consolidated balance sheets.

Employee Benefit Plans

The determination of expense and funding requirements for the Company's defined benefit pension and postretirement health care and life insurance plans are largely based on a number of actuarial assumptions. The key assumptions include discount rate, return on assets, salary increases, health care cost trends, mortality rates, longevity and service lives of employees.

The components of periodic pension and post retirement costs, other than service costs, are presented separately outside of operating income in "Other components of net periodic benefit costs" on the consolidated statement of income. The service cost component of net periodic benefit cost is presented in cost of sales and selling, general and administrative expense, which correlates with the related employee compensation costs arising from services rendered during the period. Only the service cost component of the net periodic benefit cost is eligible for capitalization in assets.

Changes in the funded status of the Company's plans are recorded through comprehensive income in the year in which the changes occur. Actuarial gains and losses, which occur when actual experience differs from actuarial assumptions, are reflected in stockholders' equity, net of taxes. If actuarial gains and losses exceed ten percent of the greater of plan assets or plan liabilities, the Company will amortize them over the average future service period of employees.

Income Taxes

The Company uses the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between the financial statement carrying amounts of assets and liabilities and their respective tax bases, operating loss carryforwards and tax credit carryforwards. Deferred tax assets and liabilities are measured pursuant to tax laws using rates expected to apply to taxable income in the years in which the temporary differences are expected to be recovered or settled. The Company records a valuation allowance to reduce the carrying amounts of deferred tax assets if it is more likely than not such deferred tax assets will not be realized. Interest expense and penalties, if applicable, related to unrecognized tax benefits are recorded in income tax expense.

The Company's income tax returns are subject to audit by U.S. federal and state taxing authorities as well as foreign jurisdictions, including Canada and France. In evaluating the tax benefits associated with various tax filing positions, the Company records a tax benefit for an uncertain tax position if it is more-likely-than-not to be realized upon ultimate settlement of the issue. The Company records a liability for an uncertain tax position that does not meet this criterion. The Company adjusts its liabilities for unrecognized tax benefits in the period in which it is determined the issue is settled with the taxing authorities, the statute of limitations expires for the relevant taxing authority to examine the tax position or when new facts or information becomes available.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

New Accounting Pronouncements

Accounting Pronouncements Not Yet Adopted

In June 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-13, *Financial Instruments—Credit Losses on Financial Instruments (Topic 326)*. The updated guidance is to be applied on a modified retrospective approach and is effective for years, and interim periods within those fiscal years, beginning after December 15, 2019. The update provides guidance on the measurement of credit losses for most financial assets and certain other instruments that are not measured at fair value through net income. The amendment replaces the current incurred loss impairment approach with a methodology to reflect expected credit losses and requires consideration of a broader range of reasonable and supportable information to explain credit loss estimates. Early adoption is permitted for fiscal years beginning after December 15, 2018, and interim periods therein. The Company anticipates the adoption of this new standard will not have a material impact, if any, to the Consolidated Financial Statements.

Recently Adopted Accounting Pronouncements

Leases

The Company adopted ASU 2016-02, *Leases*, as amended, as of January 1, 2019. The standard requires the recognition of right of use (“ROU”) assets and lease liabilities to be reported on the balance sheet but did not change the manner in which expenses are recorded in the income statement. The Company has adopted the lease guidance using the cumulative effect adjustment approach, which requires prospective application at the adoption date and elected certain practical expedients permitted under the transition guidance. The practical expedients allow for the carry forward of the historical lease classification of existing leases and eliminates the need to reassess any lease classification of expired leases and initial direct costs. The Company also elected the short-term lease practical expedient. The Company does not record ROU assets or lease liabilities for short-term leases. In addition, the Company utilized the portfolio approach to group leases with similar characteristics and did not use hindsight to determine the lease term. For leases that include other costs, such as maintenance and other services, in addition to lease cost, the Company is separating lease and non-lease components when determining the ROU assets and lease liabilities.

Adoption of the new standard resulted in the recording of a ROU assets and lease liability of \$10 million and \$11 million, respectively, and the reversal of deferred rent liability balances as of January 1, 2019. See Note 5 — *Leases* for additional information.

Pension

In August 2018, the FASB issued ASU No. 2018-14, *Changes to the Disclosure Requirements for Defined Benefit Plans*, which amended the disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The update is effective for fiscal years ending after December 15, 2020, early adoption is permitted. The amendment removes disclosures that are no longer considered cost beneficial, clarifies the specific requirements of disclosures, and adds disclosure requirements identified as relevant. Entities are required to apply the amendment retrospectively for all periods presented. The Company elected to early adopt the new guidance in 2019. The adoption did not have a material impact on the Company’s consolidated financial statements. See Note 18 — *Employee Benefit Plans*, for additional information.

Fair Value

On August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement*. This standard is effective for public business entities in fiscal years beginning after December 15, 2019, and for interim periods within those fiscal years, with early adoption permitted. This new standard requires changes to the disclosure requirements for fair value measurements for certain Level 3 items and specifies that some of the changes must be applied prospectively, while others should be applied retrospectively. The Company adopted this ASU during the fourth quarter of 2019. The Company does not have any Level 3 items, as such, the adoption of this new standard did not have an impact on its financial statement disclosures. See Note 13 — *Fair Value Measurements*, for additional information.

3. Discontinued Operations

In November 2019, the Company sold its Matane, Quebec pulp mill to Sappi Limited, a global diversified wood fiber company, for a gross purchase price of approximately \$175 million. The mill produces approximately 270,000 metric tons of high-yield

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

pulp and sells the product globally for use in manufacturing paperboard, packaging, and printing and writing paper. The Matane mill was acquired by the Company as part of its acquisition of Tembec Inc. (“Tembec”) in November 2017 and was previously reported as part of the Company’s Pulp segment.

The following table presents the major classes of assets and liabilities of discontinued operations that are classified as held for sale as of December 31, 2018:

	December 31, 2018
Accounts receivable, net	\$ 23,093
Inventory	17,349
Prepaid and other current assets	2,058
Total current assets	42,500
Property, plant and equipment, net	17,482
Deferred tax assets	31,486
Other assets	2,239
Total assets	\$ 93,707
Accounts payable	\$ 11,035
Accrued and other current liabilities	3,786
Other current liabilities	1,415
Total current liabilities	16,236
Other long-term liabilities	5,548
Total liabilities	\$ 21,784

Income (loss) from discontinued operations is comprised of the following:

	Year Ended		
	December 31, 2019	December 31, 2018	December 31, 2017
Revenues	\$ 127,561	\$ 177,419	\$ 20,917
Cost of sales	(106,572)	(124,396)	(18,618)
Gross margin	20,989	53,023	2,299
Selling, general and administrative expenses and other	(1,536)	(3,196)	173
Operating income (loss)	19,453	49,827	2,472
Interest expense (a)	(3,957)	(4,485)	(482)
Other non-operating income	321	377	45
Income from discontinued operations before income taxes	15,817	45,719	2,035
Income tax expense	(4,096)	(16,754)	(498)
Income from discontinued operations, net of taxes	11,721	28,965	1,537
Gain from sale of discontinued operation, pre-tax	118,888	—	—
Income tax expense on gain	(34,451)	—	—
Gain from sale of discontinued operations, net of tax	84,437	—	—
Income from Discontinued Operations	\$ 96,158	\$ 28,965	\$ 1,537

(a) The Company was required to repay \$100 million of debt from proceeds received from the sale of Matane. As such, interest expense has been allocated to discontinued operations using the weighted-average interest rates in effect for each period presented based on the proportionate amounts required to be repaid.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Other discontinued operations information is as follows:

	Year Ended		
	December 31, 2019	December 31, 2018	December 31, 2017
Depreciation and amortization	\$ 1,590	\$ 2,459	\$ 317
Capital expenditures	\$ 2,956	\$ 3,662	\$ 87

4. Tembec Acquisition

On November 17, 2017, the Company acquired all of the outstanding common shares of Tembec for an aggregate purchase price of approximately \$317 million Canadian dollars cash and 8.4 million shares of the Company's common stock, par value \$0.01 per share (the "Acquisition"). The aggregate purchase price was allocated to the major categories of assets and liabilities acquired based upon their estimated fair values as of December 31, 2017, which were based, in part, upon outside preliminary appraisals for certain assets. As a result of the preliminary allocation, a gain on bargain purchase was recognized of \$317 million, primarily as a result of the elimination of Tembec's valuation allowance associated with certain deferred tax assets. The Company finalized the valuation and completed the purchase consideration allocation within the measurement period and recognized an additional gain on bargain purchase of \$20 million during 2018.

Tembec's operating results contributed net revenue of \$139 million and no operating income for the period from the acquisition date of November 17, 2017 to December 31, 2017. The Company recognized \$34 million of acquisition related expenses in operating expense during 2017.

The following presents the unaudited pro forma consolidated financial information of the Company as if the acquisition of Tembec was completed on January 1, 2017. The unaudited pro forma financial information includes adjustments for the pro forma year ended December 31, 2017 for (i) depreciation on acquired property, plant and equipment of \$15 million; (ii) amortization of intangible assets recorded at the date of the transactions of \$7 million; (iii) the elimination of acquisition related costs of \$49 million and the fair value write-up of inventory of \$23 million; (iv) the elimination of interest expense related to Tembec debt that was paid off, net of interest expense associated with financing the acquisition of \$38 million; (v) the elimination of the gain on bargain purchase and (vi) total weighted average shares outstanding related to the acquisition. This information is presented for informational purposes only and does not purport to be indicative of the results of future operations or the results that would have occurred had the transaction taken place on January 1, 2017.

	Year Ended December 31, 2017
Unaudited pro forma net revenue (includes the results of the Matane mill)	\$ 2,122,000
Unaudited pro forma net income attributable to the Company	\$ 111,000
Unaudited pro forma basic net income per share	\$ 1.92
Unaudited pro forma diluted net income per share	\$ 1.76

5. Leases

The Company's operating and finance leases are primarily for corporate offices, warehouse space, rail cars and equipment. As of December 31, 2019, the Company's leases have remaining lease terms of 1 year to 9 years with standard renewal and termination options available at the Company's discretion. Certain equipment leases have purchase options at the end of the term of the lease, which are not included in the ROU assets as it is not reasonably certain that the Company will exercise such options. The Company's lease agreements do not contain any material residual value guarantees or material restrictive covenants.

The Company uses its incremental borrowing rate in determining the present value of lease payments unless the lease provides an implicit or explicit interest rate. The weighted average discount rate used in determining the operating lease ROU assets and liabilities as of December 31, 2019 was 6.0 percent. The weighted average discount rate used in determining the finance lease ROU assets and liabilities as of December 31, 2019 was 7.0 percent.

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Notes to Consolidated Financial Statements (Continued)

The Company's operating and finance lease cost is as follows:

	Year Ended
	December 31, 2019
Operating Leases	
Operating lease expense	\$ 6,474
Finance Leases	
Amortization of ROU assets	306
Interest	209
Total	\$ 6,989

As of December 31, 2019, the weighted average remaining lease term is 4.3 years and 6.9 years for operating leases and financing leases, respectively. Cash provided by operating activities includes approximately \$6 million from operating lease payments made during the year ended December 31, 2019.

As of December 31, 2019, assets acquired under finance leases of \$3 million are reflected in Property, Plant and Equipment, net. The Company's finance leases liabilities are included as debt and the maturities for the next five four years and thereafter are included in Note 10 — *Debt and Finance Leases*.

The Company's balance sheet includes the following operating lease assets and liabilities:

	Balance Sheet Classification	December 31, 2019
Right-of-use assets	Other assets	\$ 22,406
Lease liabilities, current	Accrued and other current liabilities	\$ 5,887
Lease liabilities, non-current	Other non-current liabilities	\$ 17,522

As of December 31, 2019, operating lease maturities for 2020 through 2024 and thereafter are as follows:

	December 31, 2019
2020	\$ 7,093
2021	6,148
2022	5,661
2023	4,680
2024	1,532
Thereafter	1,586
Total minimum lease payments	26,700
Less: imputed interest	(3,291)
Present value of future minimum lease payments	\$ 23,409

6. Accounts Receivable

The Company's accounts receivable included the following for the years ended December 31:

	2019	2018
Accounts receivable, trade	\$ 142,181	\$ 146,056
Accounts receivable, other (a).....	40,082	53,787
Allowance for doubtful accounts	(605)	(559)
Total accounts receivable, net	\$ 181,658	\$ 199,284

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

- (a) Accounts receivable, other consists primarily of value added/consumption taxes, government grants receivable and accrued billings due from government agencies.

7. Inventory

The Company's inventory included the following for the years ended December 31:

	2019	2018
Finished goods.....	\$ 150,259	\$ 203,350
Work-in-progress.....	17,065	21,478
Raw materials.....	73,385	68,656
Manufacturing and maintenance supplies.....	10,471	10,544
Total inventory.....	<u>\$ 251,180</u>	<u>\$ 304,028</u>

8. Property, Plant and Equipment

The Company's property, plant and equipment included the following as of December 31,:

	2019	2018
Land and land improvements.....	\$ 29,912	\$ 22,476
Buildings.....	248,395	246,971
Machinery and equipment.....	2,453,568	2,389,250
Other.....	20,063	23,138
Construction in progress.....	46,378	67,559
Total property, plant and equipment, gross.....	<u>2,798,316</u>	<u>2,749,394</u>
Accumulated depreciation.....	<u>(1,482,261)</u>	<u>(1,385,837)</u>
Total property, plant and equipment, net.....	<u>\$ 1,316,055</u>	<u>\$ 1,363,557</u>

9. Accrued and Other Current Liabilities

The Company's accrued and other current liabilities included the following as of December 31,:

	2019	2018
Accrued customer incentives and prepayments.....	\$ 31,696	\$ 41,734
Accrued payroll and benefits.....	23,593	29,567
Accrued interest.....	2,785	3,170
Foreign currency forward contracts.....	995	16,767
Accrued property taxes.....	5,643	10,663
Other current liabilities.....	37,466	44,254
Total accrued and other current liabilities.....	<u>\$ 102,178</u>	<u>\$ 146,155</u>

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Notes to Consolidated Financial Statements (Continued)

10. Debt and Finance Leases

The Company's debt and finance leases include the following for the years ended December 31,:

	<u>2019</u>	<u>2018</u>
U.S. Revolver of \$84 million maturing in November 2022, \$39 million available, bearing interest at LIBOR plus 3.75% at December 31, 2019	\$ —	\$ —
Multi-currency Revolver of \$126 million maturing in November 2022, \$48 million available, bearing interest at LIBOR plus 3.75% at December 31, 2019	—	—
Term A-1 Loan Facility borrowings maturing through November 2022 bearing interest at LIBOR plus 3.75%, interest rate of 5.54% at December 31, 2019	133,283	160,000
Term A-2 Loan Facility borrowings maturing through November 2024 bearing interest at LIBOR plus 3.40% (after consideration of 0.60% patronage benefit), interest rate of 5.19% at December 31, 2019	365,592	438,875
Senior Notes due 2024 at a fixed interest rate of 5.50%	495,647	495,647
Canadian dollar based, fixed rate term loans with interest rates ranging from 5.50% to 6.86% and maturity dates ranging from March 2020 through April 2028	83,122	91,304
Other loans	7,285	3,777
Finance lease obligations	2,818	3,124
Total principal payments due	<u>1,087,747</u>	<u>1,192,727</u>
Less: debt premium, original issue discount and issuance costs	<u>(5,604)</u>	<u>(4,558)</u>
Total debt	1,082,143	1,188,169
Less: current maturities of long-term debt	<u>(19,448)</u>	<u>(15,012)</u>
Long-term debt	<u>\$ 1,062,695</u>	<u>\$ 1,173,157</u>

Debt and finance lease payments due during the next five years and thereafter are as follows:

	Finance Lease			Debt Principal Payments
	Minimum Lease Payments	Less: Interest	Net Present Value	
2020	\$ 515	\$ 187	\$ 328	\$ 18,258
2021	515	163	352	9,078
2022	515	138	377	159,927
2023	515	110	405	7,169
2024	515	81	434	868,306
Thereafter	988	66	922	22,191
Total payments	<u>\$ 3,563</u>	<u>\$ 745</u>	<u>\$ 2,818</u>	<u>\$ 1,084,929</u>

5.50% Senior Notes due 2024

On May 22, 2014, the Company issued \$550 million in aggregate principal amount of 5.50 percent senior notes due 2024 (the "Senior Notes"). The Senior Notes were issued and sold in a private placement to qualified institutional buyers pursuant to Rule 144A under the U.S. Securities Act of 1933, as amended (the "Securities Act") and non-U.S. persons pursuant to Regulation S under the Securities Act.

During the fourth quarter of 2018, the Company repurchased in the open market \$11 million of the Senior Notes and retired them for \$10 million plus accrued and unpaid interest. In connection with the retirement of these Senior Notes, the Company recorded a gain in other income of approximately \$1 million, which includes the write-off of unamortized debt issuance costs. There were no open market purchases of these notes during the year ended December 31, 2019.

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The indenture governing the Senior Notes contains various customary covenants that limit the ability of the Company and its restricted subsidiaries, as defined by the Senior Notes, to take certain specified actions, subject to certain exceptions, including: creating liens; incurring indebtedness; making investments and acquisitions; engaging in mergers and other fundamental changes; making dispositions; making restricted payments, including dividends and distributions; and consummating transactions with affiliates. Additionally, the Senior Notes contain customary affirmative covenants and customary events of default (subject, in certain cases, to customary grace or cure periods), including, without limitation, payment defaults, breach of covenant defaults, bankruptcy defaults, judgment defaults, defaults under certain other indebtedness and changes in control. At December 31, 2019, the Company was in compliance with all covenants under the Senior Notes.

Senior Secured Credit Facility

The Company's senior secured credit facilities (collectively the "Credit Facility") consists of a \$230 million senior secured term loan (the "Term A-1 Loan Facility"), a \$450 million senior secured year term loan (the "Term A-2 Loan Facility" and together with the Term A-1 Facility, the "Term Loan Facilities"), a \$100 million revolving credit facility (the "U.S. Revolver") and a multi-currency revolving credit facility in a U.S. Dollar equivalent amount of \$150 million (the "Multi-currency Revolver" and together with the U.S. Revolver, the "Revolving Credit Facility"). The lenders under the Credit Facilities have a first priority security interest in substantially all the Company's current and future U.S. and Canadian material assets.

In September 2019, the Company entered into an amendment (the "Amendment") of the Credit Facility under which, among other changes, the lenders have agreed to relax the total net senior first lien secured leverage ratio and interest coverage ratio tests through 2021. The Amendment also increases the interest rate margin on borrowings to be paid to lenders by a maximum of 1.25 percent, subject to operation of a pricing grid which provides for reduced interest rate margins with improved leverage ratios; provides additional collateral for the lenders; and requires the Company to maintain availability under its revolving credit facility in specified amounts that vary to reflect the seasonality of the business. The Amendment reduced the availability of the multi-currency revolver borrowings to \$126 million and the U.S. revolver borrowings to \$84 million. The Amendment was accounted for as a debt modification and, as such, lender fees of \$4 million were capitalized and will be amortized over the remaining term of the Credit Facility and third-party fees of \$4 million were expensed as incurred.

The loans under the Credit Facility, as amended, bear interest at either (a) a base rate plus an applicable margin ranging between 2 percent and 3 percent or (b) an adjusted LIBOR rate plus an applicable margin ranging between 3 percent and 4 percent. The applicable margin for borrowings under the Credit Facility is based on a consolidated total net leverage-based pricing grid.

As of December 31, 2019, the Company had \$87 million of available borrowings under the Revolving Credit Facility after taking into account \$33 million used to secure outstanding letters of credit. The Amendment also requires the Company to maintain between \$80 million and \$90 million of availability on our revolving credit facility, which is also reflected as a reduction in the available borrowings.

The Credit Facility, as amended, contains a number of covenants that limit the ability of the Company and its restricted subsidiaries, as defined by the Credit Facility, to take certain specified actions, subject to certain exceptions, including: creating liens; incurring indebtedness; making investments and acquisitions; engaging in mergers and other fundamental changes; making dispositions; making restricted payments, including dividends and distributions; and consummating transactions with affiliates. As of December 31, 2019, the Company will be required to maintain a less restrictive consolidated first lien secured net leverage ratio of no greater than 5.60 to 1.00 and an interest coverage ratio of no less than 1.65 to 1.00. These covenant ratios gradually become more restrictive through December 31, 2021 to a first lien secured net leverage ratio of no greater than 3.00 to 1.00 and an interest coverage ratio of no less than 3.00 to 1.00 for the quarterly period ended March 31, 2022. Additionally, the Credit Facility contains customary affirmative covenants for credit facilities of this kind and customary events of default (subject, in certain cases, to customary grace or cure periods), including, without limitation, non-payment of interest or principal, breaches of covenants, bankruptcy filing, judgment defaults, defaults under certain other indebtedness and changes in control. As of December 31, 2019, the Company was in compliance with all covenants under the Credit Facility.

z11. Environmental Liabilities

The Company's environmental liabilities relate to sawmills, pulp, paper and wood treating plants which have ceased operations other than environmental investigation and remediation activities. The Company owns or has liability for approximately twenty sites that are subject to various federal, state or provincial statutes, including but not limited to, the Resource Conservation and Recovery Act ("RCRA"), the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA")

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Notes to Consolidated Financial Statements (Continued)

and the Environmental Protection Act in the United States, and similar laws in Canada and France, related to the investigation and remediation of environmentally-impacted sites.

The Company estimates its environmental liabilities based on its current interpretation of environmental laws and regulations when it is probable a liability has been incurred and the amount of such liability is estimable. The Company calculates estimates based on a number of factors, including the application and interpretation of current environmental laws, regulations and other requirements; reports and advice of internal and third-party environmental specialists; and management's knowledge and experience with these and similar types of environmental matters. These estimates include potential costs for investigation, assessment, remediation, ongoing operation and maintenance (where applicable), and post-remediation monitoring of the sites, as well as the cost of legally-required financial assurance relating to the Company's obligations on an undiscounted basis, generally for a period of 20 years. These environmental liabilities do not include potential third-party recoveries to which the Company may be entitled unless they are probable and estimable.

The following table provides detail for specific sites where current estimates exceed 10 percent of the total liabilities for disposed operations at December 31, 2019, 2018, or 2017. An analysis of the activity of the liabilities for disposed operations for the years ended December 31, 2019 and 2018 is as follows:

	December 31, 2017 Liability	Payments	Increase (Decrease) to Liabilities (a)	December 31, 2018 Liability	Payments	Increase (Decrease) to Liabilities (a)	December 31, 2019 Liability
Port Angeles, Washington.....	\$ 43,667	\$ (935)	\$ 2,067	\$ 44,799	\$ (1,404)	\$ 11,045	\$ 54,440
Augusta, Georgia	21,175	(929)	108	20,354	(683)	1,876	21,547
Baldwin, Florida	21,170	(4,613)	687	17,244	(450)	383	17,177
All other sites.....	78,074	(5,489)	5,672	78,257	(3,907)	3,862	78,212
Total	164,086	<u>\$ (11,966)</u>	<u>\$ 8,534</u>	160,654	<u>\$ (6,444)</u>	<u>\$ 17,166</u>	171,376
Less: Current portion	(13,181)			(11,310)			(11,339)
Non-Current portion	<u>\$ 150,905</u>			<u>\$ 149,344</u>			<u>\$ 160,037</u>

(a) Included in the Increase (Decrease) to Liabilities during the year ended December 31, 2019 and 2018 is a \$1 million increase and a \$1 million decrease of the liability, respectively, due to foreign currency gains and losses.

A brief description of the above identified sites is as follows:

Port Angeles, Washington — The Company operated a pulp mill at this site from 1930 until 1997. The site and the adjacent marine areas (a portion of Port Angeles harbor) have been in various stages of the assessment process under the Washington Model Toxics Control Act ("MTCA") since 2000, and several voluntary interim soil clean-up actions have been performed during this time. In addition, the Company may be liable under CERCLA for "natural resource damages" caused by releases from the site. As a result of an agreed order with the Washington State Department of Ecology ("Ecology"), the remainder of the MTCA regulatory process will be completed on a set timetable, subject to approval of all reports and studies by Ecology. Upon completion of all work required under the agreed order and negotiation of an approved remedy, additional remedial measures for the site and off-site areas may be necessary and, as a result, current cost estimates and the corresponding liability could change. During 2019 and 2018, the estimated liability increased by \$10 million and \$1 million, respectively, due to changes in the Company's remediation cost estimates, partly offset by payments made during the year.

Augusta, Georgia — The Company operated a wood treatment plant at this site from 1928 to 1988. This site operates under a 10-year hazardous waste permit renewed and issued pursuant to RCRA in 2015. Ongoing remediation activities currently consist primarily of groundwater recovery and treatment. Current cost estimates and the corresponding liability could vary if recovery or discharge volumes change or if changes to current remediation activities are required in the future. During 2019 and 2018, the Company recorded an \$1 million increase and a \$1 million decrease in the liability, respectively, due to payments and to the change in the estimated costs related to the site's operation and maintenance.

Baldwin, Florida — The Company operated a wood treatment plant at this site from 1954 to 1987. This site operates under a 10-year hazardous waste permit renewed and issued pursuant to RCRA in 2017. Ongoing remediation activities currently consist primarily of groundwater recovery and treatment. Additional remedial activities may be necessary in the future and, therefore,

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Notes to Consolidated Financial Statements (Continued)

current cost estimates and the corresponding liability could change. During 2018, the Company decreased the estimated liability by approximately \$5 million due to payments and a decrease in the estimated costs related to the site's remediation plan. During 2019, the reserve remained flat as payments during the year were essentially offset by an increase in the remediation cost estimates.

In addition to the estimated liabilities, the Company is subject to the risk of reasonably possible additional liabilities in excess of the established liabilities due to potential changes in circumstances and future events, including, without limitation, changes to current laws and regulations; changes in governmental agency personnel, direction, philosophy or enforcement policies; developments in remediation technologies; increases in the cost of remediation, operation, maintenance and monitoring of its disposed operations sites and providing financial assurance relating thereto; changes in the volume, nature or extent of contamination to be remediated or monitoring to be undertaken; the outcome of negotiations with governmental agencies or non-governmental parties; and changes in accounting rules or interpretations. Based on information available as of December 31, 2019, the Company estimates this exposure could range up to approximately \$80 million, although no assurances can be given that this amount will not be exceeded given the factors described above. These potential additional costs are attributable to several of the above sites and other applicable liabilities. This estimate excludes liabilities which would otherwise be considered reasonably possible but for the fact that they are not currently estimable primarily due to the factors discussed above.

Subject to the previous paragraph, the Company believes its estimates of liabilities are sufficient for probable costs expected to be incurred over the next 20 years with respect to its disposed operations. However, no assurances are given these estimates of liabilities will be sufficient for the reasons described above, and additional liabilities could have a material adverse effect on the Company's financial position, results of operations and cash flows.

12. Derivative Instruments

The Company's earnings and cash flows are subject to fluctuations due to changes in interest rates and foreign currency exchange rates. The Company allows for the use of derivative financial instruments to manage interest rate and foreign currency exchange rate exposure but does not allow derivatives to be used for speculative purposes.

All derivative instruments are recognized on the consolidated balance sheets at their fair value and are either (1) designated as a hedge of a forecasted transaction or (2) undesignated. Changes in the fair value of a derivative designated as a hedge are recorded in other comprehensive income until earnings are affected by the hedged transaction and are then reported in current earnings. Changes in the fair value of undesignated derivative instruments and the ineffective portion of designated derivative instruments are reported in current earnings.

Interest Rate Risk

The Company's primary debt obligations utilize variable-rate LIBOR, exposing the Company to variability in interest payments due to changes in interest rates. The Company entered into interest rate swap agreements to reduce the volatility of financing costs, achieve a desired proportion of fixed-rate versus floating-rate debt and to hedge the variability in cash flows attributable to interest rate risks caused by changes in the LIBOR benchmark.

The Company designated the swaps as cash flow hedges and assesses their effectiveness using the hypothetical derivative method in conjunction with regression. Effective gains and losses deferred to AOCI are reclassified into earnings over the life of the associated hedge. Ineffective gains and losses are classified to earnings immediately. There was no hedge ineffectiveness during 2019 or 2018.

Foreign Currency Exchange Rate Risk

Foreign currency fluctuations affect investments in foreign subsidiaries and foreign currency cash flows related to third party purchases, product shipments, and foreign-denominated debt. The Company is also exposed to the translation of foreign currency earnings to the U.S. dollar. Management may use foreign currency forward contracts to selectively hedge its foreign currency cash flows exposure and manage risk associated with changes in currency exchange rates. The Company's principal foreign currency exposure is to the Canadian dollar, and to a lesser extent, the euro.

The notional amounts and maturity dates of outstanding derivative instruments as of December 31, 2019 and 2018 are presented below.

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Notes to Consolidated Financial Statements (Continued)

	December 31, 2019	December 31, 2018
Interest rate swaps (a).....	\$ 200,000	\$ 200,000
Foreign currency contracts (b).....	\$ 343,665	\$ 388,930
Foreign cross-currency contracts (c).....	\$ 83,126	\$ 125,979

(a) Maturity date of December 2020

(b) Various maturity dates through September 2020

(c) Various maturity dates in 2020, 2022 and 2028

The fair values of derivative instruments included in the consolidated balance sheet as of December 31, 2019 and 2018 are provided in the below table. See Note 13 — *Fair Value Measurements* for additional information related to the Company's derivatives.

	Balance Sheet Location	December 31, 2019	December 31, 2018
Assets:			
Derivatives designated as hedging instruments:			
Interest rate swaps	Other current assets	\$ —	\$ 1,194
Interest rate swaps	Other assets	—	937
Foreign exchange forward contracts	Other current assets	4,857	—
Foreign exchange forward contracts	Other assets	5	—
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	Other current assets	246	7
Liabilities:			
Derivatives designated as hedging instruments:			
Interest rate swaps	Other current liabilities	(639)	—
Foreign exchange forward contracts	Other current liabilities	(340)	(16,408)
Foreign exchange forward contracts	Other non-current liabilities	(759)	(3,105)
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	Other current liabilities	(16)	(360)
Total derivatives		<u>\$ 3,354</u>	<u>\$ (17,735)</u>

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The effects of derivative instruments designated as cash flow hedges, the related changes in AOCI and the gains and losses in income for the years ended December 31, 2019 and 2018 were as follows:

Derivatives in Cash Flow Hedging Relationships	Gain (Loss) Recognized in OCI on Derivative (Effective Portion)	Gain (Loss) Reclassified from AOCI into Income (Effective Portion)	Gain (Loss) Recognized in Income on Derivative (Ineffective Portion and Amount Excluded from Effectiveness Testing)
December 31, 2019			
Interest rate swaps.....	\$ (2,083)	Interest expense	\$ 688
Foreign currency contracts..	\$ 2,382	Other operating expense, net	\$ 854
Foreign currency contracts..	\$ 10,006	Cost of sales	\$ (10,006)
Foreign currency contracts..	\$ 2,517	Interest income and other, net	\$ 3,537
December 31, 2018			
Interest rate swaps.....	\$ 1,446	Interest expense	\$ 64
Foreign currency contracts..	\$ (23,603)	Other operating expense, net	\$ 752
Foreign currency contracts..	\$ 3,843	Cost of sales	\$ (3,843)
Foreign currency contracts..	\$ (4,672)	Interest income and other, net	\$ (3,599)

The effects of derivative instruments not designated as hedging instruments on the statement of income for the years ended December 31, 2019 and 2018 were as follows:

Derivatives Not Designated as Hedging Instruments	Location of Gain (Loss) Recognized in Income on Derivative	December 31, 2019	December 31, 2018
Foreign exchange contracts	Other operating expense, net	\$ 416	\$ (3,009)

The after-tax amounts of unrealized gains in AOCI related to hedge derivatives at December 31, 2019 and 2018 are presented below:

	December 31, 2019	December 31, 2018
Unrealized gains from interest rate cash flow hedges	\$ (499)	\$ 1,663
Unrealized gains from foreign currency cash flow hedges	\$ 1,789	\$ (13,285)

The amount of future reclassifications from AOCI will fluctuate with movements in the underlying markets.

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Notes to Consolidated Financial Statements (Continued)

13. Fair Value Measurements

The following table presents the carrying amount, estimated fair values and categorization under the fair value hierarchy for financial instruments held by the Company at December 31, 2019 and 2018, using market information and what management believes to be appropriate valuation methodologies discussed in further detail below:

	December 31, 2019			December 31, 2018		
	Carrying Amount	Fair Value (c)		Carrying Amount	Fair Value (c)	
		Level 1	Level 2		Level 1	Level 2
Assets:						
Cash and cash equivalents	\$ 64,025	\$ 64,025	\$ —	\$ 108,966	\$ 108,966	\$ —
Interest rate swaps (a)	\$ —	\$ —	\$ —	\$ 2,131	\$ —	\$ 2,131
Foreign currency forward contracts (a).....	\$ 5,108	\$ —	\$ 5,108	\$ 7	\$ —	\$ 7
Liabilities (b):						
Interest rate swaps (a)	\$ 639	\$ —	\$ 639	\$ —	\$ —	\$ —
Foreign currency forward contracts (a).....	\$ 1,115	\$ —	\$ 1,115	\$ 19,873	\$ —	\$ 19,873
Fixed-rate long-term debt	\$ 585,027	\$ —	\$ 465,449	\$ 585,824	\$ —	\$ 541,267
Variable-rate long-term debt	\$ 494,299	\$ —	\$ 498,875	\$ 599,221	\$ —	\$ 602,652

(a) These items represent derivative instruments.

(b) Liabilities excludes finance lease obligation.

(c) The Company did not have Level 3 assets or liabilities at December 31, 2019 and 2018.

The Company uses the following methods and assumptions in estimating the fair value of its financial instruments:

Cash and cash equivalents — The carrying amount is equal to fair market value.

Derivative instruments — The fair value is calculated based on standard valuation models using quoted prices and market observable data of similar instruments. The interest rate derivatives are based on the LIBOR swap rate, which is observable at commonly quoted intervals for the full term of the swap and therefore is considered Level 2. The foreign currency derivatives are contracts to buy foreign currency at a fixed rate on a specified future date. The foreign exchange rate is observable for the full term of the swap and is therefore considered Level 2. See Note 12 — *Derivative Instruments* for additional information related to the derivative instruments.

Debt — The fair value of fixed rate debt is based upon quoted market prices for debt with similar terms and maturities. The variable rate debt adjusts with changes in the market rate, therefore the carrying value approximates fair value.

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14. Stockholders' Equity

An analysis of stockholders' equity is shown below (share amounts not in thousands):

	Common Stock		Preferred Stock		Additional Paid in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Par Value	Shares	Par Value				
Balance, December 31, 2016	43,261,905	\$ 433	1,725,000	\$ 17	\$ 242,402	\$ 78,977	\$ (110,080)	\$ 211,749
Net income	—	—	—	—	—	324,964	—	324,964
Other comprehensive loss, net of tax	—	—	—	—	—	—	33,929	33,929
Common stock issued at Acquisition	8,439,452	84	—	—	141,108	—	—	141,192
Issuance of common stock under incentive stock plans	27,131	—	—	—	14	—	—	14
Stock-based compensation	—	—	—	—	8,986	—	—	8,986
Repurchase of common stock	(11,346)	—	—	—	(157)	—	—	(157)
Common stock dividends (\$0.28 per share)	—	—	—	—	—	(13,121)	—	(13,121)
Preferred stock dividends (\$8.00 per share)	—	—	—	—	—	(13,800)	—	(13,800)
Balance, December 31, 2017	51,717,142	517	1,725,000	17	392,353	377,020	(76,151)	693,756
Net income	—	—	—	—	—	128,416	—	128,416
Other comprehensive loss, net of tax	—	—	—	—	—	—	(57,121)	(57,121)
Issuance of common stock under incentive stock plans	301,560	3	—	—	448	—	—	451
Stock-based compensation	—	—	—	—	13,007	—	—	13,007
Repurchase of common stock	(2,727,572)	(27)	—	—	(6,318)	(36,435)	—	(42,780)
ASU 2018-02 adoption	—	—	—	—	—	22,425	(22,425)	—
Common stock dividends (\$0.28 per share)	—	—	—	—	—	(15,058)	—	(15,058)
Preferred stock dividends (\$8.00 per share)	—	—	—	—	—	(13,800)	—	(13,800)
Balance, December 31, 2018	49,291,130	493	1,725,000	17	399,490	462,568	(155,697)	706,871
Net income	—	—	—	—	—	(22,450)	—	(22,450)
Other comprehensive income, net of tax	—	—	—	—	—	—	16,470	16,470
Preferred stock converted to common stock	13,361,678	133	(1,725,000)	(17)	(116)	—	—	—
Issuance of common stock under incentive stock plans	978,091	10	—	—	(10)	—	—	—
Stock-based compensation	—	—	—	—	6,531	—	—	6,531
Repurchase of common stock	(494,770)	(4)	—	—	(6,875)	—	—	(6,879)
Common stock dividends (\$0.14 per share)	—	—	—	—	—	(7,395)	—	(7,395)
Preferred stock dividends (\$6.00 per share)	—	—	—	—	—	(10,350)	—	(10,350)
Balance, December 31, 2019	63,136,129	\$ 632	—	\$ —	\$ 399,020	\$ 422,373	\$ (139,227)	\$ 682,798

Series A Mandatory Convertible Preferred Stock

On August 4, 2016, the Company completed a registered public offering of 1,725,000 shares of the Company's 8.00% Series A Mandatory Convertible Preferred Stock (the "Preferred Stock"), at a public offering price of \$100.00 per share. Net proceeds were \$167 million after deducting underwriting discounts, commissions and expenses.

Each share of the Preferred Stock automatically converted into shares of common stock on August 15, 2019. The number of shares of common stock issuable at conversion was determined based on the volume-weighted average price of the Company's

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

common stock over a 20-trading day period immediately prior to the mandatory conversion date (“Applicable Market Value”). The Applicable Market Value for our common stock was less than \$12.91, resulting in a conversion rate per share of 7.7459. On August 15, 2019, the Company issued approximately 13.4 million shares of common stock at conversion.

Dividends on the Preferred Stock were payable on a cumulative basis when declared by our Board of Directors. Preferred Stock dividends were paid at an annual rate of 8.00% of the liquidation preference of \$100 per share. The final dividend was paid on August 15, 2019.

Common Stock Buyback

On January 29, 2018, the Board of Directors authorized a share buyback program pursuant to which the Company may, from time to time, purchase shares of its common stock with an aggregate purchase price of up to \$100 million. During 2018, the Company repurchased and retired 2,570,449 shares of common stock under this buyback program at an average price of \$15.44 per share, excluding commissions, for an aggregate purchase price of approximately \$40 million. No shares were repurchased during the year ended December 31, 2019.

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Notes to Consolidated Financial Statements (Continued)

15. Accumulated Other Comprehensive Income (Loss)

AOCI was comprised of the following for the three years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Unrecognized components of employee benefit plans, net of tax:			
Balance, beginning of year	\$ (135,590)	\$ (81,638)	\$ (110,080)
Other comprehensive gain (loss) before reclassifications	(8,119)	(53,278)	26,050
Income tax on other comprehensive loss	2,413	12,160	(5,731)
Reclassifications to earnings: (a)			
Pension settlement loss (d)	8,787	—	—
Amortization of losses	9,889	11,877	11,984
Amortization of prior service costs	693	572	763
Amortization of negative plan amendment	—	(153)	(153)
Income tax on reclassifications	(4,711)	(2,705)	(4,471)
Net comprehensive gain (loss) on employee benefit plans, net of tax	8,952	(31,527)	28,442
ASU 2018-02 adoption (c)	—	(22,425)	—
Balance, end of year	<u>(126,638)</u>	<u>(135,590)</u>	<u>(81,638)</u>
Unrealized gain on derivative instruments, net of tax:			
Balance, beginning of year	(11,622)	619	—
Other comprehensive income before reclassifications	12,822	(22,985)	749
Income tax on other comprehensive income	(3,076)	5,372	(130)
Reclassifications to earnings: (b)			
Interest rate contracts	(688)	(64)	—
Foreign exchange contracts	5,615	6,690	—
Income tax on reclassifications	(1,761)	(1,254)	—
Net comprehensive gain on derivative instruments, net of tax	12,912	(12,241)	619
Balance, end of year (b)	<u>1,290</u>	<u>(11,622)</u>	<u>619</u>
Foreign currency translation:			
Balance, beginning of year	(8,485)	4,868	—
Foreign currency translation, net of tax effects of \$0, \$0, and \$0	(5,394)	(13,353)	4,868
Balance, end of year	<u>(13,879)</u>	<u>(8,485)</u>	<u>4,868</u>
Accumulated other comprehensive income (loss), end of year	<u><u>\$ (139,227)</u></u>	<u><u>\$ (155,697)</u></u>	<u><u>\$ (76,151)</u></u>

- (a) The AOCI components for defined benefit pension and post-retirement plans are included in the computation of net periodic pension cost. See Note 18 — *Employee Benefit Plans* for additional information.
- (b) Reclassifications of interest rate contracts are recorded in interest expense. Reclassifications of foreign currency exchange contracts are recorded in cost of sales, other operating income or non-operating income as appropriate. Additional details about the reclassifications related to derivative instruments is included in Note 12 — *Derivative Instruments*. There were no reclassifications to earnings for derivative instruments during the year ended December 31, 2017.
- (c) Represents a reclassification to retained earnings from the adoption of ASU No. 2018-02.

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Notes to Consolidated Financial Statements (Continued)

(d) In October 2019, the Company purchased annuity contracts from a third-party insurance company who has assumed responsibility for future pension benefits for certain participants in our Canadian defined benefit plans. As a result, we recognized a loss on the settlement and de-recognition of the projected benefit obligation. See Note 18 — *Employee Benefit Plans*.

16. Earnings per Share of Common Stock

Basic earnings per share (“EPS”) is calculated by dividing net income available for common stockholders by the weighted-average number of shares of common stock outstanding during the year. Diluted EPS is calculated by dividing net income by the weighted-average number of shares of common stock outstanding adjusted to include the potentially dilutive effect of outstanding stock options, performance shares, restricted shares and Preferred Stock.

In connection with the acquisition of Tembec in November 2017, the Company issued 8.4 million shares of common stock as part of the consideration to Tembec shareholders. These shares were included in the calculation of weighted-average shares outstanding at December 31, 2017. Refer to Note 4— *Tembec Acquisition* for more information.

The following table provides details of the calculations of basic and diluted EPS for the three years ended December 31:

	2019	2018	2017
Income (loss) from continuing operations	\$ (118,608)	\$ 99,451	\$ 323,427
Less: Preferred Stock dividends	(8,582)	(13,800)	(13,800)
Income (loss) from continuing operations attributable to common stockholders	\$ (127,190)	\$ 85,651	\$ 309,627
Income from discontinued operations	96,158	28,965	1,537
Net income (loss) available for common stockholders	<u>(31,032)</u>	<u>114,616</u>	<u>311,164</u>
Shares used for determining basic earnings per share of common stock	54,511,863	50,602,480	43,416,868
Dilutive effect of:			
Stock options	—	1,307	—
Performance and restricted shares	—	1,431,794	1,113,866
Preferred Stock	—	13,361,678	11,371,718
Shares used for determining diluted earnings per share of common stock	<u>54,511,863</u>	<u>65,397,259</u>	<u>55,902,452</u>
Basic earnings per share (not in thousands)			
Income (loss) from continuing operations	\$ (2.33)	\$ 1.70	\$ 7.13
Income from discontinued operations	1.76	0.57	0.04
Net income (loss)	<u>\$ (0.57)</u>	<u>\$ 2.27</u>	<u>\$ 7.17</u>
Diluted earnings per share (not in thousands)			
Income (loss) from continuing operations	\$ (2.33)	\$ 1.52	\$ 5.78
Income from discontinued operations	1.76	0.44	0.03
Net income (loss)	<u>\$ (0.57)</u>	<u>\$ 1.96</u>	<u>\$ 5.81</u>

Anti-dilutive instruments excluded from the computation of diluted earnings per share for the three years ended December 31, are as follows:

	2019	2018	2017
Stock options	205,026	260,033	373,058
Performance and restricted shares	494,469	398,004	798
Total	<u>699,495</u>	<u>658,037</u>	<u>373,856</u>

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Notes to Consolidated Financial Statements (Continued)

17. Incentive Stock Plans

As of December 31, 2019, the Company had two stock-based incentive plans. The Rayonier Advanced Materials Inc. Incentive Stock Plan (the “Prior Plan”) provided for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, performance shares, restricted stock, and restricted stock units, subject to certain limitations. The Company no longer issues shares under the Prior Plan. The Rayonier Advanced Materials Inc. 2017 Incentive Stock Plan (the “2017 Plan”) provides for up to 4.8 million shares to be granted for stock options, non-qualified stock options, stock appreciation rights, performance shares, restricted stock, and restricted stock units. Under the 2017 Plan, shares available for issuance may be increased by any shares of common stock subject to awards under the Prior Plan that, in whole or in part, are forfeited, terminated or expire unexercised, settled in cash in lieu of stock, or released from a reserve for failure to meet the maximum payout under a program. At December 31, 2019, approximately 3.0 million shares were available for future grants under the 2017 Plan.

During the year ended December 31, 2019, the Company made new grants of restricted stock units and performance-based stock units to certain employees. The 2019 restricted stock unit awards vest over three years. The 2019 performance-based stock unit awards are measured against an internal return on an invested capital target and metrics aligned with a weighted average cost of capital. Depending on performance against the targets, the awards will pay out in common stock amounts between 0 and 200 percent of the performance-based stock units awarded. The total number of common stock awards awarded will be adjusted up or down 25 percent, for certain participants, based on stock price performance relative to a peer group over the term of the plan, which could result in a final common stock issuance of 0 to 250 percent of the performance-based stock units awarded. In March 2019, the performance-based share units granted in 2016 were settled at an average of 246 percent of the performance-based stock units awarded, resulting in the issuance of 923,211 shares of common stock.

The Company recognizes stock-based compensation expense on a straight-line basis over the service period of the award. The Company’s total stock-based compensation cost, including allocated amounts, for the years ended December 31, 2019, 2018 and 2017 was \$7 million, \$13 million and \$9 million, respectively. These amounts may not reflect the cost of current or future equity awards.

The Company’s employee stock option compensation program generally provides accelerated vesting (i.e., a waiver of the remaining period of service required to earn an award) for awards held by employees at the time of their retirement. Stock-based compensation expense for stock option awards is recognized over the shorter of: (1) the service period (i.e., the stated period of time required to earn the award); or (2) the period beginning at the start of the service period and ending when an employee first becomes eligible for retirement.

Fair Value Calculations by Award

All restricted stock and performance share awards are presented for Rayonier Advanced Materials stock only. Option awards include Rayonier Advanced Materials awards held by employees of its former parent Rayonier Inc.

Non-Qualified Employee Stock Option Awards

Stock options are granted with an exercise price equal to the market value of the underlying stock on the grant date. They generally vest ratably over three years and have a maximum term of 10 years and two days from the grant date.

The fair value of each option grant is estimated on the grant date using the Black-Scholes option-pricing model. The Company has elected to value each grant in total and recognize the expense for stock options on a straight-line basis over three years. During the years ended December 31, 2019, 2018 and 2017, no options were granted.

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Notes to Consolidated Financial Statements (Continued)

A summary of the Company's stock option activity is presented below for the year ended December 31, 2019:

	Stock Options			
	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2019.....	286,613	\$ 34.23		
Forfeited.....	—	—		
Exercised.....	—	—		
Expired.....	(81,587)	29.54		
Outstanding at December 31, 2019.....	<u>205,026</u>	<u>\$ 36.10</u>	<u>2.4</u>	<u>\$ —</u>
Options vested and expected to vest.....	<u>205,026</u>	<u>\$ 36.10</u>	<u>2.4</u>	<u>\$ —</u>
Options exercisable at December 31, 2019.....	<u>205,026</u>	<u>\$ 36.10</u>	<u>2.4</u>	<u>\$ —</u>

A summary of additional information pertaining to stock options granted to employees is presented below:

	2019	2018	2017
Intrinsic value of options exercised.....	\$ —	\$ 108	\$ 1
Fair value of options vested.....	\$ —	\$ —	\$ 210

Restricted Stock and Stock Unit Awards

Restricted stock and stock units granted in connection with the Company's performance share plan generally vests upon completion of periods ranging from 1 year to four years. The fair value of each share granted is equal to the share price of the underlying stock on the date of grant. As of December 31, 2019, there was \$5 million of unrecognized compensation cost related to the Company's outstanding restricted stock. This cost is expected to be recognized over a weighted average period of 1.5 years.

The following table summarizes the activity of restricted stock and stock units granted to employees for the three years ended December 31:

	2019	2018	2017
Restricted stock and stock units granted.....	395,260	301,384	285,506
Weighted average price of restricted stock or units granted.....	\$ 11.99	\$ 19.73	\$ 13.37
Intrinsic value of restricted stock and units outstanding.....	\$ 3,201	\$ 9,767	\$ 17,349
Fair value of restricted stock and units vested.....	\$ 4,881	\$ 3,753	\$ 1,119

A summary of the Company's restricted stock and stock units activity is presented below for the year ended December 31, 2019:

	Restricted Stock and Stock Units	
	Awards	Weighted Average Grant Date Fair Value
Outstanding at January 1, 2019.....	917,098	\$ 13.71
Granted.....	395,260	11.99
Forfeited.....	(20,014)	15.06
Vested.....	(458,748)	10.64
Outstanding at December 31, 2019.....	<u>833,596</u>	<u>\$ 14.55</u>

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Notes to Consolidated Financial Statements (Continued)

Performance-Based Stock Unit Awards

The Company's performance-based stock unit awards generally vest upon completion of a three-year period. The number of shares, if any, that are ultimately awarded is contingent upon the Company's performance against an internal performance metric or a combination of an internal metric and a market condition.

The performance-based stock unit awards which are measured against a market condition or incorporate market conditions are valued using a Monte Carlo simulation model. The model generates the fair value of the market-based award or market-based portion of the award at the grant date. The related expense is then amortized over the award's vesting period.

As of December 31, 2019, there was \$2 million of unrecognized compensation cost related to the Company's performance-based stock unit awards. This cost is expected to be recognized over a weighted average period of 1.01 years.

The following table summarizes the activity of the Company's performance-based stock units awarded to its employees for the three years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Common shares of stock reserved for performance-based stock units	980,641	1,115,747	896,121
Weighted average fair value of performance-based stock units granted	\$ 14.98	\$ 22.75	\$ 14.60
Intrinsic value of outstanding performance-based stock units	\$ 4,572	\$ 4,774	\$ 7,408

A summary of the Company's performance-based stock unit award activity is presented below for the year ended December 31, 2019:

	<u>Performance-Based Stock Units</u>	
	<u>Awards</u>	<u>Weighted Average Grant Date Fair Value</u>
Outstanding at January 1, 2019	1,325,894	\$ 14.69
Granted	400,404	14.98
Forfeited	(15,605)	16.90
Vested	(520,167)	7.80
Outstanding at December 31, 2019	<u>1,190,526</u>	<u>\$ 17.77</u>

The expected volatility is based on representative price returns using the stock price of several peer companies. The risk-free rate was based on the 3-year U.S. treasury rate on the date of the award. The following chart provides a tabular overview of the weighted average assumptions used in calculating the fair value of the awards granted for the three years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Expected volatility	49.5%	68.7%	70.2%
Risk-free rate	2.5%	2.4%	1.5%

18. Employee Benefit Plans

Defined Benefit Plans

The Company has defined benefit pension and other postretirement plans covering certain union and non-union employees, primarily in the U.S., Canada and France. In connection with the Acquisition, we assumed the obligations of various defined benefit pension and other postretirement plans that were maintained by Tembec which cover certain employees, primarily in Canada and France. The defined benefit pension plans are closed to new participants.

In October 2019, the Company settled certain Canadian pension liabilities through the purchase of annuity contracts with an insurance company. The settlement resulted in the recognition of approximately \$9 million in pension settlement losses which

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

were recognized in “Other components of net periodic benefit costs” in our Consolidated Statement of Income and Comprehensive Income for the year ended December 31, 2019.

Defined benefit pension and other postretirement plan liabilities are calculated using actuarial estimates and management assumptions. These estimates are based on historical information, along with certain assumptions about future events. Changes in assumptions, as well as changes in actual experience, could cause the estimates to change.

The following tables set forth the changes in the projected benefit obligation and plan assets and reconciles the funded status and the amounts recognized in the Consolidated Balance Sheets for the defined benefit pension and postretirement plans for the two years ended December 31:

	<u>Pension</u>		<u>Postretirement</u>	
	<u>2019</u>	<u>2018</u>	<u>2019</u>	<u>2018</u>
<u>Change in Projected Benefit Obligation</u>				
Projected benefit obligation at beginning of year.....	\$ 1,013,541	\$ 1,112,785	\$ 41,243	\$ 45,449
Service cost	9,857	11,663	1,849	1,716
Interest cost	36,138	35,499	1,432	1,327
Actuarial loss (gain)	101,576	(44,976)	(39)	(2,720)
Participant contributions	900	905	130	360
Benefits paid.....	(55,801)	(59,531)	(2,824)	(3,418)
Plan amendment	1,693	—	—	—
Settlement.....	(222,342)	—	(146)	—
Effects of foreign currency exchange rates	22,811	(42,804)	926	(1,471)
Projected benefit obligation at end of year	<u>\$ 908,373</u>	<u>\$ 1,013,541</u>	<u>\$ 42,571</u>	<u>\$ 41,243</u>
<u>Change in Plan Assets</u>				
Fair value of plan assets at beginning of year.....	\$ 844,588	\$ 979,269	\$ —	\$ —
Actual return on plan assets	148,226	(44,167)	—	—
Employer contributions	8,899	9,109	2,694	3,059
Participant contributions	900	905	130	360
Benefits paid.....	(55,801)	(59,316)	(2,824)	(3,419)
Settlement.....	(222,342)	—	—	—
Effects of foreign currency exchange rates	21,388	(41,212)	—	—
Fair value of plan assets at end of year.....	<u>\$ 745,858</u>	<u>\$ 844,588</u>	<u>\$ —</u>	<u>\$ —</u>
Funded Status at end of year:.....	<u>\$ (162,515)</u>	<u>\$ (168,953)</u>	<u>\$ (42,571)</u>	<u>\$ (41,243)</u>

The projected benefit obligation decreased during the year ended December 31, 2019 due to the settlement of certain Canadian pension plan obligations, as discussed above, partially offset by an actuarial loss resulting from a decrease in the discount rate assumed.

	<u>Pension</u>		<u>Postretirement</u>	
	<u>2019</u>	<u>2018</u>	<u>2019</u>	<u>2018</u>
<u>Amounts recognized in the Consolidated Balance Sheets consist of:</u>				
Non-current assets	\$ 37,505	\$ 30,395	\$ —	\$ —
Current liabilities	(3,745)	(3,773)	(2,221)	(3,160)
Non-current liabilities.....	(196,275)	(195,575)	(40,350)	(38,083)
Net amount recognized	<u>\$ (162,515)</u>	<u>\$ (168,953)</u>	<u>\$ (42,571)</u>	<u>\$ (41,243)</u>

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Notes to Consolidated Financial Statements (Continued)

Net gains (losses) recognized in other comprehensive income for the three years ended December 31 are as follows:

	Pension			Postretirement		
	2019	2018	2017	2019	2018	2017
Net gains (losses).....	\$ (6,294)	\$ (55,918)	\$ 24,411	\$ (97)	\$ 2,640	\$ 1,639
Prior service (costs) gains.....	\$ (1,728)	\$ —	\$ —	\$ —	\$ —	\$ —

Net gains or losses and prior service costs or credits reclassified from other comprehensive income and recognized as a component of pension and postretirement expense for the three years ended December 31 are as follows:

	Pension			Postretirement		
	2019	2018	2017	2019	2018	2017
Pension settlement loss (a)	\$ 8,787	\$ —	\$ —	\$ —	\$ —	\$ —
Amortization of losses.....	10,244	11,648	11,651	81	229	333
Amortization of prior service (credit) cost	846	572	761	(153)	(153)	(151)

(a) In October 2019, the Company purchased annuity contracts from a third-party insurance company who has assumed responsibility for future pension benefits for certain participants in our Canadian defined benefit plans. As required under ASC 715 Compensation-Retirement Benefits, we recognized a loss in the fourth quarter of 2019 on the settlement and de-recognition of the projected benefit obligation.

Net losses, prior service costs or credits and plan amendments that have not yet been included in pension and postretirement expense for the two years ended December 31 which have been recognized as a component of AOCI are as follows:

	Pension		Postretirement	
	2019	2018	2019	2018
Prior service cost.....	\$ (2,842)	\$ (1,681)	\$ 1,185	\$ 1,338
Net losses.....	(160,058)	(172,484)	(2,266)	(2,280)
Deferred income tax benefit	37,050	39,299	293	218
Accumulated other comprehensive income (loss).....	<u>\$ (125,850)</u>	<u>\$ (134,866)</u>	<u>\$ (788)</u>	<u>\$ (724)</u>

For defined benefit pension plans with accumulated benefit obligations in excess of plan assets, the following table sets forth the projected and accumulated benefit obligations and the fair value of plan assets for the years ended December 31:

	2019	2018
Projected benefit obligation.....	\$ 907,755	\$ 740,287
Accumulated benefit obligation.....	\$ 871,291	\$ 714,891
Fair value of plan assets.....	\$ 744,662	\$ 540,944

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Notes to Consolidated Financial Statements (Continued)

The following tables set forth the components of net pension and postretirement benefit cost that have been recognized during the three years ended December 31:

Components of Net Periodic Benefit Cost	Pension			Postretirement		
	2019	2018	2017	2019	2018	2017
Service cost.....	\$ 9,857	\$ 11,663	\$ 5,646	\$ 1,849	\$ 1,716	\$ 1,249
Interest cost.....	36,138	35,499	15,926	1,432	1,327	827
Expected return on plan assets	(52,343)	(57,438)	(25,978)	—	—	—
Amortization of prior service (credit) cost	569	572	761	(153)	(153)	(151)
Amortization of losses.....	10,363	11,648	11,651	81	229	333
Pension settlement loss.....	8,787	—	—	—	—	—
Net periodic benefit cost (a).....	<u>\$ 13,371</u>	<u>\$ 1,944</u>	<u>\$ 8,006</u>	<u>\$ 3,209</u>	<u>\$ 3,119</u>	<u>\$ 2,258</u>

(a) Service cost is included in cost of sales or selling, general and administrative expenses in the statements of income, as appropriate. Interest cost, expected return on plan assets, amortization of prior service cost, amortization of losses and amortization of negative plan amendment are included in non-operating income on the consolidated statement of income.

In 2017, the Company changed its method used to determine the service and interest cost components of net periodic benefit cost. Previously, the cost was determined using a single weighted-average discount rate derived from the yield curve. Under the new method, known as the spot rate approach, individual spot rates along the yield curve that correspond with the timing of each benefit payment will be used. The Company believes this change will provide a more precise measurement of service and interest costs by improving the correlation between projected cash outflows and corresponding spot rates on the yield curve. This change does not affect the measurement of plan obligations but generally results in lower pension expense in periods where the yield curve is upward sloping. The Company accounted for this change prospectively as a change in accounting estimate.

The following table sets forth the weighted average principal assumptions inherent in the determination of benefit obligations and net periodic benefit cost of the pension and postretirement benefit plans as of December 31:

	Pension			Postretirement		
	2019	2018	2017	2019	2018	2017
Assumptions used to determine benefit obligations at December 31:						
Discount rate	3.46%	3.99%	3.55%	3.20%	3.82%	3.14%
Rate of compensation increase	2.67%	2.61%	2.60%	3.63%	3.68%	3.10%
Assumptions used to determine net periodic benefit cost for years ended December 31:						
Discount rate	3.91%	3.42%	3.77%	3.91%	3.40%	3.64%
Expected long-term return on plan assets	6.37%	6.32%	7.38%	N/A	N/A	N/A
Rate of compensation increase	2.67%	2.61%	2.59%	3.63%	3.68%	3.10%

The estimated return on plan assets is based on historical and expected long-term rates of return on broad equity and bond indices and consideration of the actual annualized rate of return. The Company, with the assistance of external consultants, utilizes this information in developing assumptions for returns, risks and correlation of asset classes, which are then used to establish the asset allocation ranges.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Assumed health care cost trends have a significant effect on the amounts reported for the postretirement benefit plans. The following table sets forth the assumed health care cost trend rates as of December 31:

	Postretirement			
	2019		2018	
	U.S.	Canada	U.S.	Canada
Health care cost trend rate assumed for next year.....	7.00%	6.50%	7.50%	5.00%
Rate to which the cost trend is assumed to decline (ultimate trend rate)...	5.00%	4.50%	5.00%	4.50%
Year that ultimate trend rate is reached.....	2024	2021-2022	2024	2019

Investment of Plan Assets

The Company's Pension and Savings Plan Committee and the Audit Committee of the Board of Directors oversee the defined benefit pension plans' investment program. The investment approach of each defined benefit pension plan is designed to maximize returns and provide sufficient liquidity to meet each plans obligations while maintaining acceptable risk levels. For certain defined benefit plans, investment target allocation percentages for equity securities can range up to 65 percent. In other more well-funded plans, 100 percent is allocated to fixed income securities. All plans were within their respective targeted ranges. The Company's weighted average defined benefit pension plan asset allocation at December 31, 2019 and 2018, by asset category are as follows:

<u>Asset Category</u>	Percentage of Plan Assets	
	2019	2018
U.S. equity securities	25%	22%
International equity securities.....	31%	24%
U.S. fixed income securities	19%	13%
International fixed income securities.....	21%	36%
Other	4%	5%
Total	<u>100%</u>	<u>100%</u>

Investments within the equity categories may include large capitalization, small capitalization and emerging market securities, while the international fixed income portfolio may include emerging markets debt. Pension assets did not include a direct investment in Rayonier Advanced Materials common stock at December 31, 2019 or 2018.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Fair Value Measurements

The following table sets forth by level, within the fair value hierarchy (see Note 2 — *Summary of Significant Accounting Policies and New Accounting Pronouncements* for definition), the assets of the plans as of December 31, 2019 and 2018.

<u>Asset Category</u>	Fair Value at December 31, 2019			
	Level 1	Level 2	Level 3	Total
Mutual funds	\$ 128,000	\$ —	\$ —	\$ 128,000
Investments at net asset value:				
Common collective trust funds				617,858
Total assets at fair value				\$ 745,858

<u>Asset Category</u>	Fair Value at December 31, 2018			
	Level 1	Level 2	Level 3	Total
Mutual funds	\$ 172,870	\$ —	\$ —	\$ 172,870
Investments at net asset value:				
Common collective trust funds				671,718
Total assets at fair value				\$ 844,588

The valuation methodology used for measuring the fair value of these asset categories was as follows:

Mutual funds — Net asset value in an observable market.

Common collective trust funds — Common collective trusts are measured at NAV per share, as a practical expedient for fair value, as provided by the Plan trustee. The NAV is calculated by determining the fair value of the fund’s underlying assets, deducting its liabilities, and dividing by the units outstanding as of the valuation date. These funds are not publicly traded; however, in the majority of cases the unit price calculation is based on observable market inputs of the funds’ underlying assets.

There have been no changes in the methodology used during the years ended December 31, 2019 and 2018.

Cash Flows

Expected benefit payments for the next ten years are as follows:

	Pension Benefits	Postretirement Benefits
2020.....	\$ 45,443	\$ 2,988
2021.....	44,157	2,863
2022.....	45,396	2,902
2023.....	46,400	2,798
2024.....	47,098	2,730
2025 — 2029.....	243,013	12,990

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

The Company has mandatory pension contribution requirements of \$5 million in 2019 and may make additional discretionary contributions.

Defined Contribution Plans

The Company provides defined contribution plans to all of its hourly and salaried employees. The Company's contributions charged to expense for these plans were \$9 million, \$8 million, and \$5 million for the years ended December 31, 2019, 2018 and 2017, respectively.

19. Other Operating Expense, Net

Other operating expense, net was comprised of the following for the three years ended December 31:

	2019	2018	2017
Environmental liability expense (a)	\$ (17,832)	\$ (8,332)	\$ (1,451)
Loss on sale or disposal of property, plant and equipment	(1,295)	(3,186)	(2,032)
Gain on foreign exchange	(3,203)	1,114	2,335
Equity income (loss) from joint venture	(5,089)	(4,359)	(495)
Insurance settlement	4,500	—	(13)
Miscellaneous income (expense)	(2,078)	2,341	382
Total other operating expense, net	<u>\$ (24,997)</u>	<u>\$ (12,422)</u>	<u>\$ (1,274)</u>

(a) Environmental liability expense reflects the adjustments to the Company's estimates for environmental liability for the assessment, remediation and long-term monitoring and maintenance of the disposed operations sites over the next 20 years and other related costs. See Note 11 — *Environmental Liabilities* for additional information.

20. Income Taxes

Income Tax Benefit (Expense) from Continuing Operations

Income tax benefit (expense) from continuing operations for the three years ended December 31 are as follows:

	2019	2018	2017
Current			
Federal	\$ 7,789	\$ (8,630)	\$ 10,871
Foreign	(4,201)	(10,115)	(121)
State and other	536	(657)	(201)
	<u>4,124</u>	<u>(19,402)</u>	<u>10,549</u>
Deferred			
Federal	2,471	4,238	(34,635)
Foreign	22,702	(11,901)	4,563
State and other	379	25	290
	<u>25,552</u>	<u>(7,638)</u>	<u>(29,782)</u>
Income tax expense	<u>\$ 29,676</u>	<u>\$ (27,040)</u>	<u>\$ (19,233)</u>

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

A reconciliation of the U.S. federal statutory income tax rate to the actual income tax rate for the three years ended December 31 is as follows:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
U.S. federal statutory income tax rate	21.0%	21.0%	35.0%
Nontaxable bargain purchase gain (a).....	—	(4.2)	(32.3)
Change in valuation allowance (b)	(8.6)	—	—
Tax credits (excluding FTC).....	3.1	(3.0)	(1.5)
State credits	2.8	—	—
U.S. federal rate change (c).....	—	—	3.2
Difference in foreign statutory rates	2.3	5.9	—
Global Intangible Low Taxed Income (Net of FTC)	—	3.7	—
Book tax differences related to joint venture	—	2.0	—
Net changes in uncertain tax positions	(1.2)	(3.1)	—
Adjustment to previously filed tax returns.....	0.1	(2.4)	(0.1)
Other	0.5	1.5	1.3
Income tax rate as reported	<u>20.0%</u>	<u>21.4%</u>	<u>5.6%</u>

- (a) The bargain purchase gain from the acquisition of Tembec of \$20 million and \$317 million during the years ended December 31, 2018 and 2017, respectively, was not taxable resulting in a decrease in the income tax rate.
- (b) Each quarter, the Company evaluates both positive and negative evidence related to the likelihood of realization of the deferred tax assets in order to determine, based on all available evidence, whether it is more likely than not that some or all of the deferred tax assets will not be realized. In the year ended December 31, 2019, the Company established a new valuation allowance in the amount of \$16 million against deferred tax assets associated with deferred U.S. deductions of interest. The realizable amount of these deferred interest deductions could be positively or negatively impacted by future U.S. tax guidance, changes in U.S. taxable earnings, or changes in U.S. interest expense.
- (c) The income tax rate for the year ended December 31, 2017 was impacted by the Tax Cuts and Jobs Act through a decrease in the federal tax rate from 35 percent to 21 percent. Income tax expense of \$11 million for the re-measurement of the deferred tax assets was recorded during the year ended December 31, 2017. This expense is the result of previously recorded deferred tax deductions which will now result in a lower after-tax benefit due to the reduced rate.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Deferred Taxes

Deferred income taxes result from recording revenues and expenses in different periods for financial reporting versus tax reporting. The nature of the temporary differences and the resulting net deferred tax liability for the two years ended December 31 were as follows:

	2019	2018
Gross deferred tax assets:		
U.S. federal and Canadian net operating losses (a)	\$ 205,563	\$ 203,330
Canadian pool of scientific research and experimentation deductions ("SR&ED") (a)	87,315	87,253
Tax credit carryforwards (a).....	74,503	80,182
Property, plant and equipment basis differences.....	66,653	57,073
Pension, postretirement and other employee benefits.....	52,126	56,687
Environmental liabilities.....	39,118	36,583
Deferred interest deductions (a).....	15,537	5,820
Capitalized costs	2,979	5,275
State net operating losses (a).....	3,249	2,942
Other	12,818	9,738
Total gross deferred tax assets	559,861	544,883
Less: valuation allowance (a).....	(94,660)	(85,938)
Total deferred tax assets after valuation allowance	465,201	458,945
Gross deferred tax liabilities:		
Property, plant and equipment basis differences.....	(90,290)	(92,857)
Intangible assets.....	(12,284)	(15,579)
Other	(2,961)	(3,054)
Total gross deferred tax liabilities.....	(105,535)	(111,490)
Net deferred tax asset.....	\$ 359,666	\$ 347,455
Included in:		
Deferred tax assets	\$ 384,513	\$ 375,471
Deferred tax liabilities.....	(24,847)	(28,016)
	\$ 359,666	\$ 347,455

(a) The following relates to net operating losses, tax credits, and certain other carryforwards as of December 31, 2019:

	Gross Amount	Tax Effected	Valuation Allowance	Expiration
Foreign R&D credit carryforwards	\$ 49,143	\$ 49,143	\$ (49,143)	2019-2037
State tax credit carryforwards.....	\$ 24,260	\$ 24,260	\$ (24,018)	2019-2028
State net operating losses.....	\$ 71,521	\$ 3,249	\$ (2,782)	2019-2039
Canada non-capital losses.....	\$ 910,097	\$ 201,504	\$ (3,180)	2026-2039
Canadian pool of SR&ED	\$ 407,587	\$ 87,315	\$ —	None
Interest limitation carryforward.....	\$ 70,624	\$ 15,537	\$ (15,537)	None
U.S. Federal net operating losses	\$ 19,329	\$ 4,059	\$ —	None

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Unrecognized Tax Benefits

The Company recognizes the impact of a tax position if it is more likely than not to prevail, based on technical merit, in the case of an audit. As of December 31, 2019, there were several positions resulting in unrecognized tax benefits that, if recognized, would affect income tax expense. During the years presented, the Company recorded in total less than \$1 million of interest expense and penalties in income tax expense. A reconciliation of the beginning and ending unrecognized tax benefits for the three years ended December 31 is as follows:

	2019	2018	2017
Balance at January 1,	\$ 8,844	\$ 23,804	\$ —
Decreases related to prior year tax positions	(193)	(17,872)	—
Increases related to prior year tax positions	1,904	1,137	11,171
Increases related to current year tax positions	—	1,775	12,633
Balance at December 31,	<u>\$ 10,555</u>	<u>\$ 8,844</u>	<u>\$ 23,804</u>

Each of our unrecognized tax benefits would impact our effective tax rate if recognized. Total interest and penalties recorded in unrecognized tax benefits is less than \$1 million.

It is reasonably possible that within the next twelve months a number of tax positions could increase or decrease, due to pending tax legislation, new tax regulations, or the conclusion of statute of limitations, impacting our unrecognized tax position reserve by between a decrease of \$2 million and increase of \$2 million.

Tax Statutes

In the normal course of business, the Company is regularly audited by tax authorities, and is currently under audit in the U.S. and Canada. The following table provides detail of tax years that remain open to examination by significant taxing jurisdictions:

<u>Taxing Jurisdiction</u>	<u>Open Tax Years</u>
U.S.	2014-2019
France	2017-2019
Canada	2015-2019

21. Segment and Geographical Information

As a result of the Matane Mill sale in November 2019, the Company now operates in the following business segments: High Purity Cellulose, Forest Products, Paperboard, Pulp & Newsprint and Corporate. All prior period amounts presented herein have been reclassified to conform to the new segment structure. See Note 3 — *Discontinued Operations* for additional information on the Matane Mill sale. See also Note 1 — *Nature of Operations and Basis of Presentation* for a description of the operating businesses. The Corporate segment consists primarily of senior management, accounting, information systems, human resources, treasury, tax and legal administrative functions that provide support services to the operating business units. The Company does not allocate the cost of maintaining these support functions to its operating units.

The Company evaluates the performance of its segments based on operating income. Intersegment sales consist primarily of wood chips sales from Forest Products to High Purity Cellulose and to the Pulp & Newsprint segments. Intersegment sales prices are at rates that approximate market for the respective operating area.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Net sales, disaggregated by product-line, was comprised of the following for the three years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Net sales:			
High Purity Cellulose			
Cellulose Specialties	\$ 765,077	\$ 831,805	\$ 661,760
Commodity Products	279,527	243,711	183,208
Other sales (a)	82,383	116,873	21,893
Total High Purity Cellulose	<u>1,126,987</u>	<u>1,192,389</u>	<u>866,861</u>
Forest Products			
Lumber	230,360	284,418	25,880
Other sales (b)	68,753	71,242	8,065
Total Forest Products	<u>299,113</u>	<u>355,660</u>	<u>33,945</u>
Paperboard			
Paperboard	199,987	196,866	18,875
Pulp & Newsprint			
Pulp	127,784	169,025	17,553
Newsprint	87,188	113,275	10,576
Total Pulp & Newsprint	<u>214,972</u>	<u>282,300</u>	<u>28,129</u>
Corporate			
Eliminations	(65,667)	(70,221)	(7,394)
Total net sales	<u>\$ 1,775,392</u>	<u>\$ 1,956,994</u>	<u>\$ 940,416</u>

(a) Other sales include sales of electricity, resins, lignin and other by-products to third-parties

(b) Other sales include sales of logs, wood chips and other by-products to other segments and third-parties

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Operating income by segment was comprised of the following for the years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Operating income:			
High Purity Cellulose.....	\$ 6,588	\$ 112,308	\$ 120,356
Forest Products.....	(30,904)	24,850	(4)
Paperboard	4,120	4,392	(899)
Pulp & Newsprint	1,658	71,899	1,683
Corporate.....	(64,580)	(65,634)	(62,156)
Total operating income	<u>\$ (83,118)</u>	<u>\$ 147,815</u>	<u>\$ 58,980</u>

Identifiable assets by segment were as follows for the years ended December 31:

	<u>2019</u>	<u>2018</u>
Identifiable assets:		
High Purity Cellulose.....	\$ 1,559,073	\$ 1,643,092
Forest Products.....	171,167	166,801
Paperboard	145,030	168,458
Pulp & Newsprint	102,959	113,055
Corporate.....	501,918	493,973
Assets Held for Sale	—	93,707
Total identifiable assets	<u>\$ 2,480,147</u>	<u>\$ 2,679,086</u>

Long-life assets by country were as follows for the years ended December 31:

	<u>2019</u>	<u>2018</u>
Long-life assets:		
United States.....	\$ 791,769	\$ 829,153
Canada (a).....	905,897	920,503
France	209,304	213,338
Other	146	—
Total long-life assets	<u>\$ 1,907,116</u>	<u>\$ 1,962,994</u>
<i>(a) 2018 includes \$51 million of assets of discontinued operations</i>		

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

Depreciation and amortization and capital expenditures by segment were as follows for the years ended December 31:

	2019	2018	2017
Depreciation and amortization:			
High Purity Cellulose.....	\$ 123,279	\$ 119,231	\$ 93,177
Forest Products.....	9,288	6,683	728
Paperboard	15,587	15,674	1,922
Pulp & Newsprint.....	4,323	3,711	505
Corporate.....	798	658	314
Total depreciation and amortization	<u>\$ 153,275</u>	<u>\$ 145,957</u>	<u>\$ 96,646</u>

Capital expenditures (a):			
High Purity Cellulose.....	\$ 79,293	\$ 92,980	\$ 65,691
Forest Products.....	13,667	26,691	4,409
Paperboard	1,446	1,598	17
Pulp & Newsprint.....	4,664	4,938	1,347
Corporate.....	6,300	2,826	19
Total capital expenditures	<u>\$ 105,370</u>	<u>\$ 129,033</u>	<u>\$ 71,483</u>

(a) Amounts exclude the impact of changes in capital assets purchased on account and government grants.

Geographical distribution of the Company's sales was comprised of the following for the three years ended December 31:

	Sales by Destination					
	2019	%	2018	%	2017	%
United States	\$ 694,785	39	\$ 771,575	40	\$ 336,737	37
China	328,037	18	348,550	18	248,419	26
Canada.....	221,601	12	259,949	13	41,178	4
Japan	119,839	7	143,577	7	123,850	13
Europe.....	268,417	15	291,008	15	108,992	12
Latin America.....	10,223	1	11,868	1	11,576	1
Other Asia	115,332	7	125,773	6	67,739	7
All other	17,158	1	4,694	—	1,925	—
Total sales.....	<u>\$ 1,775,392</u>	<u>100</u>	<u>\$ 1,956,994</u>	<u>100</u>	<u>\$ 940,416</u>	<u>100</u>

The Company had no significant customers representing over 10 percent of total sales for the year ended December 31, 2019 and 2018. The Company had three significant customers in its High Purity Cellulose segment which represented over 10 percent of total sales for the year ended December 31, 2017:

	Percentage of Sales
	2017
Eastman Chemical Company	20%
Nantong Cellulose Fibers, Co., Ltd.....	15%
Daicel Corporation	10%

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

22. Commitments and Contingencies

Litigation and Contingencies

IESO Investigation of the Kapuskasing Facility. Since 2014, the Market Assessment and Compliance Division (“MACD”) branch of the Independent Electricity System Operator (“IESO”), the governmental agency responsible for operating the wholesale electricity market and directing the operation of the bulk electrical system in the province of Ontario, Canada, has been engaged in reviewing certain companies’ compliance with the published market rules that govern the operation of the wholesale electricity market in Ontario. MACD has been specifically reviewing issues relating to payments made by IESO to the Company’s facility in Kapuskasing, Ontario. The inquiry has focused primarily on payments made by IESO between 2010 and 2019 under market rules in connection with multiple planned, extended and unplanned forced outages that caused extensive downtime in respect of parts or the entire Kapuskasing facility. The Company has been cooperating in MACD’s inquiry. The Company believes it has complied in all material respects with the rules. No final breach or sanction determinations have yet been made, nor any lawsuits filed, against the Company by MACD to date in respect of this matter. The Company does not believe this matter will be material to its business or financial condition, although no assurances can be given.

In addition to the above, the Company is engaged in various legal and regulatory actions and proceedings, and has been named as a defendant in various lawsuits and claims arising in the ordinary course of its business. While the Company has procured reasonable and customary insurance covering risks normally occurring in connection with its businesses, the Company has in certain cases retained some risk through the operation of self-insurance, primarily in the areas of workers’ compensation, property insurance and general liability. These other lawsuits and claims, either individually or in aggregate, are not expected to have a material adverse effect on the Company’s financial position, results of operations or cash flows.

Commitments

The Company leases certain buildings, machinery and equipment under various operating leases. Total rental expense for operating leases amounted to \$7 million, \$8 million, and \$6 million in 2019, 2018 and 2017, respectively. See Note 5-*Leases*, for additional information on future minimum lease payments.

At December 31, 2019, the future minimum payments under purchase obligations were as follows:

	<u>Purchase Obligations (a)</u>
2020	\$ 74,663
2021	48,881
2022	41,604
2023	29,376
2024	11,022
Thereafter	101,679
Total	<u>\$ 307,225</u>

(a) Purchase obligations primarily consist of payments expected to be made on natural gas, steam energy and wood chips purchase contracts. Obligations reported in the table are estimates and may vary based on changes in actual price and volumes terms.

Guarantees and Other

The Company provides financial guarantees as required by creditors, insurance programs and various governmental agencies. As of December 31, 2019, the Company had \$37 million of various standby letters of credit, primarily for financial assurance relating to environmental remediation, credit support for natural gas and electricity purchases, and guarantees related to foreign retirement plan obligations. These standby letters of credit represent a contingent liability. The Company would only be liable upon its default on the related payment obligations. The letters of credit have various expiration dates and will be renewed as required.

The Company had surety bonds of \$86 million as of December 31, 2019, primarily to comply with financial assurance requirements relating to environmental remediation and post closure care, to provide collateral for the Company’s workers’ compensation program, and to guarantee taxes and duties for products shipped internationally. These surety bonds expire at various dates and are expected to be renewed annually as required.

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Notes to Consolidated Financial Statements (Continued)

The Company is liable for certain financing agreements related to its LTF joint venture. The Company's portion of the guarantee related to LTF at December 31, 2019 was \$31 million.

The Company has not recorded any liabilities for these financial guarantees in its consolidated balance sheets, either because the Company has recorded the underlying liability associated with the guarantee or the guarantee is dependent on the Company's own performance and, therefore, is not subject to the measurement requirements or because the Company has calculated the estimated fair value of the guarantee and determined it to be not material based upon the current facts and circumstances that would trigger a payment obligation.

It is not possible to determine the maximum potential amount of the liability under these potential obligations due to the unique set of facts and circumstances likely to be involved with each provision.

The Company currently employs approximately 4,000 people in the United States, Canada and France. As of December 31, 2019, approximately 74 percent of the work force is unionized. As a result, the Company is required to negotiate wages, benefits and other terms with unionized employees collectively. As of December 31, 2019, all of the Company's collective bargaining agreements covering its unionized employees were current.

23. Supplemental Disclosures of Cash Flows Information

Supplemental disclosures of cash flows information was comprised of the following for the three years ended December 31:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Cash paid (received) during the period:			
Interest.....	\$ 59,434	\$ 55,286	\$ 35,451
Income taxes	\$ 3,266	\$ 12,558	\$ 5,992
Non-cash investing and financing activities:			
Capital assets purchased on account	\$ 14,769	\$ 16,864	\$ 12,083
Value of stock issued for Acquisition.....	\$ —	\$ —	\$ 141,192

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

24. Quarterly Results for 2019 and 2018 (Unaudited)

	Quarter Ended				
	March 30	June 29	September 28	December 31	Total Year
2019					
Net Sales	\$ 441,060	\$ 450,233	\$ 416,129	\$ 467,970	\$ 1,775,392
Gross Margin	\$ 7,619	\$ 17,979	\$ 16,619	\$ 11,930	\$ 54,157
Operating Income	\$ (27,599)	\$ (15,320)	\$ (8,564)	\$ (31,635)	\$ (83,118)
Income (loss) from continuing operations	\$ (27,987)	\$ (19,274)	\$ (14,353)	\$ (56,994)	\$ (118,608)
Income from discontinued operations (c)	\$ 5,937	\$ 4,357	\$ 137	\$ 85,727	\$ 96,158
Net Income (Loss)	\$ (22,050)	\$ (14,917)	\$ (14,216)	\$ 28,733	\$ (22,450)
Basic earnings per share					
Continuing operations (b)	\$ (0.64)	\$ (0.46)	\$ (0.29)	\$ (0.91)	\$ (2.33)
Discontinued operations	\$ 0.12	\$ 0.09	\$ —	\$ 1.36	\$ 1.76
Total (b)	\$ (0.52)	\$ (0.37)	\$ (0.29)	\$ 0.45	\$ (0.57)
Diluted earnings per share:					
Continuing operations (b)	\$ (0.64)	\$ (0.46)	\$ (0.29)	\$ (0.91)	\$ (2.33)
Discontinued operations	\$ 0.12	\$ 0.09	\$ —	\$ 1.36	\$ 1.76
Total (b)	\$ (0.52)	\$ (0.37)	\$ (0.29)	\$ 0.45	\$ (0.57)

	Quarter Ended				
	March 31	June 30	September 29	December 31	Total Year
2018					
Net Sales	\$ 479,491	\$ 494,860	\$ 501,298	\$ 481,345	\$ 1,956,994
Gross Margin	\$ 68,914	\$ 87,677	\$ 82,297	\$ 52,259	\$ 291,147
Operating Income	\$ 35,233	\$ 52,859	\$ 42,940	\$ 16,783	\$ 147,815
Income (loss) from continuing operations	\$ 17,746	\$ 44,638	\$ 29,968	\$ 7,099	\$ 99,451
Income from discontinued operations	\$ 6,709	\$ 8,751	\$ 7,969	\$ 5,536	\$ 28,965
Net Income	\$ 24,455	\$ 53,389	\$ 37,937	\$ 12,635	\$ 128,416
Basic earnings per share					
Continuing operations (a)(b)	\$ 0.28	\$ 0.80	\$ 0.52	\$ 0.07	\$ 1.70
Discontinued operations	\$ 0.13	\$ 0.17	\$ 0.16	\$ 0.11	\$ 0.57
Total (a)(b)	\$ 0.41	\$ 0.97	\$ 0.68	\$ 0.18	\$ 2.27
Diluted earnings per share:					
Continuing operations (a)(b)	\$ 0.28	\$ 0.70	\$ 0.47	\$ 0.07	\$ 1.52
Discontinued operations	\$ 0.10	\$ 0.13	\$ 0.13	\$ 0.11	\$ 0.44
Total (a)(b)	\$ 0.38	\$ 0.83	\$ 0.60	\$ 0.18	\$ 1.96

(a) Basic and diluted earnings per share for the second, third, and fourth quarters of 2018 and year ended December 31, 2018 included the impact of the repurchase and retirement of common stock as part of the Board of Directors authorized share buyback program. See Note 16 — *Earnings per Share of Common Stock* for additional information.

Rayonier Advanced Materials Inc.
Notes to Consolidated Financial Statements (Continued)

- (b) Basic and diluted earnings per share may include the impact of dividends on the Company's Preferred Stock. As a result, quarterly EPS does not crossfoot to full-year EPS. See Note 16 — *Earnings per Share of Common Stock* for additional information.
- (c) Fourth quarter 2019 includes the gain from the sale of the Matane mill. See Note 3 — *Discontinued Operations*.

Rayonier Advanced Materials Inc.
Schedule II—Valuation and Qualifying Accounts
Years Ended December 31, 2019, 2018, and 2017
(In thousands)

<u>Description</u>	<u>Balance at Beginning of Year</u>	<u>Additions</u>			<u>Deductions</u>	<u>Balance at End of Year</u>
		<u>Charged to Cost and Expenses</u>	<u>Charged to Other Accounts</u>	<u>Acquisition</u>		
Allowance for doubtful accounts:						
Year ended December 31, 2019.....	\$ 559	\$ 232	\$ 10	\$ —	\$ (195)	\$ 606
Year ended December 31, 2018.....	\$ 566	\$ 239	\$ (54)	\$ —	\$ (192)	\$ 559
Year ended December 31, 2017.....	\$ 151	\$ 410	\$ 5	\$ —	\$ —	\$ 566
Allowance for sales returns:						
Year ended December 31, 2019.....	\$ 1,259	\$ (346)	\$ —	\$ —	\$ (183)	\$ 730
Year ended December 31, 2018.....	\$ 1,121	\$ 969	\$ —	\$ —	\$ (831)	\$ 1,259
Year ended December 31, 2017.....	\$ 523	\$ 598	\$ —	\$ —	\$ —	\$ 1,121
Deferred tax asset valuation allowance:						
Year ended December 31, 2019.....	\$ 85,938	\$ 8,722	\$ —	\$ —	\$ —	\$ 94,660
Year ended December 31, 2018.....	\$ 92,081	\$ —	\$ 3,715	\$ —	\$ (9,858)	\$ 85,938
Year ended December 31, 2017.....	\$ 20,821	\$ —	\$ 873	\$ 71,722	\$ (1,335)	\$ 92,081
Self-insurance liabilities:						
Year ended December 31, 2019.....	\$ 1,011	\$ 622	\$ —	\$ —	\$ (276)	\$ 1,357
Year ended December 31, 2018.....	\$ 1,289	\$ 348	\$ —	\$ —	\$ (626)	\$ 1,011
Year ended December 31, 2017.....	\$ 428	\$ 1,660	\$ —	\$ —	\$ (799)	\$ 1,289

**Subsidiaries of Rayonier Advanced Materials Inc.
As of 12/31/2019**

<u>Name of Subsidiary</u>	<u>Place of Incorporation</u>
Rayonier A.M. Canada Energy LP	Canada
Rayonier A.M. Canada Enterprises Inc.	Canada
Rayonier A.M. Canada General Partnership	Canada
Rayonier A.M. Canada Industries Inc.	Canada
Rayonier A.M. France SAS	France
Rayonier A.M. Products Inc.	Delaware
Rayonier A.M. Properties LLC	Delaware
Rayonier A.M. Sales and Technology Inc.	Delaware
Rayonier A.M. Tartas SAS	France
Rayonier Performance Fibers, LLC	Delaware
Southern Wood Piedmont Company	Delaware
Spruce Falls Acquisition Corp.	Canada

Consent of Independent Registered Public Accounting Firm

We have issued our reports dated March 2, 2020, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of Rayonier Advanced Materials Inc. on Form 10-K for the year ended December 31, 2019. We consent to the incorporation by reference of said reports in the Registration Statements of Rayonier Advanced Materials Inc. on Forms S-8 (File No. 333-197093 and File No. 333-218975) and Forms S-3 (File No. 333-212068 and File No. 333-209747).

/s/ Grant Thornton LLP

Jacksonville, Florida

March 2, 2020

Certification

I, Paul G. Boynton, certify that:

1. I have reviewed this annual report on Form 10-K of Rayonier Advanced Materials Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rule 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 2, 2020

/s/ PAUL G. BOYNTON

Paul G. Boynton
Chairman, President and Chief Executive Officer
Rayonier Advanced Materials Inc.

Certification

I, Marcus J. Moeltner, certify that:

1. I have reviewed this annual report on Form 10-K of Rayonier Advanced Materials Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rule 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 2, 2020

/s/ MARCUS J. MOELTNER

Marcus J. Moeltner
*Chief Financial Officer and
Senior Vice President, Finance
Rayonier Advanced Materials Inc.*

Certification

The undersigned hereby certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, that to our knowledge:

1. The annual report on Form 10-K of Rayonier Advanced Materials Inc. (the "Company") for the period ended December 31, 2019 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

March 2, 2020

/s/ PAUL G. BOYNTON

Paul G. Boynton

*Chairman, President and Chief Executive Officer
Rayonier Advanced Materials Inc.*

/s/ MARCUS J. MOELTNER

Marcus J. Moeltner

*Chief Financial Officer and
Senior Vice President, Finance
Rayonier Advanced Materials Inc.*

BOARD OF DIRECTORS

Paul G. Boynton
Chairman

C. David Brown, II
Lead Director

Charles E. Adair
Director

DeLyle W. Bloomquist
Director

Julie A. Dill
Director

Mark E. Gaumond
Director

James F. Kirsch
Director

Thomas I. Morgan
Director

Lisa M. Palumbo
Director

SENIOR LEADERSHIP

Paul G. Boynton
*Chairman,
President and Chief Executive Officer*

Chris Black
*Senior Vice President
Forest Products and Board Business*

John P. Carr
Chief Accounting Officer

William R. Manzer
*Senior Vice President
Manufacturing Operations*

Marcus J. Moeltner
*Chief Financial Officer
and Senior Vice President Finance*

James L. Posze, Jr.
*Senior Vice President
Human Resources*

Frank A. Ruperto
*Executive Vice President
High Purity and Cellulose Business*

R. Colby Slaughter
*Vice President, General Counsel
and Corporate Secretary*

ANNUAL MEETING OF STOCKHOLDERS

May 18, 2020
5:00 p.m.

DoubleTree Hotel
1201 Riverplace Boulevard
Jacksonville, Florida 32207

TRANSFER AGENT AND REGISTRAR

Please contact Computershare for all essential stockholder services, including:

- Change of address
- Lost dividend checks
- Changes in registered ownership
- Certificates of transfer

Inside the U.S. (866) 246-0322
Outside the U.S. (201) 680-6578

Rayonier Advanced Materials Inc.
c/o Computershare
P.O. Box 505000
Louisville, KY 40233-5000

Overnight correspondence should be sent to:

Computershare
462 South 4th Street
Suite 1600
Louisville, KY 40202

Online Inquiries:

<https://www-us.computershare.com/investor/contact>

Stockholder website:

<https://www.computershare.com/investor>

INVESTOR RELATIONS

Michael H. Walsh
Treasurer and Vice President, Investor Relations
(904) 357-4600
mickey.walsh@rayonieram.com



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