RAYONIER
Advanced Materials™

INVESTING IN THE (BIO)FUTURE

A CULTURE OF SUSTAINABLE INNOVATION

2020 | ANNUAL REPORT

Letter to Our Stockholders

April 2, 2021

Dear Fellow Stockholders:

We are proud of what our team accomplished during what turned out to be an exceptionally challenging year for not only our Company, but also for our employees, customers, suppliers, communities, and other critical partners. We believe that because we successfully dealt with these difficulties, we strengthened our business and further solidified our status as a global leader in converting renewable resources into remarkable materials.

Coming into 2020, our financial commitment to you, our stockholders, was to focus on reducing operating and corporate costs, lowering capital expenditures, and improving working capital in order to improve cash flow as we managed through a very low trough of many of our markets. Then came COVID-19. Our team responded with decisive action to meet the added pandemic-driven challenges head-on, including:

- Establishing a COVID-19 task force to help us effectively navigate the pandemic and its varied and ever-changing impacts on, and disruptions to, our global business and operations.
- Securing "essential operations" status for each of our manufacturing facilities in the U.S., Canada and France.
- Instituting strict social distancing, sanitization, and other new safety protocols into our manufacturing operations and processes, and shifting our office workforce to home office environments in order to protect the health of employees and their families.
- Adapting quickly to significant shifts in demand for many of our products, including taking downtime in facilities where price and demand were insufficient to meet our goals.
- Driving working capital improvements and reducing capital expenditures to the bare essentials as we waited for the full impact of the pandemic to come into better focus.

These actions provided the necessary time for our markets and business to survive the initial shock of the pandemic and, by year end, positioned our Company to excel when the market conditions began to recover. A couple cases in point: by the end of the year our Forest Products business had more than recovered, and many of our pulp markets were beginning to show signs of recovery. Once again, we adapted, adjusting our production to capitalize on these favorable shifts, and through it all, we never lost sight of, and ultimately delivered on, our financial commitments. Net Income turned positive and Adjusted EBITDA more than doubled to $153 million. We generated $73 million of Free Cash Flow and reduced Adjusted Net Debt by $23 million.

The Company has also taken significant action to position itself for success in 2021 and beyond. In December 2020, seizing on an opportunity presented by favorable markets, we refinanced our secured debt. This extended our nearest significant debt maturity to 2024, eliminated many covenants and maintained solid liquidity to allow the Company to continue to aggressively pursue value-creation opportunities to the benefit of our stockholders.

We continued our high levels of investor engagement begun in 2019 into 2020. During the course of the year, we reached out to 60% of our largest and most influential stockholders and held more than 300 meetings with investors. We listen carefully to our stockholders and have acted in areas that we believe will enhance your experience. For example, in May 2020, we completed several changes to our governance structure, including the refreshment of two director seats, the addition of a Finance and Strategic Planning Committee, the separation of our Chair and Chief Executive Officer roles and an increase in the diversity of our Board.

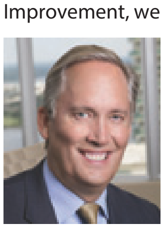
We also worked to enhance the nature of our disclosures with respect to Environmental, Social and Governance (ESG) matters. For example, we track and will publish the five leading safety metrics to achieve our aim of "every employee going home safe every day." We have also recently updated our disclosures on greenhouse gas emissions, and published metrics for wood fiber sourcing, air quality and water usage that are in line with Sustainability Accounting Standards Board (SASB) disclosure recommendations for our industry. Additionally, in furtherance of our Core Values and commitments to our employees and communities, the Company has recently commissioned a Diversity and Inclusion Advisory Group, comprised of approximately a dozen employees representing a diverse cross-section of the organization, to assist the Company in building and improving upon its culture of inclusion and diversity.

We look forward to realizing in the near future the opportunities we have created for ourselves. Pulp markets have started to recover – in particular, viscose prices have increased from decade lows experienced in 2020, and fluff and high-yield pulp markets have started a resurgence of strength in 2021. Demand for our key cellulose specialties products is relatively stable, and the near-term outlook for the Company's lumber business remains strong. The Company is working to realize significant one-time cash flows such as anticipated tax refunds. We believe that the debt refinancing coupled with expected strong cash flow will allow the Company to repay debt, invest in the growth of our businesses and achieve its full potential.

Our vision is to further enhance and leverage a very sustainable business model – taking natural, renewable materials and turning them into remarkable products for our customers. In our high purity cellulose business, we achieve this vision via our four bio-refineries. The Company is working hard to optimize these assets to meet the increasing consumer demand for a more sustainable world. As such, you should expect to see increased investment in the reliability and efficiency of these bio-refineries and further innovation into our "biofuture."

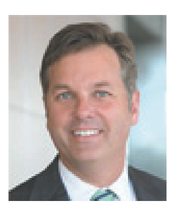
We will continue to invest in non-petroleum cellulose polymer technologies as well as further leverage our bio-refineries to create biofuels, bioenergy and other biomaterials. We recently commissioned the final phase of the bioenergy plant at our France facility, and we are currently deploying significant resources on TEMSILK™, a product we developed in our Temiscaming facility to service the growing Lyocell textile market. By providing quality pulp to exacting specifications, we enable our customers to produce a fine textile with fewer chemicals and lower cost, benefiting both investors and the environment. We have also invested in Anomera, an early-stage company based in Montreal with patented break-through nano-cellulose technology aimed at displacing plastics in the cosmetics and skin care markets and serving as an eco-friendly ingredient in industrial and other applications. We believe these innovation projects have the potential to yield substantial returns and leverage our core competencies in cellulose.

The journey we took together in 2020 has served as an important reminder to the organization that as we remain focused on our Core Values of Integrity, Quality, Accountability and People and our Cultural Cornerstones of Safety, Innovation, Customer-focused and Continuous Improvement, we will achieve sustained success for this business. We look forward to a successful 2021.



Sincerely,

DE LYLE W. BLOOMQUIST
Chair of the Board



Sincerely,

PAUL G. BOYNTON
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, 2020

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 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	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

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 has filed a report on and attestation to its management’s assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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 27, 2020 was $142,511,707 based on the closing sale price as reported on the New York Stock Exchange.

The registrant had 63,359,836 shares of Common Stock, $.01 par value per share, outstanding as of February 24, 2021.

Portions of the registrant’s definitive proxy statement to be filed with the Securities and Exchange Commission in connection with the 2021 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, 2020.

Table of Contents

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.

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

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.

Part I

Epidemics and Pandemic Risks

- We are subject to risks associated with epidemics and pandemics, including the COVID-19 pandemic and related impacts. The nature and extent of ongoing and future impacts of the pandemic are highly uncertain and unpredictable.

Macroeconomic and Industry 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.
- Changes in raw material and energy availability and prices could affect our business, financial condition and results of operations.
- We are subject to risks associated with doing business outside of the United States.
- 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, could adversely affect our ability to access certain markets.

Business and Operating Risks

- Our ten largest customers represent approximately 31 percent of our 2020 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.
- The availability of, and prices for, wood fiber could materially impact our business, results of operations and financial condition.
- Our operations require substantial capital.
- We depend on third parties for transportation services and increases in costs and the availability of transportation could adversely affect our business.

- 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.

Regulatory Risks
- 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.

Financial Risks

- 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 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 in 2023 may impact 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.

Company's Common Stock and Certain Corporate Matters Risks

- 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, which comprise a broad offering of high purity cellulose specialties, a natural polymer commonly used in the production of specialty chemicals and polymers for use in producing LCD displays, filters, fibers, performance additives for pharmaceutical, food and other industrial applications. 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 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, we separated from Rayonier and started 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. As a result of the sale, we have reclassified the Matane Mill's operating results and assets and liabilities for prior periods as discontinued operations. See Note 3 — ***Discontinued Operations*** of our consolidated financial statements for additional information.

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

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

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

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 liquid crystal displays, impact-resistant plastics, thickeners for food products, pharmaceuticals, cosmetics, cigarette filters, 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 and reactivity 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 customers' 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 challenges 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, Austrocell 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 six sawmills located in Canada.

In 2020, approximately 67 percent of our 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 2020, the Company has paid approximately $91 million of duties. In December 2020, following its administrative review of the period of April 28, 2017 through December 31, 2018 ("First Administrative Review", the USDOC determined revised rates for the Duties, with the Company now being subject to an anti-dumping duty rate of approximately nine percent.

Products

We manufacture finished dimensional lumber (2 by 4's, 2 by 8's, etc. 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 products. Annually, 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, Sappi and Winstone.

Significant Newsprint competitors include Resolute Forest Products, White Birch Paper and Kruger.

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, 2020.

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 $7 million, $6 million and $6 million on research and development for the years ended December 31, 2020, 2019 and 2018, 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.

Human Capital

<u>*Code of Conduct*</u>

Within the framework of our core values of Integrity, Accountability, Quality, and People, the Rayonier Advanced Materials Standard of Ethics and Code of Corporate Conduct is our guide to the lawful and ethical performance of our duties. Adherence to the Code is intended to ensure that we:

· Fulfill our obligation to observe the law both in letter and spirit in all countries in which we do business; and

· Deal fairly with shareholders, employees, customers, suppliers, regulators and communities.

We publish and communicate these expectations and values for all employees several times throughout the year as well as include these statements in new hire materials.

Employee Demographics

Rayonier Advanced Materials has production facilities in the United States, Canada, and France with sales offices in the United States, Canada, France, United Kingdom, Japan, and China. Of our approximately 4000 employees, 75 percent are unionized, as all of our manufacturing sites are represented by various local and national unions. We have strong and open relationships with these employee representatives. See Note 22 — ***Commitments and Contingencies*** of our consolidated financial statements for more information.

Diversity

Respect for people is one of Rayonier Advanced Materials core values. To better explain this core value to our external stakeholders, we have published a Human Rights Policy found on our website. We specifically and publicly state that inclusion and diversity are not just words at Rayonier Advanced Materials, they are ideals ingrained in our company values and projected through our business practices and human resources programs. Our diversity allows us to learn and build solutions from different perspectives.

As a means of listening to our employees to ensure we have an appropriate perspective of what we do well and how to improve, we have commissioned a Diversity and Inclusion Advisory Group which is made up of employees across all our major locations, including union leadership. The focus of this group is expanding the recruiting network to ensure more diverse candidates are included in the pipeline.

Safety

Rayonier Advanced Materials has a vision of every employee coming to work and going home injury free. While we have not achieved this vision, we continue to make progress each year with the 2020 company wide injury rate decreasing by 8 percent versus 2019. The organization's vision of injury free operations is achieved through five leading metrics: housekeeping, leadership engagement, corrective action closure, gas emissions, and life safety programs. We track the progress against these metrics monthly with an annual goal of improvement. In addition, there are subcommittees of leaders across the company that are accountable for one of the leading metrics with these teams reporting to a steering team chaired by our CEO.

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 business, financial condition, results of operations, cash flows and equity are subject to a number of risks and potential material 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.

Epidemic and Pandemic Risks

We are subject to risks associated with epidemics and pandemics, including the COVID-19 pandemic and related impacts. The nature and extent of ongoing and future impacts of the pandemic are highly uncertain and unpredictable.

Our global operations expose us to risks associated with public health crises, including epidemics and pandemics, such as the COVID-19 pandemic which has generated, and may continue to generate, significant volatility, uncertainty and economic disruption across the globe including in many markets in which we or our customers do business. Over the past year, COVID-19 has adversely impacted our business and financial condition in various ways, including impacts associated with preventive and precautionary measures that we, other businesses, governments and individual consumers have taken and are continuing to take to limit the spread of the virus. Examples of such impacts have included: increased operating costs due to social distancing and other strict health and safety protocols implemented at our facilities to protect employees and contractors; reductions and/or unpredictable fluctuations in demand necessitating production adaptations such as the 4-8 weeks of production downtime taken at our Canadian sawmills in early 2020; sharp declines in newsprint volumes driven by the pandemic’s impact on the hospitality and travel sectors; and reduced supply chain reliability due to international shipping congestion associated with global demand surges and fluctuations and empty container imbalances. Impacts could be magnified if the pandemic severity increases or duration persists over an extended period of time. While the full extent of the COVID-19 pandemic’s ongoing and future impacts on our business cannot currently be predicted with certainty, we continue to promote the health and safety of our employees, contractors, suppliers and customers and to closely monitor the pandemic's impacts on our liquidity, access to capital markets, reliability, customers and suppliers, and the macroeconomic conditions relevant to our business, including general economic uncertainty, unemployment rates and recessionary pressures.

Specific risks associated with COVID-19 include, but are not limited to, the following:

- Significant and unpredictable reductions and other fluctuations in demand for certain of our products due to pandemic-driven factors such as end-market weakness and customer security-of-supply concerns.
- Adverse effects on our suppliers, vendors and other global supply chain partners which have impaired and could continue to impair our ability to timely and efficiently move our products through the various steps in the global supply chain process to our end customers.
- Possible workforce disruption to the extent our operational, management or other personnel are impacted in significant numbers by COVID-19 and are not available to perform their duties and tasks, which could create reductions or suspensions of our manufacturing operations and other support functions.
- Restricted access to capital, increased financing costs and/or adverse effects on our liquidity and perceptions of our creditworthiness due to the ongoing adverse impacts of COVID-19 on the global economy and capital markets worldwide.
- Possible heightening of other risks described in the “Risk Factors” section in this Report to the extent that COVID-19 continues to adversely affect our business, financial condition or results of operations.

Macroeconomic and Industry 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 cyclicality 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, have collectively contributed to substantially lower cellulose specialties sales prices over the past several years. Likewise, volumes have declined meaningfully in recent years due to these factors. The COVID-19 pandemic has exacerbated these dynamics and may continue to do so. Our high-purity commodity products for viscose and absorbent materials applications are also highly cyclical, and in 2019-2020 were at extremely low pricing levels. While these levels began to slowly rebound during the latter part of 2020, there can be no assurance as to the extent of such rebound or that elevated levels will be sustained over a significant period of time.

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. 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, such as fluctuations experienced over the past year during the COVID-19 pandemic. 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 each been the subject of temporary curtailments at given points over the past two years in reaction to market conditions.

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

Changes in raw material and energy availability and prices could have a material adverse effect on our business, 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, civil 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 demand 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 suppliers of raw materials to 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.

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

We have large manufacturing operations 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% of our revenue in 2020. 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;
- complying with changes in and reinterpretations of the laws, regulations and enforcement priorities of the countries in which we manufacture and sell our products;
- complying 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;
- complying with data privacy laws such as the European Union's General Data Privacy Regulation (GDPR);
- 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.

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

We have manufacturing operations in the United States, Canada and France. We also sell our products all over the world, in either U.S. dollars, Canadian dollars or Euros. As a result, we are exposed to movements in foreign currency exchange rates, and our 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 our competitive position versus these competitors. In addition to ordinary course currency fluctuations, specific events have had, and could in the future have, an impact on currency valuation. Our 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, though no hedges are currently in place. To accomplish this, we have used, and may in the future continue to use, derivative instruments, such as currency options and foreign exchange forward contracts, to mitigate our exposure to fluctuations in foreign currency exchange rates, but there can be no assurance that we 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 materially 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 anti-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 and Canada are set forth below.

China

In 2020, the we had total sales of $357 million of products shipped to customers in China and, of this amount, $256 million were of products manufactured in the United States. Trade tensions and trade-related actions, such as tariffs and duties, between China and the U.S. have impacted our business and our customers' businesses and could do so in the future. 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 adverse impact on our business, financial condition and results of operations.

Canada

We operate six softwood lumber mills in Ontario and Quebec, Canada, and, in 2020, sold approximately $224 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 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 USDOC on lumber exported into the United States, we were 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. In December 2020, following its administrative review of the period of April 28, 2017 through December 31, 2018, USDOC determined revised rates for antidumping and countervailing duties, and we are now subject to an anti-dumping duty rate of 1.57 percent and a countervailing duty rate of 7.42 percent. Canada has filed an appeal under Chapter 10 of the United States-Mexico-Canada Agreement on Trade ("USMCA") to contest these revised duties. We have paid approximately $91 million in lumber duties to date, but expect 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.

Business and Operational Risks

Our ten largest customers represent approximately 31 percent of our 2020 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 31 percent of revenue in 2020. 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 our 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 materially 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 material 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 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 impacts to the environment or human health and safety;
- information technology system failures and cybersecurity incidents causing systems to be inaccessible or unusable;
- 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 strikes and short duration walk-outs such as the walk-out 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.

The availability of, and prices for, wood fiber may have a material adverse impact on 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 2020, 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. 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. Sourcing fiber from greater distances from our facilities due to unavailability of more proximately located fiber sources could also impact pricing due to additional transportation cost. Significant reduction in the availability of contractors experienced in harvesting and transporting logs 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, in the recent past we have seen more frequent wet weather in the Southeastern U.S. region from which we source our fiber supplied to our Jesup and Fernandina facilities, 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, 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.

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 endeavor to 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. 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 a material adverse effect on our business, financial condition and results of operations.

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

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

As of December 31, 2020, approximately 75 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 materially 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 labor 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 (such as the short-duration walk-out in 2019 at our site in Tartas, France) 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 materially 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 develop and retain key personnel and recruit and develop qualified replacements for retiring or other departing employees could materially 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 material 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 intellectual property laws. Failure to generate meaningful revenue and profit from our research and product development efforts could materially 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 data, or disruption of its manufacturing operations, in each case due to cyberattacks or cybersecurity breaches, could materially adversely impact the Company.

Like most companies, the Company has been, and expects in the future to continue to be, subject to attempted cyberattacks. Such attacks could include, for example, the increasingly prevalent practice of cyber extortion through the deployment of ransomware. 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. Moreover, the recent pandemic-driven increase in remote working and virtual interactions has only served to expand the Company's "attack surface". 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.

Regulatory Risks

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

Our plants are subject to environmental laws, regulations and permits that may require significant capital to enable our compliance, or which could limit our operations and production. Many of our operations are subject to environmental laws, regulations and permits that contain stringent 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 materially adversely 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 stricter, 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, water withdrawal, remedial standards for contaminated property and groundwater, and the type of chemicals we use in our manufacturing processes. Over time, the complexity and restrictions imposed by these laws and regulations have increased and regulatory enforcement efforts have 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, wastewater and storm water control. See Item 7 - *Management's Discussion and Analysis of Financial Condition and Results of Operations - Environmental Regulation* of this Report for further information. Environmental laws and regulations will likely continue to become more restrictive and over time could materially 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 our 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 our favor, we expect continuing attempts at legal intervention by ARK and others.

We currently own or may acquire properties that require environmental remediation or otherwise are subject to environmental and other liabilities. We currently own, or may acquire in the future, properties which are subject to environmental liabilities, such as remediation of soil, sediment and groundwater contamination and other liabilities, and we may have such liabilities at properties, such as formerly operated manufacturing facilities, that we do not currently own. The cost of assessment and remediation of contaminated properties could be substantial and materially 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 resolution of 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 that 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* of this Report and Note 11 — ***Environmental Liabilities*** of our consolidated financial statements.

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

In 2020, 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). The Company is working to incorporate a focus on climate-related risks and opportunities into its business processes, and to that end has begun to track and publish (on its Company website) meaningful and actionable information including Sustainable Accounting Standards Board (SASB)-aligned metrics for "greenhouse gas" ("GHG") emissions, air quality, water management and supply chain management. 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 GHGs to facilitate the reduction of carbon compound emissions into 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 the electricity needed to operate. 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 regulatory 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.

The federal government of Canada adopted the Greenhouse Gas Pollution Pricing Act which implements the federal carbon pollution pricing system. Under the provisions of the Greenhouse Gas Pollution Pricing Act, the provinces, who have implemented their own carbon pollution price or a "cap-and-trade" system, will not be subject to the federal program provided their program meets the minimum federal pricing and emissions reduction targets. Quebec implemented a "cap-and-trade" program for GHGs which meets the said minimum criteria and, at this time. Only the Company's Temiscaming site in Québec was a net purchaser of credits under these programs in 2020. On the other hand, Ontario is subjected to the federal program. The Greenhouse Gas Pollution Pricing Act is being challenged by various provincial governments, including the government of Ontario. 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 materially 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.

Financial Risks

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 materially 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* of this Report for additional information about these plans, including funding status.

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

As of December 31, 2020, our total combined indebtedness was approximately $1.1 billion. This significant amount of debt could have material adverse 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;
- 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; and
- limiting access to liquidity, including through our variable asset-based revolving credit facility.

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 2023 may impact our borrowing costs.

The reporting of financial information used to determine LIBOR is scheduled to be phased out beginning in 2023. As of December 31, 2020, we had no indebtedness outstanding with interest payment terms based on LIBOR. However, under the terms of the recently closed asset-based revolving credit facility, loans are subject to LIBOR or 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, and although the Secured Overnight Financing Rate ("SOFR") is expected to be the alternative rate that replaces LIBOR, we cannot predict what margin adjustments and related terms would be negotiated with our loan counterparties. As a result, our interest expense could increase. 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.

Company's Common Stock and Certain Corporate Matters Risks

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.

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 issue preferred stock and grant the holders thereof 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.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The following table details the material properties we owned or leased at December 31, 2020:

Segment/Location	Annual Production Capacity	Owned/Leased
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
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 potential market related downtime and/or reliability issues. Due to reduced demand from the COVID-19 pandemic, the newsprint facility operated at 50 percent capacity in 2020. In October 2020, the Huntsville facility in Ontario, Canada, which has a production capacity of 15,000 thousand board feet of lumber, was sold.

(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.

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 the Company's compliance with the published rules that govern the operation of the wholesale electricity market in Ontario, Canada. 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.

In May 2020, MACD finalized two of its four investigations into the Company’s electricity management practices at its Kapuskasing facility, and orders claiming penalties of CAD $25 million in connection therewith were issued by the IESO. More particularly, the orders would require the Company to pay penalties of CAD $3 million immediately and CAD $12 million over a 10-year period, with the remaining CAD $10 million to be deferred and ultimately forgiven assuming the Company otherwise complied with the remaining terms of the orders. The Company believes it has complied in all material respects with the published rules and is vigorously contesting IESO’s orders, including filing of proceedings with the divisional Court (Superior Court of Justice) of Ontario seeking invalidation of the orders. The Company does not believe the ultimate outcome of this dispute will be material to its business or financial condition, although no assurances can be given.

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**".

Holders

The number of record holders of our common stock at February 24, 2021 was 4,022.

Dividends

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 debt facilities place limitations on the declaration and payment of future dividends. No dividends were declared in 2020.

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, 2020:

Period	Total Number of Shares Purchased (b)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (a)
September 27 to October 31	—	$ —	—	$ 60,294,000
November 1 to November 28	156	$ 3.43	—	$ 60,294,000
November 29 to December 31	931	$ 6.25	—	$ 60,294,000
Total	1,087		—	

(a) As of December 31, 2020, 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) Repurchased to satisfy the tax withholding requirements related to the issuance of stock under the Rayonier Advanced Materials Incentive Stock Plan.

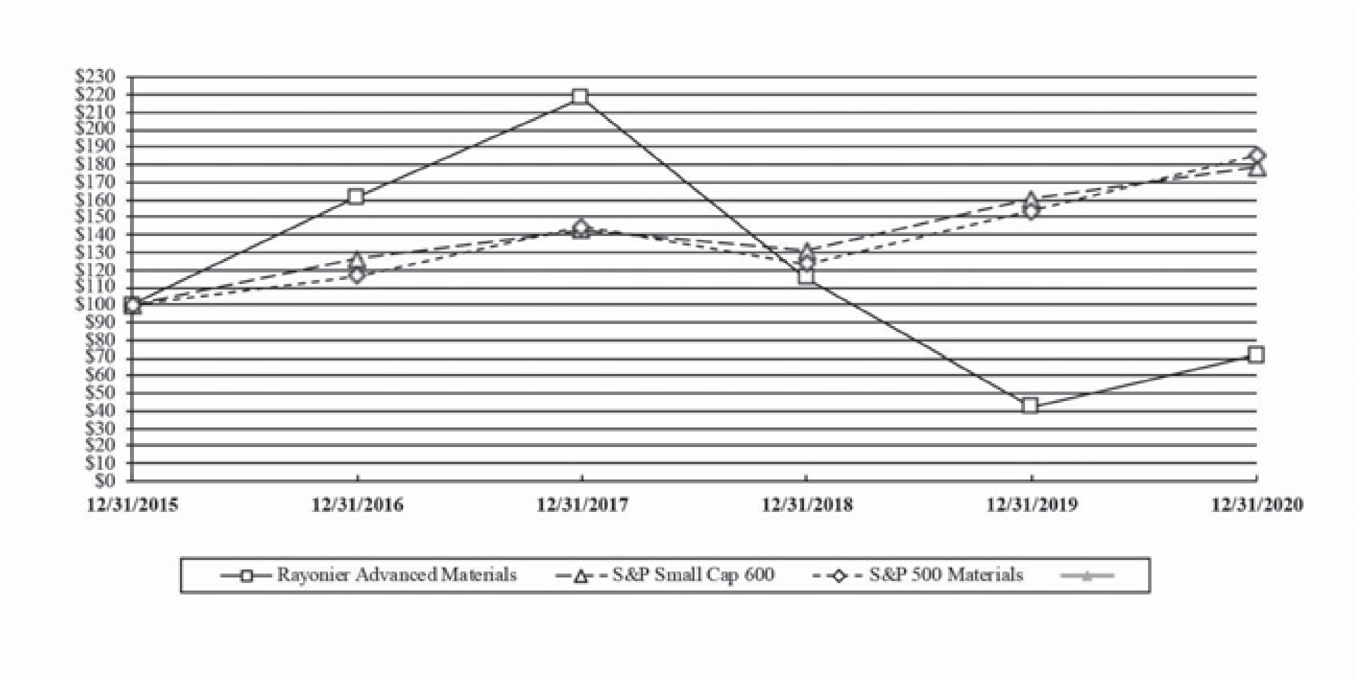
Securities Authorized for Issuance under Equity Compensation Plans

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 graph tracks the performance of a $100 investment in our common stock and in each index (with the reinvestment of all dividends) from December 31, 2015 to December 31, 2020.



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

	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020
Rayonier Advanced Materials...	$ 100	$ 162	$ 218	$ 115	$ 42	$ 72
S&P Small Cap 600..................	$ 100	$ 126	$ 143	$ 131	$ 161	$ 179
S&P 500 Materials Index..........	$ 100	$ 117	$ 145	$ 123	$ 154	$ 185

Recent Sales of Unregistered Securities

During 2020, we did not issue or sell any unregistered equity 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)	2020	2019	2018	2017 (c)	2016
Statement of Income Data:					
Net Sales	$ 1,739	$ 1,775	$ 1,957	$ 940	$ 869
Gross margin	138	54	291	141	186
Operating income (loss)	27	(83)	148	59	143
Income (loss) from continuing operations	—	(119)	99	323	73
Diluted income (loss) from continuing operations per share of common stock (a)	$ —	$ (2.33)	$ 1.52	$ 5.78	$ 1.55
Dividends declared per share of common stock	$ —	$ 0.14	$ 0.28	$ 0.28	$ 0.28
Balance Sheet Data:					
Total assets	$ 2,530	$ 2,480	$ 2,679	$ 2,643	$ 1,422
Property, plant and equipment, net	1,275	1,316	1,364	1,391	801
Total debt	1,084	1,082	1,188	1,241	783
Stockholders' equity	695	683	707	694	212
Statement of Cash Flows Data:					
Cash provided by operating activities	$ 124	$ 42	$ 247	$ 130	$ 232
Cash provided by (used for) investing activities	(78)	53	(116)	(277)	(87)
Cash provided by (used in) financing activities	(19)	(138)	(116)	(84)	80
Capital expenditures (d)	(77)	(105)	(129)	(75)	(89)
Non-GAAP Measures (b):					
EBITDA	$ 169	$ 65	$ 327	$ 477	$ 235
Adjusted EBITDA	$ 153	$ 76	$ 311	$ 209	$ 226
Adjusted Free Cash Flows	$ 73	$ (53)	$ 130	$ 62	$ 147

(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.

(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.

The following significant events occurred in 2020, 2019 and 2018:

- Our businesses have been significantly impacted by the coronavirus ("COVID-19") pandemic in 2020. However, due to the role they play in producing critical raw materials for pharmaceutical, food, cleaning and other products, our manufacturing facilities in the U.S., Canada and France have remained operating. In order to mitigate the impact of COVID-19 on our financial results and operations, we have taken the following actions:
    - To ensure the safety of our employees and the continuity of our operations, we have implemented exacting protocols to reduce the potential spread of COVID-19 in our operating facilities and work spaces.
    - To control costs and minimize pandemic driven losses, we have curtailed operations as necessary to match production with market demand.
    - Due to the financial impacts of COVID-19, we are actively monitoring the recoverability of the carrying value of our long-term assets. During the year ended December 31, 2020, we did not recognize any impairment charges related to long-lived assets held for use. We will continue to evaluate the recoverability of these and other assets as necessary.
- In December 2020, we issued $500 million in aggregate principal amount of 7.625 percent senior secured notes due 2026 (the "Senior Secured Notes"), at an offering price of 100 percent of the principal amount thereof. We also entered into a five-year senior secured asset-based revolving credit facility with an initial committed amount of $200 million (the "ABL Revolving Credit Facility"). In connection with these transactions, we terminated all commitments and repaid all outstanding obligations under our Senior Secured Credit Facilities and recorded a loss on debt extinguishment of $8 million. See Note 10 — ***Debt and Finance Leases*** of our consolidated financial statements for additional information.
- In December 2020, the USDOC finalized the First Administrative Review and determined a reduction of duties on softwood lumber imported into the U.S. from 20 percent to 9 percent for the Company for such duties paid during 2017 and 2018.
- In November 2019, we completed the sale of the Matane Mill for $175 million and used $100 million of the net proceeds to repay borrowings under our Senior Secured Credit Facilities. 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. Included in discontinued operations is allocated interest expense, due to the required loan payments, and professional fees incurred to sell the operation. 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, and again in June 2020, we amended our Senior Secured Credit Facilities. 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, a non-core asset originally acquired as part of our acquisition of Tembec. The resulting gain on sale of $7 million was treated as an adjustment to the bargain purchase gain in 2018.

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 250,000 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 six production facilities located in Canada have a targeted annual production capacity of approximately 755 million board feet of lumber.

Wood fiber and energy represents approximately 46 percent and 4 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, 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 located in Canada has the capacity to annually produce 180,000 metric tons of paperboard. Wood pulp, chemicals, and energy represent approximately 60 percent, 15 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.

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 22 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 13 percent and 4 percent, respectively, of the per metric ton cost of sales. Labor, energy, manufacturing and maintenance supplies, depreciation, manufacturing overhead and transportation costs represent the remaining cost of sales.

Market Assessment

The market assessment represents our best current estimate of each business in this environment.

High Purity Cellulose

We are experiencing increased strong demand for our commodity products and stable demand for our high-value cellulose specialties products. Prices for cellulose specialties are expected to decline slightly relative to 2020 while prices for commodity products, fluff and viscose pulps, will increase significantly in the first quarter and are forecasted to remain elevated for the near-term. Overall, we expect increased pricing from 2020 levels while total volumes and mix for 2021 are expected to remain steady compared to 2020 as increased productivity will be offset by an extended maintenance outage at the Jesup facility in the second quarter.

Key costs, including wood, energy and commodity chemical prices declined in 2020 from prior year levels due to both market conditions and our strategic actions. However, certain chemical prices are now trending higher and, overall, future input prices and availability of these inputs remain difficult to predict due to the current unprecedented economic conditions. We will also continue to invest in our business to reduce costs, improve reliability and provide new platforms for growth. Our 2020 investment in a green energy project at our Tartas facility will deliver lower costs and improved reliability starting in 2021.

Forest Products

Prices for lumber continue to remain near all-time high levels driven by exceptional demand in the U.S with housing starts in January 2021 of 1.6 million units, seasonally adjusted, and building permits of 1.9 million, while repair and remodel activity remains elevated as investment in homes remains attractive. With the absence of market downtime experienced in the first half of 2020 and new investments to increase productivity, we expect to produce an incremental 40 million board feet, an increase of 7 percent, compared to prior year.

In December 2020, the U.S. Department of Commerce finalized its administrative review of the period of April 28, 2017 through December 31, 2018 and determined a reduction of duties on softwood lumber imported into the U.S from 20 percent to 9 percent for the Company. We will benefit from the reduced amount of duties expense on lumber sold into the U.S; however there remains no discussion about a full resolution to the softwood lumber dispute which, based on most recent disputes, would likely result in the U.S. returning all or the vast majority of the duties previously paid. Since 2017, we have paid a total of $91 million in duties.

Paperboard

Paperboard prices are expected to increase slightly in early 2021 given solid demand for packaging grades and announced price increases from larger competitors in the industry. Overall profitability is expected to remain flat as price and volume benefits are expected to be offset by increased raw material costs.

Pulp & Newsprint

Pulp and newsprint markets are beginning to recover from lows in 2020 as economies recover from the impacts caused by COVID-19. Larger competitors in both pulp and newsprint markets have recently announced price increases, and we expect higher prices for both products in the near-term. Additionally, we continue to manage production of our newsprint facility in order to minimize costs and improve sales mix. As such, we expect lower newsprint volumes and higher prices in 2021 compared to 2020. Further, we are maintaining focus on the expansion of the Envirosmart™ food service bag, launched in late third quarter, targeting the quick service restaurant end-market and used for items such as sandwiches and to-go orders, which have grown and remain strong in the post COVID-19 environment.

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.

Accounting Policies:

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.

Accounting Estimates:

Environmental liabilities

At December 31, 2020, we had $172 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 our results of 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 3.46 percent at December 31, 2019 to 2.48 percent at December 31, 2020.

Our defined pension plans were underfunded by $188 million at December 31, 2020. The underfunded status increased by $25 million in 2020, primarily due to lower discount rates. In 2021, pension expense is expected to increase due to an increase in service cost, higher amortization of actuarial losses partly offset by lower interest cost. 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.

During 2020, we started the process of winding up certain Canadian pension plans and as a result recorded a settlement gain of $3 million. In 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*, a loss of $9 million was recorded in 2019 on the settlement and de-recognition of the projected benefit obligation.

In 2020, we made mandatory contributions and benefit payments to plan participants of approximately $10 million. During 2021, we expect to make mandatory and discretionary benefit payments to plan participants of approximately $8 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:

	Impact on (in millions):	
	Effect on 2021 Pension Expense	Effect on December 31, 2020 Projected Benefit Obligation
Change in Assumption	**(Decrease)/Increase**	**Increase (Decrease)**
50 bp decrease in discount rate	$4	$72
50 bp increase in discount rate	$(3)	$(65)
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 each of the following years ended December 31:

Financial Information (in millions, except percentages)		**2020**		**2019**		**2018**
Net Sales	$	1,739	$	1,775	$	1,957
Cost of Sales		(1,601)		(1,721)		(1,666)
Gross Margin		138		54		291
Selling, general and administrative expenses		(85)		(90)		(105)
Duties (a)		(10)		(22)		(26)
Other operating expense, net		(16)		(25)		(12)
Operating Income (Loss)		27		(83)		148
Interest expense		(64)		(60)		(56)
Interest income and other, net		(7)		—		5
Other components of net periodic benefit (expense)		6		(5)		8
Gain on bargain purchase		—		—		20
Gain (loss) on debt extinguishment		(8)		—		1
Income (Loss) from Continuing Operations before Income Taxes		(46)		(148)		126
Income Tax (Expense) Benefit		47		30		(27)
Equity in income (loss) of equity method investments		(1)		—		—
Income (Loss) from Continuing Operations	$	—	$	(119)	$	99
Income from discontinued operations, net of taxes		1		96		29
Net Income	$	1	$	(22)	$	128
Gross Margin %		7.9 %		3.1 %		14.9 %
Operating Margin %		1.6 %		(4.7)%		7.6 %
Effective Tax Rate %		(101.3)%		(20.0)%		21.4 %

(a) The year ended December 31, 2020 includes the $21 million reduction in duties expense. See discussion in the Forest Products portion of the Results of Operations herein.

Results of Operations, Year Ended December 31, 2020 versus December 31, 2019

Net sales by segment were as follows:

		2020		2019
Net Sales (in millions)				
High Purity Cellulose	$	1,051	$	1,127
Forest Products		392		299
Paperboard		190		200
Pulp & Newsprint		172		215
Eliminations		(66)		(66)
Total Net Sales	$	1,739	$	1,775

Net sales decreased $36 million or 2 percent, in 2020 compared to 2019. The decrease was primarily driven by lower high purity cellulose sales prices and lower newsprint sales prices and volumes, partially offset by strong lumber sales prices. For further assessment of changes in net sales, see the discussion of operating results by segment.

Operating income by segment was as follows:

	2020	2019
Operating income (in millions)		
High Purity Cellulose	$ 7	$ 7
Forest Products	80	(31)
Paperboard	18	4
Pulp & Newsprint	(25)	2
Corporate	(53)	(65)
Total Operating Income	$ 27	$ (83)

Operating income for 2020 improved by $110 million when compared to the prior year. The increase was primarily driven by higher prices for lumber and lower costs driven by improved operating reliability, partly offset by declines in newsprint sales prices and volumes. In addition, 2020 reflects the $21 million reduction in duties expense resulting from the U.S. Department of Commerce determination on Canadian softwood lumber imports into the U.S. For further assessment of changes of operating income, see the discussion of Operating Results by Segment.

Non-operating Expenses

Interest expense for 2020 increased $4 million driven by the higher interest rate margin from the amendments to our credit facilities held during most of 2020, as well as increased amortization of debt issuance costs. In December 2020, the Company issued $500 million of 7.625 percent Senior Secured Notes due 2026 (the "Senior Secured Notes" and closed on its five-year, $200 million senior secured asset-based revolving credit facility (the "ABL Credit Facility". The Company used the net proceeds from the sale of the Senior Secured Notes, together with cash on hand, to repay all outstanding obligations under its previous Senior Secured Credit Facility. In connection with the early repayment of the Senior Secured Credit Facility, we recorded a loss from extinguishment of long-term debt of $8 million, primarily from writing off unamortized deferred financing fees. For additional information, see Note 10 — ***Debt and Finance Leases***.

Other components of net periodic benefit (expense changed by $11 million to a $6 million benefit during 2020 as a result of a $3 million pension settlement and curtailment gain recorded during the fourth quarter of 2020 whereas 2019 included a $9 million pension net settlement loss. See Note 18 — ***Employee Benefit Plans***.

Income Taxes

The effective tax benefit rate for 2020 was a benefit of 101 percent. The 2020 effective tax rate benefit differs from the federal statutory rate of 21 percent primarily due to benefits from the CARES Act, the release of certain valuation allowances related to nondeductible interest expense, tax return to accrual adjustments, and tax credits, partially offset by increases to uncertain tax position reserves, nondeductible executive compensation, and lower tax deductions on vested stock compensation. The 2019 effective tax rate from continuing operations was a benefit of 20 percent. See Note 20 — ***Income Taxes*** of our consolidated financial statements for additional information.

Discontinued Operations

The Company has presented the operating results for its Matane operations, which were sold in November 2019, as discontinued operations for the years ended December 31, 2020, 2019 and 2018. Included in discontinued operations is allocated interest expense for debt that was required to be repaid upon completion of the sale. In addition, legal and administrative costs to sell the operations are included in discontinued operations. Income from discontinued operations during the year ended December 31, 2020 included a $1 million benefit resulting from the final working capital adjustment as required by the sale agreement. Income from discontinued operations increased $67 million during 2019 compared to 2018 and reflects the $84 million gain from the sale of the operations. See Note 3 — ***Discontinued Operations*** of our consolidated financial statements for additional information.

Operating Results by Segment

High Purity Cellulose

($ in million)	2020	2019
Net Sales	$ 1,051	$ 1,127
Operating Income	$ 7	$ 7
Average Sales Prices ($ per metric ton):	$ 992	$ 1,083
Sales Volumes (thousands of metric tons):	976	964

Changes in High Purity Cellulose net sales are as follows:

Net Sales (in millions)		Changes Attributable to:		
	2019	Price	Volume/Mix	2020
Cellulose specialties	$ 765	$ 11	$ (91)	$ 685
Commodity products and other	280	(44)	47	283
Other sales (a)	82	—	1	83
Total Net Sales	$ 1,127	$ (33)	$ (43)	$ 1,051

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

Total net sales decreased $76 million, or 7 percent, in 2020. Sales prices for cellulose specialties increased 2 percent during the year ended December 31, 2020 whereas commodity prices declined 17 percent primarily driven by COVID-19 and China trade dispute related impacts on demand on the larger commodity pulp and textile markets. Cellulose specialties sale volumes declined 12 percent primarily due to the impact on demand driven by COVID-19. Commodity sales volumes increased 21 percent for the full year compared to 2019 driven by the recovery of the textile markets in the second half of 2020.

Changes in High Purity Cellulose operating income are as follows:

Operating Income (in millions)		Gross Margin Changes Attributable to:				
	2019	Price	Volume/ Sales Mix (a)	Cost	SG&A and other	2020
Operating Income	$ 7	$ (33)	$ (37)	$ 68	$ 2	$ 7
Operating Margin %	0.6 %	(3.0)%	(3.6)%	6.5 %	0.2 %	0.7 %

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

Operating income remained essentially flat in 2020 when compared to the prior year. Lower wood and chemical costs, improved reliability and higher commodity volumes were offset by the impact of lower cellulose specialty volumes and commodity sale price declines during 2020. Included in SG&A and other costs is our share of the loss of the lignin joint venture of $4 million and $5 million during 2020 and 2019, respectively.

Forest Products

(in millions)	2020	2019
Net Sales	$ 392	$ 299
Operating income	$ 80	$ (31)
Average Sales Prices ($ per thousand board feet):		
Lumber	$ 523	$ 373
Sales Volumes (millions of board feet):		
Lumber	611	617

Changes in Forest Products net sales are as follows:

Net Sales (in millions)		Changes Attributable to:		
	2019	Price	Vol/Mix/Other (a)	2020
Lumber	$ 230	$ 92	$ (3)	$ 319
Other sales (a)	69	—	4	73
Total Net Sales	$ 299	$ 92	$ 1	$ 392

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

Total net sales increased $93 million, or 31 percent, in 2020. Lumber sales prices improved 40 percent due to strong demand while lumber sales volumes decreased by 1 percent as a result of market downtime taken in the first half of the year to address the initial negative impact on demand driven by the COVID-19 pandemic. Other sales were up from higher wood chip sales during the year ended December 31, 2020.

Changes in Forest Products operating income are as follows:

Operating Income (in millions)		Gross Margin Changes Attributable to:				
	2019	Price	Volume/ Sales Mix (a)	Cost	SG&A and other	2020
Operating Income	$ (31)	$ 92	$ 1	$ 6	$ 12	$ 80
Operating Margin %	(10.5)%	26.0 %	0.2 %	1.5 %	3.1 %	20.3 %

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

Operating income increased $111 million in 2020. The improvement was primarily driven by the 40 percent increase in lumber sales prices and lower costs driven by the curtailments of production in the early part of 2020. Additionally the Company reversed $21 million of prior expenses related to import duties as the USDOC announced its final determination in December 2020 to reduce the duties on Canadian softwood lumber imported into the U.S. from 20 percent to 9 percent for such duties paid during 2017 and 2018. The years ended December 31, 2020 and 2019 include $10 million and $23 million in softwood lumber duties, respectively. Duties incurred during 2020 take into account the $21 million reduction previously discussed.

Paperboard

(in millions)	2020	2019
Net Sales	$ 190	$ 200
Operating income	$ 18	$ 4
Average Sales Prices ($ per metric tons) (a):		
Paperboard	$ 1,076	$ 1,103
Sales Volumes (in thousands of metric tons) (a):		
Paperboard	176	181

Changes in Paperboard net sales are as follows:

Net Sales (in millions)		Changes Attributable to:		
	2019	Price	Volume/Mix	2020
Paperboard	$ 200	$ (5)	$ (5)	$ 190

Total net sales declined $10 million, or 5 percent in 2020. Paperboard sales prices declined 2 percent due to increased competition. Paperboard sales volumes decreased 3 percent.

Changes in Paperboard operating income are as follows:

Operating Income (in millions)		**Gross Margin Changes Attributable to:**				
	2019	**Price**	**Volume/ Sales Mix (a)**	**Cost**	**SG&A and other**	**2020**
Operating Income	$ 4	$ (5)	$ (2)	$ 21	$ —	$ 18
Operating Margin %	2.0 %	(2.5)%	(1.1)%	11.1 %	— %	9.5 %

(a) Computed based on contribution margin.

Operating income increased $14 million in 2020 due to decreased costs from lower pulp raw material prices as well as lower transportation costs.

Pulp & Newsprint

(in millions)	2020	2019
Net Sales	$ 172	$ 215
Operating income	$ (25)	$ 2
Average Sales Prices ($ per metric ton):		
Pulp	$ 470	$ 499
Newsprint	$ 418	$ 524
Sales Volumes (in metric tons):		
Pulp	217	207
Newsprint	112	166

Changes in Pulp & Newsprint net sales are as follows:

Net Sales (in millions)		**Changes Attributable to:**		
	2019	**Price**	**Volume/Mix**	**2020**
Pulp	$ 128	$ (8)	$ 5	$ 125
Newsprint	87	(12)	(28)	47
Total Net Sales	$ 215	$ (20)	$ (23)	$ 172

(a) Average sales prices and volumes for external sales only. The Pulp segment sold approximately 66,000 metric tons and 66,000 metric tons of high-yield pulp for $23 million and $25 million to the Paperboard segment for the production of paperboard during 2020 and 2019, respectively.

Total net sales declined $43 million, or 20 percent, in 2020. Average pulp sales prices declined 6 percent due to weak market conditions during 2020. Pulp sales volumes increased 5 percent. Newsprint sales prices and volumes declined 20 percent and 33 percent, respectively, due to weak demand and market-related downtime resulting from the COVID-19 pandemic.

Changes in Pulp & Newsprint operating income are as follows:

Operating Income (in millions)		**Gross Margin Changes Attributable to:**				
	2019	**Price**	**Volume/ Sales Mix (a)**	**Cost**	**SG&A and other**	**2020**
Operating Income	$ 2	$ (20)	$ (13)	$ 5	$ 1	$ (25)
Operating Margin %	0.8 %	(10.2)%	(8.7)%	2.9 %	0.6 %	(14.6)%

(a) Computed based on contribution margin.

Operating income for Pulp & Newsprint decreased $27 million during 2020, driven by lower pulp and newsprint prices and newsprint volumes, partly offset by higher pulp sales volumes. Costs improved primarily from lower transportation expenses, partially offset by higher energy costs.

Corporate

(in millions)	2020	2019
Operating loss	$ (53)	$ (65)

The operating loss for Corporate decreased by $12 million to $53 million in 2020, when compared to 2019, primarily due to lower environmental reserves charges and reduced spending, partially offset by higher non-cash amortization of technology costs and unfavorable currency impacts in the current year and the impact of an insurance recovery in the prior year.

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

	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:

	2019	2018
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	$ (83)	$ 148

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 rate margin from the amendment to our credit facilities, increased amortization of deferred loan costs from the $100 million pay-down of our 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):	$ 1,083	$ 1,167
Sales Volumes (thousands of metric tons):	964	922

Changes in High Purity Cellulose net sales are as follows:

Net Sales (in millions)		Changes Attributable to:		
	2018	**Price**	**Volume/Mix**	**2019**
Cellulose specialties	$ 832	$ (16)	$ (51)	$ 765
Commodity products and other	244	(33)	69	280
Other sales (a)	117	—	(34)	82
Total Net Sales	$ 1,192	$ (49)	$ (16)	$ 1,127

(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)		Gross Margin Changes Attributable to:				
	2018	**Price**	**Volume/ Sales Mix (a)**	**Cost**	**SG&A and other**	**2019**
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	$ 356	$ (60)	$ 3	$ 299

(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 %	7.0 %	(18.8)%	— %	1.0 %	0.3 %	(10.5)%

(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)		**Changes Attributable to:**		
	2018	**Price**	**Volume/Mix**	**2019**
Paperboard	$ 197	$ (5)	$ 8	$ 200

Total net sales increased $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)		**Gross Margin Changes Attributable to:**				
	2018	**Price**	**Volume/ Sales Mix (a)**	**Cost**	**SG&A and other**	**2019**
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: Price	Volume/Mix	2019
Pulp (a)	$ 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 66,000 metric tons and 65,000 metric tons 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)	2018	Gross Margin Changes Attributable to: 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 in 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.

Liquidity and Capital Resources

Cash flows from operations, primarily driven by operating results, have historically been our primary source of liquidity and capital resources. However, our operating cash flows have been volatile in recent years due to decreases in market prices for our commodity products as well as the impact on demand driven by the COVID-19 pandemic. In response, we have maintained a key focus on cash, managing working capital closely and optimizing the timing and level of our capital expenditures. We amended our previous Credit Agreement in 2019 and again in 2020 to provide us with financial flexibility. In December 2020, we completed the private placement of $500 million 7.625% Senior Secured Notes due 2026 (the "Senior Secured Notes" and concurrently entered into a five-year senior secured asset-based revolving credit agreement (the "ABL Credit Facility" in an initial aggregate principal amount of $200 million. In connection with these transactions, we terminated all commitments and repaid all outstanding obligations under the existing Credit Agreement. See Note 10 — ***Debt and Finance Leases*** of our consolidated financial statements for additional information.

As of December 31, 2020, we are in compliance with all financial and other customary covenants. We continue to believe our future cash flows from operations and availability under our ABL 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.

The non-guarantor subsidiaries had assets of $797 million, year-to-date revenue of $204 million, covenant EBITDA for the last twelve months is a $9 million loss and liabilities of $283 million as of December 31, 2020.

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 debt facilities place limitations on the declaration and payment of future dividends. No dividends were declared in 2020.

On January 29, 2018, our Board of Directors authorized a $100 million common stock share buyback program. For the years ended December 31, 2020 and 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,		
	2020	2019	2018
Cash and cash equivalents (a)	$ 94	$ 64	$ 109
Availability under the ABL Credit Facility (b)	102	—	—
Availability under the Revolving Credit Facility (c)	—	87	217
Total debt (d)	1,084	1,082	1,188
Stockholders' equity	695	683	707
Total capitalization (total debt plus equity)	1,779	1,765	1,895
Debt to capital ratio	61 %	61 %	63 %

(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 ABL Credit Facility fluctuate based on eligible accounts receivable and inventory levels. At December 31, 2020, we had $146 million of gross availability and net available borrowings of $102 million after taking into account standby letters of credit of approximately $44 million. In addition to the availability under the ABL Credit Facility, we have $19 million available under an accounts receivable factoring line of credit in France. See Note 22 — ***Commitments and Contingencies*** of our consolidated financial statements for additional information.

(c) Amounts available under the Revolving Credit Facility have been reduced by $33 million and $34 million as of December 31, 2019 and 2018, respectively. We were also required to maintain between $80 million and $90 million of availability on our Revolving Credit Facility, therefore we show this as a reduction to the December 31, 2019 availability.

(d) 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 following years ended December 31:

Cash Provided by (Used for):	2020	2019	2018
Operating activities	$ 124	$ 42	$ 247
Investing activities	$ (78)	$ 53	$ (116)
Financing activities	$ (19)	$ (138)	$ (116)

Cash Provided by Operating Activities

Cash provided by operating activities during the year ended December 31, 2020 increased $82 million, compared to the prior year period, due to improvements in our operating results, mostly from higher lumber prices and lower costs from improved reliability. The increase was partly offset by an increase in income tax receivables that are expected to be refunded during 2021. Included in cash provided by operating activities for the year ended December 31, 2019 was $20 million of cash provided by discontinued operations.

Cash provided by operating activities in 2019 decreased $205 million when compared to the prior year ended December 31, 2018, primarily 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, 2018 was $25 million of cash provided by discontinued operations.

Cash Provided by (Used for Investing Activities

Cash used for investing activities during the year ended December 31, 2020 was $78 million compared to cash provided by investing activities of $53 million during the same prior year period. The year ended December 31, 2019 included proceeds from discontinued operations of $158 million that were received from the November 2019 sale of the Matane mill and $3 million of discontinued operations capital spending. Capital expenditures from continuing operations decreased $28 million during the year ended December 31, 2020 when compared to the same prior year period. The current year included proceeds of $4 million from the sale of assets and $4 million of contributions for our investment in Anomera. See Note 2—***Summary of Significant Accounting Policies and New Accounting Pronouncements*** for additional information on the investment.

Cash used for investing activities of continuing operations during 2019 decreased $10 million when compared to the prior year from a decrease in capital spending. In addition, the year ended December 31, 2018 included $16 million of proceeds received from the sale of the resins business. Included in cash provided by investing activities of discontinued operations for the year ended December 31, 2019 were $155 million of proceeds from the sale of the Matane mill, partly offset by approximately $3 million of capital spending.

Cash Provided by (Used for Financing Activities

Cash used for financing activities decreased $119 million primarily due a decrease of $109 million in our net long-term debt payments during 2020 when compared to the year ended December 31, 2019. In addition, the year ended December 31, 2020 included $5 million of short term borrowings from the France factoring line. Common stock dividends paid decreased by $9 million due to the suspension of the quarterly $0.07 dividend starting in the third quarter of 2019. In addition, the preferred stock dividend payments declined by $10 million in 2020 as the preferred stock automatically converted to common stock in August 2019. During 2020, the Company incurred $24 million of debt issuance costs primarily from the Senior Secured Notes due 2026 that were issued in December 2020. Common shares repurchased decreased by $6 million during 2020 when compared to the same prior year period due to fewer shares in lieu of income taxes repurchased. See Note 10 — ***Debt and Finance Leases*** and Note 14 — ***Stockholders' Equity*** for additional information.

Cash used for financing activities during 2019 increased $22 million when compared to the prior year, primarily due to a net increase in long-term debt payments of $64 million during the year ended December 31, 2019, partially offset by a $36 million decrease in common stock repurchases due to the absence of the share repurchases under the buyback program that occurred in 2018. In addition, common stock and preferred stock dividends decreased in total by $10 million during 2019. In addition, debt issuance costs of $4 million were incurred in 2019.

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. 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. Our management considers 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. Our management uses 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, duties reversal, 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 each of the years ended December 31 (in millions of dollars):

Income (Loss) from Continuing Operations to EBITDA and Adjusted EBITDA Reconciliations	**2020**	**2019**	**2018**	**2017**	**2016**
Income (loss) from continuing operations	$ —	$ (118)	$ 99	$ 323	$ 73
Depreciation and amortization	152	153	146	97	88
Interest expense, net	64	60	55	38	35
Income tax expense (benefit)	(47)	(30)	27	19	39
EBITDA	169	65	327	477	235
Pension settlement (gain) loss	(3)	9	—	—	—
Insurance recovery	—	(4)	—	—	—
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)	—
Loss (gain) on debt extinguishment	8	—	—	—	(9)
Duties reversal (b)	(21)	—	—	—	—
Adjusted EBITDA	$ 153	$ 76	$ 311	$ 209	$ 226

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

(b) The U.S. Department of Commerce announced its final determination in December 2020 to reduce the Company's duties on Canadian softwood lumber imported into the U.S. from 20 percent to 9 percent. As a result the Company reflected a $21 million reversal of prior period expense during the year ended December 31, 2020.

EBITDA and Adjusted EBITDA for 2020 increased compared to 2019, primarily due to higher earnings from operations as a result of higher lumber sales prices and lower costs, primarily from improved reliability. EBITDA and Adjusted EBITDA for 2019 decreased compared to 2018, primarily due to lower earnings from operations as a result of lower sales prices on all our products. 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, net of proceeds from sale of assets, 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 each of the following years ended December 31 (in millions of dollars):

Cash Flows from Operations to Adjusted Free Cash Flows Reconciliation	2020	2019	2018	2017	2016
Cash provided by operating activities-continuing operations	$ 124	$ 22	$ 222	$ 126	$ 232
Capital expenditures, net (a)	(51)	(75)	(92)	(64)	(85)
Adjusted free cash flows	$ 73	$ (53)	$ 130	$ 62	$ 147

(a) Capital expenditures, net of proceeds from sale of assets, exclude strategic capital expenditures which we deem discretionary. Strategic capital expenditures for the years ended December 31, 2020, 2019, 2018, 2017 and 2016 were $22 million, $27 million, $37 million, $11 million and $4 million, respectively.

Adjusted free cash flows in 2020 increased compared to 2019 primarily due to strong lumber prices and lower costs driven by improved reliability, partly offset by lower capital expenditures.

Adjusted free cash flows in 2019 decreased compared to 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.

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, 2020 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, 2020 and anticipated cash spending by period:

		Payments Due by Period			
Contractual Financial Obligations (in millions)	Total	2021	2022-2023	2024-2025	Thereafter
Long-term debt, including current maturities	$ 1,093	$ 17	$ 40	$ 517	$ 519
Interest payments on long-term debt and finance lease obligations (a)	310	70	138	94	8
Purchase obligations (b)	342	138	76	35	93
Postretirement obligations (c)	19	2	4	4	9
Finance lease obligations	2	—	1	1	—
Operating leases (d)	21	7	11	2	1
Total contractual cash obligations	$ 1,787	$ 234	$ 270	$ 653	$ 630

(a) Projected interest payments were calculated based on outstanding principal amounts and interest rates as of December 31, 2020. 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 may 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. We may also use foreign currency forward contracts to manage these exposures. The principal objective of such contracts is to minimize the potential volatility and financial impact of changes in foreign currency exchange rates. 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 and Pulp & 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. While these prices are not directly correlated to commodity dissolving wood pulp and paper pulp prices, changes in commodity dissolving wood pulp and paper pulp prices may impact competitors' actions which can lead to an impact in prices for cellulose specialties products. In addition, approximately half of our cellulose specialties contracted volumes are under multi-year contracts that expire between 2021 and 2023.

As of December 31, 2020, we had $5 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 an immaterial increase/decrease in interest payments and expense over a 12-month period.

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, 2020 was $1,050 million compared to the $1,088 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-48 of this Annual Report on Form 10-K for the year ended December 31, 2020.

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, as amended (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, 2020.

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 quarter ended December 31, 2020, 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 2021 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. Exhibits.

(b) Exhibits.

See Item 15(a)(3).

(c) Financial Statement Schedule.

See Item 15(a)(2).

Exhibit No.	Description	Location
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	Incorporated herein by reference to Exhibit 4.2 to the Registrant's Form 10-K filed on March 2 2020

Exhibit No.	Description	Location
4.3	Indenture, dated as of December 23, 2020, by and among Rayonier A.M. Products Inc., the Guarantors party thereto and Wells Fargo Bank, National Association as trustee and as notes collateral agent	Incorporated herein by reference to Exhibit 4.1 to the Registrant's Form 8-K filed on December 23, 2020
4.4	Form of 7.625% Senior Secured Notes due 2026, included as Exhibit A to the Indenture	Incorporated herein by reference to Exhibit 4.2 to the Registrant's Form 8-K filed on December 23, 2020
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	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
10.6	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
10.7	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
10.8	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
10.9	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
10.10	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
10.11	Form of Rayonier Advanced Materials Inc. 2021 Restricted Stock Unit Award Agreement**	Filed herewith
10.12	Form of Rayonier Advanced Materials Inc. 2021 Performance Share Unit Award Agreement**	Filed herewith
10.13	Form of Rayonier Advanced Materials Inc. 2021 Performance Cash Unit Award Agreement**	Filed herewith
10.14	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
10.15	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Supplemental Terms Applicable to the 2020 Equity Award Grant**	Incorporated herein by reference to Exhibit 10.2 to the Registrant's Form 10-Q filed on May 7, 2020

Exhibit No.	Description	Location
10.16	Form of Rayonier Advanced Materials Inc. Incentive Stock Plan Supplemental Terms Applicable to the 2021 Equity Award Grant**	Filed herewith
10.17	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
10.18	Description of Rayonier Advanced Materials Inc. 2020 Performance Share Award Program**	Incorporated herein by reference to Exhibit 10.3 to the Registrant's Form 10-Q filed on May 7, 2020
10.19	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
10.20	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
10.21	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
10.22	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
10.23	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
10.24	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
10.25	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
10.26	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
10.27	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
10.28	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
10.29	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
10.30	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
10.31	Amendment to Rayonier Advanced Materials Inc. Investment and Savings Plan for Salaried Employees, effective January 1, 2016**	Incorporated herein by reference to Exhibit 10.27 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 October 1, 2016**	Incorporated herein by reference to Exhibit 10.28 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 February 13, 2017**	Incorporated herein by reference to Exhibit 10.29 to the Registrant's Form 10-K filed on February 24, 2017

Exhibit No.	Description	Location
10.34	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
10.35	Form of Rayonier Advanced Materials Inc. Outside Directors Compensation Program/Cash Deferral Option Agreement, effective January 1, 2020**	Filed herewith
10.36	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
10.37	Revolving Credit Agreement, dated as of December 10, 2020, among Rayonier Advanced Materials Inc., Rayonier A.M. Products Inc., the other subsidiaries of Rayonier Advanced Materials Inc. 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 December 23, 2020
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, 2020, formatted in Extensible Business Reporting Language ("XBRL"), includes: (i) the Consolidated Statements of Income and Comprehensive Income for the Years Ended December 31, 2020, 2019 and 2018; (ii) the Consolidated Balance Sheets as of December 31, 2020 and 2019; (iii) the Consolidated Statements of Cash Flows for the Years Ended December 31, 2020, 2019 and 2018; and (iv) the Notes to the Consolidated Financial Statements	Filed herewith
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 1, 2021

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.

Signature	Title	Date
/s/ PAUL G. BOYNTON Paul G. Boynton (Principal Executive Officer)	Chief Executive Officer and President	March 1, 2021
/s/ MARCUS J. MOELTNER Marcus J. Moeltner (Principal Financial Officer)	Chief Financial Officer and Senior Vice President, Finance	March 1, 2021
/s/ GABRIELA GARCIA Gabriela Garcia (Principal Accounting Officer)	Chief Accounting Officer and Vice President, Controller	March 1, 2021
* DeLyle W. Bloomquist	Chairman	
* Charles E. Adair	Director	
* Julie A. Dill	Director	
* James F. Kirsch	Director	
* David C. Mariano	Director	
* Thomas I. Morgan	Director	
* Lisa M. Palumbo	Director	
* Ivona Smith	Director	

*By: /s/ MARCUS J. MOELTNER

Marcus J. Moeltner
(Attorney-In-Fact)

March 1, 2021

Index to Financial Statements

Index to Financial Statement Schedules

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 reliability of financial reporting and the preparation 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 and with the participation of the Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2020. 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 management's assessment and the criteria set forth in *Internal Control — Integrated Framework*, our management concluded that our internal control over financial reporting was effective as of December 31, 2020.

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, 2020. The report on the Company's internal control over financial reporting as of December 31, 2020, is on page F-5.

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, 2020 and 2019, the related consolidated statements of income and comprehensive income, and cash flows for each of the three years in the period ended December 31, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, 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, 2020, 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 1, 2021 expressed an unqualified opinion.

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 regarding 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.

Critical audit matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Environmental Liabilities

As more fully described in Note 11 to the financial statements, the Company records accruals for 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. Accruals for Environmental Liabilities totaled approximately $172 million at December 31, 2020. These liabilities are established based on projected spending over many years and require significant estimates and specialized knowledge to determine the proper amount at any point in time. 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. The Company estimates this exposure could range up to approximately $78 million in addition to the liabilities recorded and has disclosed this exposure in Note 11.

The principal considerations for our determination that the accruals for environmental liabilities is a critical audit matter are that the length of time over which the obligation will be resolved is significant and the estimate requires specialized knowledge of environmental engineering. The estimate, which involves assumptions such as the nature and extent of contamination at each site, the nature and extent of required cleanup efforts, the duration and effectiveness of the chosen remedial strategy and changes in environmental regulations is subjective in nature and involved our complex and subjective judgment.

Our audit procedures related to the accruals for environmental liabilities included the following procedures, among others. We evaluated the design and tested the operating effectiveness of relevant controls over the Company's estimation process and accounting for the accruals, and the completeness and accuracy of the underlying data used in the reserve estimates. We performed a public domain search to determine whether the sites being accounted for by the Company is complete and whether all information from regulators is being considered in the estimation process. We used an environmental reserve specialist to assist us in evaluating the appropriateness of the Company's remediation plans and the reasonableness of management's estimates in relation to the regulatory requirements and to review the estimated costs used by the Company, including consideration of information available from external data from other sources. With the support of our environmental reserve specialists, we evaluated the competency of the specialists used by the Company in addition to whether the method, models and assumptions utilized in estimating the reserve balances were appropriate based on testing of engineering studies and historical experience.

Realizability of Deferred Tax Assets
As more fully described in Note 20, at December 31, 2020, the Company had gross deferred tax assets of approximately $571 million, reduced by a valuation allowance of approximately $81 million, primarily related to its Canadian operations. Deferred tax assets must be reduced by a valuation allowance if, based upon the weight of all available evidence, it is more likely than not that some portion, or all, of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which the deferred tax assets will become realized. The Company assesses the need for a valuation allowance by evaluating both the positive and negative evidence that may exist.

The principal considerations for our determination that the realizability of the deferred tax assets is a critical audit matter are that the length of time of the forecast period is significant and the estimate of future taxable income of the Company's Canadian operations is an accounting estimate subject to a high level of estimation uncertainty.

Our audit procedures related to the realizability of the deferred tax assets included the following procedures, among others. We evaluated the design and tested the operating effectiveness of the key controls over the Company's forecasting process, evaluation of the realizability of deferred tax assets and establishment of valuation allowances. We assessed the historical accuracy of management's forecasted Canadian taxable income and compared the forecasts to historical trends and current industry and economic trends. Additionally, we performed sensitivity analyses around the assessment. We involved tax professionals to evaluate the application of jurisdictional tax laws and regulations used in the Company's assumptions and calculations.

/s/ GRANT THORNTON LLP

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

Jacksonville, Florida
March 1, 2021

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, 2020, 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, 2020, 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, 2020, and our report dated March 1, 2021 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 1, 2021

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

	2020	2019	2018
Net Sales	$ 1,738,899	$ 1,775,392	$ 1,956,994
Cost of Sales	(1,601,115)	(1,721,235)	(1,665,847)
Gross Margin	137,784	54,157	291,147
Selling, general and administrative expenses	(85,193)	(89,644)	(104,989)
Duties	(10,304)	(22,634)	(25,921)
Other operating expense, net (Note 19)	(15,213)	(24,997)	(12,422)
Operating Income (Loss)	27,074	(83,118)	147,815
Interest expense	(64,214)	(60,267)	(55,923)
Interest income (loss) and other, net	(7,265)	(24)	5,019
Other components of net periodic benefit income (expense)	6,216	(4,875)	8,345
Gain on bargain purchase (Note 4)	—	—	20,449
(Loss) gain on debt extinguishment	(7,841)	—	786
Income (Loss) from Continuing Operations Before Income Taxes	(46,030)	(148,284)	126,491
Income tax benefit (expense) (Note 20)	46,607	29,676	(27,040)
Equity in income (loss) of equity method investment	(730)	—	—
Income (Loss) from Continuing Operations	(153)	(118,608)	99,451
Income from discontinued operations (Note 3)	708	96,158	28,965
Net Income (Loss) Attributable to the Company	555	(22,450)	128,416
Mandatory convertible stock dividends	—	(8,582)	(13,800)
Net Income (Loss) Available to Common Stockholders	$ 555	$ (31,032)	$ 114,616
Basic Earnings (Loss) Per Share of Common Stock (Note 16)			
Income (loss) from continuing operations	$ —	$ (2.33)	$ 1.70
Income from discontinued operations	0.01	1.76	0.57
Net income (loss) per common share-basic	$ 0.01	$ (0.57)	$ 2.27
Diluted Earnings (Loss) Per Share of Common Stock (Note 16)			
Income (loss) from continuing operations	$ —	$ (2.33)	$ 1.52
Income from discontinued operations	0.01	1.76	0.44
Net income (loss) per common share-diluted	$ 0.01	$ (0.57)	$ 1.96
Comprehensive Income:			
Net Income (Loss)	$ 555	$ (22,450)	$ 128,416
Other Comprehensive Income (Loss), net of tax (Note 15)			
Foreign currency translation adjustments	25,024	(5,394)	(13,353)
Unrealized gain (loss) on derivative instruments	544	12,912	(12,241)
Net gain (loss) from pension and postretirement plans	(19,976)	8,952	(31,527)
Total other comprehensive income (loss)	5,592	16,470	(57,121)
Comprehensive Income (Loss)	$ 6,147	$ (5,980)	$ 71,295

See Notes to Consolidated Financial Statements.

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

	2020	2019
Assets		
Current Assets		
Cash and cash equivalents	$ 93,653	$ 64,025
Accounts receivable, net (Note 6)	179,208	181,658
Inventory (Note 7)	233,484	251,180
Prepaid and other current assets	68,570	60,846
Income tax receivable (Note 20)	58,657	16,118
Total current assets	633,572	573,827
Property, Plant and Equipment, Net (Note 8)	1,274,942	1,316,055
Deferred Tax Assets (Note 20)	385,459	384,513
Intangible Assets, Net	38,441	45,451
Other Assets	197,451	160,301
Total Assets	$ 2,529,865	$ 2,480,147
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts payable	$ 156,721	$ 153,181
Accrued and other current liabilities (Note 9)	110,495	102,178
Debt due within one year (Note 10)	17,100	19,448
Current environmental liabilities (Note 11)	8,684	11,339
Total current liabilities	293,000	286,146
Long-Term Debt (Note 10)	1,066,837	1,062,695
Non-Current Environmental Liabilities (Note 11)	162,995	160,037
Pension and Other Postretirement Benefits (Note 18)	260,708	236,625
Deferred Tax Liabilities (Note 20)	24,462	24,847
Other Non-Current Liabilities	26,776	26,999
Commitments and Contingencies (Note 22)		
Stockholders' Equity (Note 14)		
Common stock, 140,000,000 shares authorized at $0.01 par value, 63,359,839 and 63,136,129 issued and outstanding, as of December 31, 2020 and 2019, respectively	633	632
Additional paid-in capital	405,161	399,020
Retained earnings	422,928	422,373
Accumulated other comprehensive income (loss) (Note 15)	(133,635)	(139,227)
Total Stockholders' Equity	695,087	682,798
Total Liabilities and Stockholders' Equity	$ 2,529,865	$ 2,480,147

See Notes to Consolidated Financial Statements.

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

	2020	2019	2018
Operating Activities			
Net income (loss)	$ 555	$ (22,450)	$ 128,416
Loss (income) from discontinued operations	(708)	(96,158)	(28,965)
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	151,462	153,275	145,957
Stock-based incentive compensation expense	6,599	6,531	13,007
Amortization of capitalized debt costs and debt discount	2,682	2,292	835
Deferred income tax (benefit) expense	2,040	(25,552)	7,637
Gain on bargain purchase	—	—	(19,071)
Increase in environmental liabilities	5,381	16,384	7,285
Loss (gain) on debt extinguishment	7,750	—	(786)
Net periodic benefit cost of pension and postretirement plans	5,588	16,580	5,063
Loss from sale/disposal of property, plant and equipment	896	1,295	3,186
Loss (gain) on foreign currency exchange	7,894	6,574	(12,170)
Other	—	(3,332)	4,176
Changes in operating assets and liabilities:			
Receivables	4,539	14,443	(31,532)
Inventories	19,962	52,347	(21,579)
Income tax receivables	(52,568)	(6,175)	9,442
Accounts payable	(6,055)	(26,025)	30,162
Accrued liabilities	8,659	(20,034)	4,864
All other operating activities	(25,448)	(29,899)	155
Payments for pension and other postretirement benefit plans	(9,654)	(11,593)	(12,153)
Expenditures for environmental liabilities	(5,308)	(6,444)	(11,852)
Cash provided by operating activities-continuing operations	124,266	22,059	222,077
Cash provided by operating activities-discontinued operations	204	19,845	24,867
Cash Provided by Operating Activities	124,470	41,904	246,944
Investing Activities			
Capital expenditures	(77,159)	(105,462)	(128,796)
Proceeds from sale of resins operations	—	—	16,233
Proceeds from sale of assets	3,764	2,655	10
Investment in equity method investment	(4,426)	—	—
Cash used for investing activities-continuing operations	(77,821)	(102,807)	(112,553)
Cash provided by (used for) investing activities-discontinued operations	—	155,309	(3,413)
Cash (Used for) Provided by Investing Activities	(77,821)	52,502	(115,966)
Financing Activities			
Issuance of long-term debt	500,000	—	—
Revolving credit facility and other borrowings	29,043	91,158	—
Repayments of revolving credit facility and other borrowings	(30,328)	(86,000)	—
Repayment of debt long-term debt	(498,875)	(114,331)	(45,270)
Short-term financing, net	5,044	—	—
Dividends paid on common stock	—	(8,569)	(15,058)
Dividends paid on preferred stock	—	(10,350)	(13,800)
Proceeds from the issuance of common stock	—	—	451
Repurchase of common stock	(457)	(6,878)	(42,780)
Debt issuance costs	(23,817)	(3,514)	—
Cash (Used for) Provided by Financing Activities	(19,390)	(138,484)	(116,457)
Change in cash and cash equivalents	27,259	(44,078)	14,521
Net effect of foreign exchange on cash and cash equivalents	2,369	(863)	(1,790)
Balance, beginning of year	64,025	108,966	96,235
Balance, end of year	$ 93,653	$ 64,025	$ 108,966

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 six 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 of 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.

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.

Coronavirus Pandemic

The Company's businesses have been significantly impacted by the coronavirus ("COVID-19") pandemic. However, due to the role they play in producing critical raw materials for pharmaceutical, food, cleaning and other products, the Company's manufacturing facilities in the U.S., Canada and France have remained operating. In order to mitigate the impact of COVID-19 on its financial results and operations, the Company has taken the following actions:

- To ensure the safety of our employees and the continuity of our operations, the Company has implemented exacting protocols to reduce the potential spread of COVID-19 in its operating facilities and work spaces.
- To control costs and minimize pandemic driven losses, the Company has curtailed operations as necessary to match production with market demand.

Due to the financial impacts of COVID-19, the Company is actively monitoring the recoverability of the carrying value of its long-term assets. During the year ended December 31, 2020, the Company did not recognize any impairment charges related to long-lived assets held for use. The Company will continue to evaluate the recoverability of these and other assets as necessary.

Subsequent Events

Events and transactions subsequent to the balance sheet date have been evaluated for potential recognition and disclosure through March 1, 2021, the date these financial statements were available to be issued. The following events were identified for disclosure:

During 2020, the Canadian government enacted the Canada Emergency Wage Subsidy ("CEWS") to help Canadian employers whose businesses were affected by the COVID-19 pandemic. CEWS provides a subsidy to eligible employees' employment remuneration, subject to certain criteria. In January 2021, the Company's Canadian subsidiaries applied for the CEWS in the amount of CAD$25 million. The Company will record the impact of this benefit upon its realization.

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 Expected Credit Losses

Trade accounts receivable are stated at the net amount expected to be collected. All customers are granted credit on a short-term basis and related credit risks are considered minimal. The Company maintains an allowance for expected credit 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 expected losses, including consideration of 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 net realizable value. 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 to 35 years and 5 to 30 years, respectively. Depreciation expense reflected in cost of sales in the Consolidated Statements of Income was \$136 million, \$137 million and \$135 million for the years ended December 31, 2020, 2019 and 2018, 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, 2020 and 2019 the Company had \$27 million and \$19 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, 2020			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted-Average Remaining Life
Customer Lists	$ 51,680	$ (20,047)	$ 31,633	4.9 years
Trade Names	8,604	(1,796)	6,808	11.9 years
Total Definite-Lived Intangibles	$ 60,284	$ (21,843)	$ 38,441	6.2 years

	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

Total amortization expense related to definite-lived assets was $7 million, $7 million and $7 million for the years ended December 31, 2020, 2019 and 2018, respectively.

The following table outlines the estimated future amortization expense related to intangible assets held as of December 31, 2020:

	December 31, 2020
2021	$ 7,009
2022	7,009
2023	7,009
2024	7,009
2025	6,473
Thereafter	3,932
Total	$ 38,441

Equity Method Investments

Anomera, Inc.

The Company is an investor in Anomera, Inc. ("Anomera"), a Canadian start-up corporation headquartered in Montreal, Quebec. Anomera manufactures Carboxylated Cellulose Nanocrystals (CNC), a patented, biodegradable product, with uses in the cosmetics industry and various other industrial applications, including concrete, inks and pigments, polymer composites, coatings and adhesives industries. Anomera has a product development lab in Mississauga, Ontario and is constructing a pilot production facility on the Company's Temiscaming site. In exchange for voting and non-voting interests, the Company has invested a total of $7 million in Anomera through December 31, 2020, and expects to make additional investments at various times over the next five years. The Company and Anomera have also entered into various service, leasing and supply agreements to support Anomera's operations starting in 2021.

The Company has a 44 percent voting interest in Anomera and is able to exercise significant influence, but not control, as it does not have the ability to direct the decisions that most significantly impact its economic performance. As such, the Company has determined it is not the primary beneficiary of the investment and therefore accounts for it under the equity method of accounting. The Company records its share of net earnings and losses on the investment in "Income (loss) from equity method investee, net of tax" in the Consolidated Statements of Income and Comprehensive Income. During the year ended December 31, 2020, the Company recorded a loss of $1 million from its equity investment in Anomera.

There are no financing agreements at Anomera for which the Company is liable.

LignoTech Florida LLC

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 $7 million and $6 million of lignin sales to the LTF joint venture during the years ended December 31, 2020 and 2019, 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. During each of the years ended December 31, 2020, 2019 and 2018, the Company recorded losses of $4 million, $5 million and $4 million, respectively, from its equity investment in LTF. 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.

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, 2020.

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 2021 through 2041, 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.

New and Recently Adopted Accounting Pronouncements

In December 2019, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2019-12, *Simplifying the Accounting for Income Taxes*, which, among other things, eliminates certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating taxes during the quarters when a year-to-date loss exceeds the anticipated loss for the year and the recognition of deferred tax liabilities for outside basis differences. ASU 2019-12 is effective for the Company beginning January 1, 2021 with early adoption permitted. The Company adopted ASU 2019-12 during 2020 with no material impact on the Company's consolidated financial statements.

The Company adopted ASU 2016-13, *Financial Instruments-Credit Losses on Financial Instruments (Topic 326,* on January 1, 2020. The updated guidance replaced the incurred loss impairment approach with a methodology to reflect expected credit losses by requiring consideration of a broader range of reasonable and supportable information to explain the credit loss estimates. The adoption of this standard did not have a material impact on the Company's consolidated financial statements.

In March 2020, the Financial Accounting Standards Board ("FASB") issued ASU 2020-04, *Reference Rate Reform (Topic 848: Facilitation of the Effects of Reference Rate Reform on Financial Reporting*. The amendments provide optional expedients and exceptions for applying GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The amendments in ASU 2020-04 apply only to contracts, hedging relationships, and other transactions that reference London interbank offered rate ("LIBOR") or another reference rate expected to be discontinued because of the reference rate reform. In the second quarter of 2020, the Company adopted certain applicable practical expedients to assist with the transition related to the phaseout of LIBOR. The adoption of these expedients did not have a material impact on the Company's consolidated financial statements.

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 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.

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

	Year Ended		
	December 31, 2020	December 31, 2019	December 31, 2018
Revenues	$ —	$ 127,561	$ 177,419
Cost of sales	—	(106,572)	(124,396)
Gross margin	—	20,989	53,023
Selling, general and administrative expenses and other	—	(1,536)	(3,196)
Operating income (loss)	—	19,453	49,827
Interest expense (a)	—	(3,957)	(4,485)
Other non-operating income	—	321	377
Income from discontinued operations before income taxes	—	15,817	45,719
Income tax expense	—	(4,096)	(16,754)
Income from discontinued operations, net of taxes	—	11,721	28,965
Gain from sale of discontinued operation, pre-tax	956	118,888	—
Income tax expense on gain	(248)	(34,451)	—
Gain from sale of discontinued operations, net of tax	708	84,437	—
Income from Discontinued Operations	$ 708	$ 96,158	$ 28,965

(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.

Other discontinued operations information is as follows:

	Year Ended		
	December 31, 2020	December 31, 2019	December 31, 2018
Depreciation and amortization	$ —	$ 1,590	$ 2,459
Capital expenditures	$ —	$ 2,956	$ 3,662

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"). A preliminary gain on bargain purchase of $317 million was recognized in the year ended December 31, 2017, primarily associated with the value of certain deferred tax assets. The Company recognized an additional gain on bargain purchase of $20 million during the year ended December 31, 2018 upon finalizing the valuation.

5. Leases

The Company's operating and finance leases are primarily for corporate offices, warehouse space, rail cars and equipment. As of December 31, 2020, the Company's leases have remaining lease terms of 1 year to 8.2 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, 2020 and December 31, 2019 was 6.1 percent and 6.0 percent, respectively. The weighted average discount rate used in determining the finance lease ROU assets and liabilities as of December 31, 2020 and December 31, 2019 was 7.0 percent.

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

	Year Ended	
	December 31, 2020	December 31, 2019
Operating Leases		
Operating lease expense	$ 7,270	$ 6,474
Finance Leases		
Amortization of ROU assets	328	306
Interest	187	209
Total	$ 7,785	$ 6,989

As of December 31, 2020, the weighted average remaining lease term is 3.6 years and 5.9 years for operating leases and financing leases, respectively. As of December 31, 2019, the weighted average remaining lease term is 4.3 years and 6.9 years for operating leases and finance leases, respectively. Cash provided by operating activities includes approximately $7 million and $6 million from operating lease payments made during the year ended December 31, 2020 and 2019, respectively.

As of December 31, 2020 and 2019, assets acquired under finance leases of $2 million and $3 million, respectively, 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 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, 2020	December 31, 2019
Right-of-use assets	Other assets	$ 17,566	$ 22,406
Lease liabilities, current	Accrued and other current liabilities	$ 5,666	$ 5,887
Lease liabilities, non-current	Other non-current liabilities	$ 13,007	$ 17,522

As of December 31, 2020, operating lease maturities for 2021 through 2025 and thereafter are as follows:

	December 31, 2020
2021	$ 6,609
2022	6,035
2023	4,960
2024	1,645
2025	788
Thereafter	831
Total minimum lease payments	20,868
Less: imputed interest	(2,195)
Present value of future minimum lease payments	$ 18,673

6. Accounts Receivable

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

	2020	2019
Accounts receivable, trade	$ 140,036	$ 142,181
Accounts receivable, other (a)	39,659	40,082
Allowance for expected credit losses	(487)	(605)
Total accounts receivable, net	$ 179,208	$ 181,658

(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:

	2020	2019
Finished goods	$ 138,064	$ 150,259
Work-in-progress	17,246	17,065
Raw materials	70,009	73,385
Manufacturing and maintenance supplies	8,165	10,471
Total inventory	$ 233,484	$ 251,180

8. Property, Plant and Equipment

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

	2020	2019
Land and land improvements	$ 30,247	$ 29,912
Buildings	255,381	248,395
Machinery and equipment	2,506,764	2,453,568
Other	24,968	20,063
Construction in progress	68,036	46,378
Total property, plant and equipment, gross	2,885,396	2,798,316
Accumulated depreciation	(1,610,454)	(1,482,261)
Total property, plant and equipment, net	$ 1,274,942	$ 1,316,055

9. Accrued and Other Current Liabilities

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

	2020	2019
Accrued customer incentives and prepayments	$ 29,387	$ 31,696
Accrued payroll and benefits	21,500	23,593
Accrued interest	3,230	2,785
Accrued income taxes	5,052	3,616
Foreign currency forward contracts	—	995
Accrued property taxes	3,995	5,643
Accrued stumpage	10,045	1,867
Other current liabilities	37,286	31,983
Total accrued and other current liabilities	$ 110,495	$ 102,178

10. Debt and Finance Leases

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

	2020	2019
ABL Credit Facility due 2025, $102 million available, bearing interest at 0.25% LIBOR floor plus 2.75%, interest rate of 3.00% at December 31, 2020	$ —	$ —
Senior Secured Notes due 2026 at a fixed interest rate of 7.625%	500,000	—
U.S. Revolver of $84 million, $39 million available, bearing interest at LIBOR plus 3.75% at December 31, 2019; *debt extinguished in December 2020*	—	—
Multi-currency Revolver of $126 million, $48 million available, bearing interest at LIBOR plus 3.75% at December 31, 2019; *debt extinguished in December 2020*	—	—
Term A-1 Loan Facility borrowings, bearing interest at LIBOR plus 3.75%, interest rate of 5.54% at December 31, 2019; *debt extinguished in December 2020*	—	133,283
Term A-2 Loan Facility borrowings bearing interest at LIBOR plus 3.40% (after consideration of 0.60% patronage benefit), interest rate of 5.19% at December 31, 2019; *debt extinguished in December 2020*	—	365,592
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 July 2022 through April 2028	73,791	83,122
Other loans	18,193	7,285
Short-term factoring facility-France	5,089	—
Finance lease obligations	2,489	2,818
Total principal payments due	1,095,209	1,087,747
Less: debt premium, original issue discount and issuance costs	(11,272)	(5,604)
Total debt	1,083,937	1,082,143
Less: debt due within one year	(17,100)	(19,448)
Long-term debt	$ 1,066,837	$ 1,062,695

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

	Finance Lease			
	Minimum Lease Payments	**Less: Interest**	**Net Present Value**	**Debt Principal Payments**
2021	$ 515	$ 163	$ 352	**$ 16,748**
2022	515	138	377	**30,195**
2023	515	110	405	**10,358**
2024	515	81	434	**505,923**
2025	515	50	465	**10,918**
Thereafter	472	16	456	**518,578**
Total payments	$ 3,047	$ 558	$ 2,489	**$ 1,092,720**

Asset Backed Loan due 2025

On December 23, 2020, the Company entered into a 5-year senior secured asset-based revolving credit facility with an initial committed amount of $200 million (the "ABL Credit Facility"). The outstanding letters of credit issued thereunder were reissued under the ABL Credit Facility. The ABL Credit Facility is secured by certain U.S. and Canadian assets, including a first priority lien on inventory, accounts receivable and bank accounts. The ABL Credit Facility also is secured by second priority lien on certain of the assets securing the Senior Secured Notes.

Availability under the ABL Credit Facility fluctuates based on eligible accounts receivable and inventory levels. As of December 31, 2020, the Company had $146 million of gross availability under the ABL Credit Facility and net available borrowings of $102 million of after taking into account $44 million used to secure outstanding letters of credit. Additionally. the Company is subject to cash dominion if availability falls below a certain threshold, currently $25 million.

The credit agreement governing the ABL Credit Facility does not contain an ongoing financial maintenance covenant. However, the agreement requires the Company to meet a fixed charge coverage ratio of not less than 1.0 if availability falls below a certain threshold, currently $25 million. The agreement also contains various customary covenants that limit the ability of the Company and its restricted subsidiaries, as defined by the ABL 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. Additionally, the ABL Credit Facility contains 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, 2020, the Company was in compliance with all covenants under the ABL Credit Facility.

In connection with entering into this agreement and through December 31, 2020, the Company incurred and capitalized fees totaling $9 million.

7.625% Senior Secured Notes due 2026

On December 23, 2020, the Company issued $500 million in aggregate principal amount of 7.625 percent senior secured notes due 2026 (the “Senior Secured Notes”), at an offering price of 100 percent of the principal amount thereof. The Company used the net proceeds from the sale of the Senior Secured Notes, together with cash on hand, to repay all outstanding obligations under its previous Senior Secured Credit Facility.

The Senior Secured 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.

The lenders under the Senior Secured Notes have a first priority security interest in substantially all of the Company’s current and future U.S. and Canadian material assets. The ABL Credit Facility is also secured by certain U.S. and Canadian assets, including a first priority lien on inventory, accounts receivable and bank accounts, while the Senior Secured Notes will have second priority liens on certain of the assets securing the ABL Credit Facility.

In connection with the early repayment of the outstanding obligations of the previous Senior Secured Credit Facility, the Company recorded a loss from early extinguishment of long-term debt of $8 million, primarily from writing off unamortized deferred financing fees.

The indenture governing the Senior Secured Notes contains various customary covenants that limit the ability of the Company and its restricted subsidiaries, as defined by the Senior Secured, 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 Secured 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, 2020, the Company was in compliance with all covenants under the Senior Secured Notes.

In connection with this issuance and through December 31, 2020, the Company incurred and capitalized fees totaling $10 million.

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, 2020.

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, 2020, the Company was in compliance with all covenants under the Senior Notes.

Senior Secured Credit Facility

In December 2020, all outstanding liabilities under the Senior Secured Credit Facility were paid in full and the related agreements terminated. The Company’s senior secured credit facilities (collectively, the “Credit Facility”) consisted 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 had a first priority security interest in substantially all the Company's current and future U.S. and Canadian material assets.

In June 2020, the Company entered into a second amendment of its Senior Secured Credit Agreement (the "Second Amendment") under which, among other changes, the lenders have agreed to relax the financial covenants through 2022. The Second Amendment added a 1 percent LIBOR floor and lenders were paid a customary fee as consideration for their consent to the Second Amendment. The Second Amendment was accounted for as a debt modification and, as such, lender fees of $3 million were capitalized and third-party fees of $1 million were expensed as incurred.

In September 2019, the Company entered into the first amendment of the Credit Facility (the "Amendment") under which, among other changes, the lenders agreed to relax the total net senior first lien secured leverage ratio and interest coverage ratio tests through 2021. The Amendment also increased the interest rate margin on borrowings to be paid to lenders by a maximum of 1.25 percent. The Amendment was accounted for as a debt modification and, as such, lender fees of $4 million were capitalized and third-party fees of $4 million were expensed as incurred.

The loans under the Credit Facility, as amended, bore interest at either (a) a base rate plus an applicable margin ranging between 2 percent and 3 percent or (b) an adjusted LIBOR rate (or 1 percent LIBOR floor) 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.

Through its termination in December 2020, the Company was in compliance with all covenants under the Credit Facility.

Short-term Factoring Facility-France

The Company's subsidiary in France entered into a factoring agreement with BNP-Paribas Factor ("BNP") pursuant to which it submits the value of eligible receivables up to USD $3 million and €24 million for immediate payment. Eligibility of receivables is based on invoices issued to the Company's subsidiary from customers previously approved by BNP. Upon collection of these receivables, on average no longer than 60 days, amounts outstanding under this agreement are paid off. The Company pays interest on a monthly basis for these borrowings based on the value of factored invoices at Euribor 3-month rate (with floor at zero) plus 0.55 percent. The weighted-average interest rate on total short-term borrowings associated with this agreement at December 31, 2020 was 0.55 percent as Euribor 3-month rate was negative for the period.

11. 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") 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, 2020, 2019, or 2018. An analysis of the activity of the liabilities for disposed operations for the years ended December 31, 2020 and 2019 is as follows:

	December 31, 2018	Payments	Increase (Decrease) to Liabilities (a)	December 31, 2019 Liability	Payments	Increase (Decrease) to Liabilities (a)	December 31, 2020 Liability
Port Angeles, Washington	$ 44,799	$ (1,404)	$ 11,045	$ 54,440	$ (1,447)	$ 1,011	$ 54,004
Augusta, Georgia	20,354	(683)	1,876	21,547	(514)	62	21,095
Baldwin, Florida	17,244	(450)	383	17,177	(55)	(700)	16,422
All other sites	78,257	(3,907)	3,862	78,212	(3,292)	5,238	80,158
Total	160,654	$ (6,444)	$ 17,166	171,376	$ (5,308)	$ 5,611	171,679
Less: Current portion	(11,310)			(11,339)			(8,684)
Non-Current portion	$ 149,344			$ 160,037			$ 162,995

(a) Included in the Increase (Decrease) to Liabilities during the year ended December 31, 2020 and 2019 is a $229 thousand and a $1 million increase of the liability, respectively, due to foreign currency fluctuations.

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 2020, the estimated liability decreased $436 thousand as changes in the remediation costs were partly offset by an increase in the reserve. During 2019 the liability increased $10 million, 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 2020 and 2019, the Company recorded a $452 thousand decrease and a $1 million increase 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, current cost estimates and the corresponding liability could change. During 2020, the reserve decreased $1 million primarily from a favorable change in the estimated costs expected for the site. 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, 2020, the Company estimates this exposure could range up to approximately $78 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.

In December 2020, the Company terminated all outstanding derivative instruments, consisting of six foreign exchange forward contracts. These instruments were previously designated as hedging instruments and had various maturity dates through 2028. In connection with these terminations, the Company received approximately $3.6 million. Accumulated gains and losses associated with these instruments are deferred as a component of accumulated other comprehensive income (loss), totaling a net after-tax gain of $2 million, and will be recognized in earnings as the underlying hedged transactions occur and affect earnings.

Interest Rate Risk

The Company's current debt obligations are primarily fixed and therefore not materially exposed to variability in interest payments due to changes in interest rates. The Company previously entered into interest rate swap agreements to reduce the volatility of interest expense, 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 had 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 2020 or 2019.

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, 2020 and 2019 are presented below.

	December 31, 2020	December 31, 2019
Interest rate swaps (a)	$ —	$ 200,000
Foreign currency contracts (b)	$ —	$ 343,665
Foreign cross-currency contracts (b)	$ —	$ 83,126

(a) Matured December 2020
(b) Terminated in December 2020

The fair values of derivative instruments included in the consolidated balance sheet as of December 31, 2020 and 2019 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, 2020	December 31, 2019
Assets:			
Derivatives designated as hedging instruments:			
Interest rate swaps	Other current assets	$ —	$ —
Interest rate swaps	Other assets	—	—
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
Liabilities:			
Derivatives designated as hedging instruments:			
Interest rate swaps	Other current liabilities	—	(639)
Foreign exchange forward contracts	Other current liabilities	—	(340)
Foreign exchange forward contracts	Other non-current liabilities	—	(759)
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	Other current liabilities	—	(16)
Total derivatives		$ —	$ 3,354

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, 2020 and 2019 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, 2020			
Interest rate swaps	$ (2,027)	Interest expense	$ (2,666)	$ —
Foreign currency contracts	$ (13,045)	Other operating expense, net	$ 702	—
Foreign currency contracts	$ 6,481	Cost of sales	$ (6,481)	—
Foreign currency contracts	$ (197)	Interest income and other, net	$ (918)	—
	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	—

The effects of derivative instruments not designated as hedging instruments on the statement of income for the years ended December 31, 2020 and 2019 were as follows:

Derivatives Not Designated as Hedging Instruments	Location of Gain (Loss) Recognized in Income on Derivative	December 31, 2020	December 31, 2019
Foreign exchange contracts	Other operating expense, net	$ (703)	$ 416

The after-tax amounts of unrealized gains in AOCI related to hedge derivatives at December 31, 2020 and 2019 are presented below:

	December 31, 2020	December 31, 2019
Unrealized gains from interest rate cash flow hedges	$ —	$ (499)
Unrealized gains from foreign currency cash flow hedges	$ 1,834	$ 1,789

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, 2020 and 2019, using market information and what management believes to be appropriate valuation methodologies discussed in further detail below:

	December 31, 2020			December 31, 2019		
	Carrying Amount	Fair Value (c)		Carrying Amount	Fair Value (c)	
		Level 1	Level 2		Level 1	Level 2
Assets:						
Cash and cash equivalents	$ 93,653	$ 93,653	$ —	$ 64,025	$ 64,025	$ —
Foreign currency forward contracts (a)	$ —	$ —	$ —	$ 5,108	$ —	$ 5,108
Liabilities (b):						
Interest rate swaps (a)	$ —	$ —	$ —	$ 639	$ —	$ 639
Foreign currency forward contracts (a)	$ —	$ —	$ —	$ 1,115	$ —	$ 1,115
Fixed-rate long-term debt	$1,076,359	$ —	$1,050,287	$ 585,027	$ —	$ 465,449
Variable-rate long-term debt	$ —	$ —	$ —	$ 494,299	$ —	$ 498,875

(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, 2020 and 2019.

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.

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, 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
Net income	—	—	—	—	—	555	—	555
Other comprehensive income, net of tax	—	—	—	—	—	—	5,592	5,592
Issuance of common stock under incentive stock plans	416,454	4	—	—	(4)	—	—	—
Stock-based compensation	—	—	—	—	6,599	—	—	6,599
Repurchase of common stock	(192,744)	(3)	—	—	(454)	—	—	(457)
Balance, December 31, 2020	63,359,839	$ 633	—	$ —	$ 405,161	$ 422,928	$ (133,635)	$ 695,087

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 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 years ended December 31, 2020 and 2019.

15. Accumulated Other Comprehensive Income (Loss)

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

	2020	2019	2018
Unrecognized components of employee benefit plans, net of tax:			
Balance, beginning of year	$ (126,638)	$ (135,590)	$ (81,638)
Other comprehensive gain (loss) before reclassifications	(37,515)	(8,119)	(53,278)
Income tax on other comprehensive loss	8,940	2,413	12,160
Reclassifications to earnings: (a)			
Pension settlement loss (d)	(2,548)	8,787	—
Amortization of losses	12,838	9,889	11,877
Amortization of prior service costs	564	693	572
Amortization of negative plan amendment	—	—	(153)
Income tax on reclassifications	(2,255)	(4,711)	(2,705)
Net comprehensive gain (loss) on employee benefit plans, net of tax	(19,976)	8,952	(31,527)
ASU 2018-02 adoption (c)	—	—	(22,425)
Balance, end of year	(146,614)	(126,638)	(135,590)
Unrealized gain on derivative instruments, net of tax:			
Balance, beginning of year	1,290	(11,622)	619
Other comprehensive income before reclassifications	(8,788)	12,822	(22,985)
Income tax on other comprehensive income	2,171	(3,076)	5,372
Reclassifications to earnings: (b)			
Interest rate contracts	2,666	(688)	(64)
Foreign exchange contracts	6,697	5,615	6,690
Income tax on reclassifications	(2,202)	(1,761)	(1,254)
Net comprehensive gain on derivative instruments, net of tax	544	12,912	(12,241)
Balance, end of year (b)	1,834	1,290	(11,622)
Foreign currency translation:			
Balance, beginning of year	(13,879)	(8,485)	4,868
Foreign currency translation, net of tax effects of $0, $0, and $0	25,024	(5,394)	(13,353)
Balance, end of year	11,145	(13,879)	(8,485)
Accumulated other comprehensive income (loss), end of year	$ (133,635)	$ (139,227)	$ (155,697)

(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.

(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:

	2020	2019	2018
Income (loss) from continuing operations	$ (153)	$ (118,608)	$ 99,451
Less: Preferred Stock dividends	—	(8,582)	(13,800)
Income (loss) from continuing operations attributable to common stockholders	$ (153)	$ (127,190)	$ 85,651
Income from discontinued operations	708	96,158	28,965
Net income (loss) available for common stockholders	$ 555	$ (31,032)	$ 114,616
Shares used for determining basic earnings per share of common stock	63,241,197	54,511,863	50,602,480
Dilutive effect of:			
Stock options	—	—	1,307
Performance and restricted shares	—	—	1,431,794
Preferred Stock	—	—	13,361,678
Shares used for determining diluted earnings per share of common stock	63,241,197	54,511,863	65,397,259
Basic earnings per share (not in thousands)			
Income (loss) from continuing operations	$ —	$ (2.33)	$ 1.70
Income from discontinued operations	0.01	1.76	0.57
Net income (loss)	$ 0.01	$ (0.57)	$ 2.27
Diluted earnings per share (not in thousands)			
Income (loss) from continuing operations	$ —	$ (2.33)	$ 1.52
Income from discontinued operations	0.01	1.76	0.44
Net income (loss)	$ 0.01	$ (0.57)	$ 1.96

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

	2020	2019	2018
Stock options	152,281	205,026	260,033
Performance and restricted shares	2,650,357	494,469	398,004
Total	2,802,638	699,495	658,037

17. Incentive Stock Plans

As of December 31, 2020, 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, 2020, approximately 2.3 million shares were available for future grants under the 2017 Plan.

During the year ended December 31, 2020, the Company made new grants of restricted stock units and performance-based stock units to certain employees. The 2020 restricted stock unit awards cliff vest after three years. Prior to the 2020 award, the restricted stock units vest upon completion of periods ranging from one year to three years . During the year ended December 31, 2020, the Company made new grants of restricted stock units and performance-based stock units to certain employees. The 2020 performance-based stock unit awards will measure total shareholder return ("TSR") on an absolute basis and relative to peers coupled with an EBITDA margin metric, with the measurement period ending on December 31, 2022. Participants can earn between 0 and 200 percent of the target award. Performance below the threshold for the absolute TSR would result in a zero payout for the TSR metric; however, payouts under the EBITDA margin metric would still be possible.

In March 2020, the performance-based share units granted in 2017 were settled at an average of 76 percent of the performance-based stock units awarded, resulting in the issuance of 266,154 shares of common stock.

The Company recognizes stock-based compensation expense on a straight-line basis, net of forfeitures, over the service period of the award. The Company's total stock-based compensation cost, including allocated amounts, for the years ended December 31, 2020, 2019 and 2018 was $7 million, $7 million and $13 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, 2020, 2019 and 2018, no options were granted.

A summary of the Company's stock option activity is presented below for the year ended December 31, 2020:

	Stock Options			
	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2020	205,026	$ 36.10		
Forfeited	—	—		
Exercised	—	—		
Expired	(52,745)	29.87		
Outstanding at December 31, 2020	152,281	$ 38.26	1.9	$ —
Options vested and expected to vest	152,281	$ 38.26	1.9	$ —
Options exercisable at December 31, 2020	152,281	$ 38.26	1.9	$ —

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

	2020	2019	2018
Intrinsic value of options exercised	$ —	$ —	$ 108
Fair value of options vested	$ —	$ —	$ —

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, 2020, there was $2 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 1.1 years.

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

	2020	2019	2018
Restricted stock and stock units granted	426,469	395,260	301,384
Weighted average price of restricted stock or units granted	$ 3.73	$ 11.99	$ 19.73
Intrinsic value of restricted stock and units outstanding	$ 5,405	$ 3,201	$ 9,767
Fair value of restricted stock and units vested	$ 4,420	$ 4,881	$ 3,753

A summary of the Company's restricted stock and stock units activity is presented below for the year ended December 31, 2020:

	Restricted Stock and Stock Units	
	Awards	Weighted Average Grant Date Fair Value
Outstanding at January 1, 2020	833,596	$ 14.55
Granted	426,469	3.73
Forfeited	(65,838)	12.71
Vested	(365,272)	12.10
Outstanding at December 31, 2020	828,955	$ 10.27

Performance-Based Stock Unit Awards

The Company's performance-based stock unit awards generally vest upon completion of a three-year period. The 2020 performance-based stock unit award payout is calculated using a combination of Company specific performance metrics and total shareholder return, which is measured on an absolute basis as well as relative to a peer group of companies. Depending on performance against these targets, the awards will pay out in common stock amounts between 0 and 200 percent of the performance-based stock units awarded.

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, 2020, 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 1.9 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:

	2020	2019	2018
Common shares of stock reserved for performance-based stock units	2,201,134	980,641	1,115,747
Weighted average fair value of performance-based stock units granted	$ 2.07	$ 14.98	$ 22.75
Intrinsic value of outstanding performance-based stock units	$ 11,876	$ 4,572	$ 4,774

A summary of the Company's performance-based stock unit award activity is presented below for the year ended December 31, 2020:

	Performance-Based Stock Units	
	Awards	Weighted Average Grant Date Fair Value
Outstanding at January 1, 2020	1,190,526	$ 17.77
Granted	1,100,567	2.07
Forfeited	(65,764)	17.09
Vested	(403,927)	15.68
Outstanding at December 31, 2020	1,821,402	$ 8.77

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:

	2020	2019	2018
Expected volatility	67.8 %	49.5 %	68.7 %
Risk-free rate	0.9 %	2.5 %	2.4 %

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.

During 2020, the Company started the process of winding up certain Canadian pension plans and as a result recorded a settlement gain of $3 million. During 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 a $9 million loss during the year ended December 31, 2019. The settlements 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, 2020 and 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:

	Pension		Postretirement	
Change in Projected Benefit Obligation	**2020**	**2019**	**2020**	**2019**
Projected benefit obligation at beginning of year	$ 908,373	$ 1,013,541	$ 42,571	$ 41,243
Service cost	10,546	9,857	1,258	1,849
Interest cost	25,327	36,138	1,002	1,432
Actuarial loss (gain)	86,137	101,576	(3,172)	(39)
Participant contributions	779	900	105	130
Benefits paid	(43,687)	(55,801)	(2,104)	(2,824)
Plan amendment	—	1,693	—	—
Settlement	(1,495)	(222,342)	—	(146)
Effects of foreign currency exchange rates	9,216	22,811	30	926
Projected benefit obligation at end of year	$ 995,196	$ 908,373	$ 39,690	$ 42,571
Change in Plan Assets				
Fair value of plan assets at beginning of year	$ 745,858	$ 844,588	$ —	$ —
Actual return on plan assets	88,772	148,226	—	—
Employer contributions	7,656	8,899	1,999	2,694
Participant contributions	779	900	105	130
Benefits paid	(43,688)	(55,801)	(2,104)	(2,824)
Settlement	—	(222,342)	—	—
Effects of foreign currency exchange rates	7,866	21,388	—	—
Fair value of plan assets at end of year	$ 807,243	$ 745,858	$ —	$ —
Funded Status at end of year:	$ (187,953)	$ (162,515)	$ (39,690)	$ (42,571)

The projected benefit obligation increased during the year ended December 31, 2020 due to actuarial losses resulting from a decrease in the discount rate assumed partly offset by lower interest cost and foreign currency exchange impacts.

	Pension		Postretirement	
Amounts recognized in the Consolidated Balance Sheets consist of:	**2020**	**2019**	**2020**	**2019**
Non-current assets	$ 39,351	$ 37,505	$ —	$ —
Current liabilities	(4,089)	(3,745)	(2,197)	(2,221)
Non-current liabilities	(223,215)	(196,275)	(37,493)	(40,350)
Net amount recognized	$ (187,953)	$ (162,515)	$ (39,690)	$ (42,571)

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

	Pension			Postretirement		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Net gains (losses)	$ (38,178)	$ (6,294)	$ (55,918)	$ 663	$ (97)	$ 2,640
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		
	2020	2019	2018	2020	2019	2018
Pension settlement (gain) loss (a)	$ (2,548)	$ 8,787	$ —	$ —	$ —	$ —
Amortization of losses	13,026	10,244	11,648	(188)	81	229
Amortization of prior service (credit) cost	717	846	572	(153)	(153)	(153)

(a) 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 loss in 2019 on the settlement and de-recognition of the projected benefit obligation. The year ended December 31, 2020 also includes a gain for Canadian plans in the process of winding-up and expected to be settled in 2021.

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	
	2020	2019	2020	2019
Prior service cost	$ (2,116)	$ (2,842)	$ 1,032	$ 1,185
Net losses	(187,533)	(160,058)	(1,820)	(2,266)
Deferred income tax benefit	43,731	37,050	90	293
Accumulated other comprehensive income (loss)	$ (145,918)	$ (125,850)	$ (698)	$ (788)

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:

	2020	2019
Projected benefit obligation	$ 995,192	$ 907,755
Accumulated benefit obligation	$ 954,043	$ 871,291
Fair value of plan assets	$ 807,241	$ 744,662

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:

	Pension			Postretirement		
Components of Net Periodic Benefit Cost	2020	2019	2018	2020	2019	2018
Service cost	$ 10,546	$ 9,857	$ 11,663	$ 1,258	$ 1,849	$ 1,716
Interest cost	25,327	36,138	35,499	1,002	1,432	1,327
Expected return on plan assets	(41,308)	(52,343)	(57,438)	—	—	—
Amortization of prior service (credit) cost	717	569	572	(153)	(153)	(153)
Amortization of losses	13,026	10,363	11,648	(188)	81	229
Pension settlement (gain) loss	(2,548)	8,787	—	—	—	—
Other	—	—	—	(2,091)	—	—
Net periodic benefit cost (a)	$ 5,760	$ 13,371	$ 1,944	$ (172)	$ 3,209	$ 3,119

(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.

The Company uses the spot rate approach method to determine the service and interest cost components of net periodic benefit cost. Under this method, individual spot rates along the yield curve that correspond with the timing of each benefit payment will be used. The Company believes this provides 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.

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		
	2020	2019	2018	2020	2019	2018
Assumptions used to determine benefit obligations at December 31:						
Discount rate	2.48 %	3.46 %	3.99 %	2.48 %	3.20 %	3.82 %
Rate of compensation increase	2.67 %	2.67 %	2.61 %	3.90 %	3.63 %	3.68 %
Assumptions used to determine net periodic benefit cost for years ended December 31:						
Discount rate	3.15 %	3.91 %	3.42 %	3.05 %	3.91 %	3.40 %
Expected long-term return on plan assets	6.19 %	6.37 %	6.32 %	N/A	N/A	N/A
Rate of compensation increase	2.67 %	2.67 %	2.61 %	3.90 %	3.63 %	3.68 %

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.

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			
	2020		2019	
	U.S.	Canada	U.S.	Canada
Health care cost trend rate assumed for next year	6.50 %	5.68 %	7.00 %	6.50 %
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	2022-2025	2024	2021-2022

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, 2020 and 2019, by asset category are as follows:

	Percentage of Plan Assets	
Asset Category	2020	2019
U.S. equity securities	22 %	25 %
International equity securities	27 %	31 %
U.S. fixed income securities	21 %	19 %
International fixed income securities	26 %	21 %
Other	4 %	4 %
Total	100 %	100 %

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, 2020 or 2019.

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, 2020 and 2019.

	Fair Value at December 31, 2020			
Asset Category	**Level 1**	**Level 2**	**Level 3**	**Total**
Mutual funds	$ 5,878	$ —	$ —	$ 5,878
Investments at net asset value:				
Common collective trust funds				801,365
Total assets at fair value				$ 807,243

	Fair Value at December 31, 2019			
Asset Category	**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

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, 2020 and 2019.

Cash Flows

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

	Pension Benefits	Postretirement Benefits
2021	$ 45,657	$ 2,038
2022	47,245	1,986
2023	48,187	1,894
2024	49,019	1,813
2025	49,934	1,815
2026 — 2030	245,613	8,712

The Company has mandatory pension contribution requirements of $3 million in 2021 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, $9 million, and $8 million for the years ended December 31, 2020, 2019 and 2018, respectively.

19. Other Operating Expense, Net

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

	2020	2019	2018
Environmental liability expense (a)	$ (5,962)	$ (17,832)	$ (8,332)
Loss on sale or disposal of property, plant and equipment	(896)	(1,295)	(3,186)
(Loss) gain on foreign exchange	(4,949)	(3,203)	1,114
Equity income (loss) from joint venture	(3,706)	(5,089)	(4,359)
Insurance settlement	—	4,500	—
Miscellaneous income (expense)	300	(2,078)	2,341
Total other operating expense, net	$ (15,213)	$ (24,997)	$ (12,422)

(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:

	2020	2019	2018
Current			
Federal	$ 49,940	$ 7,789	$ (8,630)
Foreign	(962)	(4,201)	(10,115)
State and other	(332)	536	(657)
	48,646	4,124	(19,402)
Deferred			
Federal	339	2,471	4,238
Foreign	(3,100)	22,702	(11,901)
State and other	722	379	25
	(2,039)	25,552	(7,638)
Income tax expense	$ 46,607	$ 29,676	$ (27,040)

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:

	2020	2019	2018
U.S. federal statutory income tax rate	21.0 %	21.0 %	21.0 %
CARES Act and other tax regulations (a)	42.1	2.8	—
Change in valuation allowance (b)	29.6	(8.6)	—
Adjustment to previously filed tax returns	13.7	0.1	(2.4)
Tax credits (excluding FTC)	5.3	3.1	(3.0)
Nondeductible compensation for executives and share-based awards	(4.4)	0.7	0.7
Net changes in uncertain tax positions	(3.6)	(1.2)	(3.1)
Difference in foreign statutory rates	(2.7)	2.3	5.9
Book tax differences related to joint venture	0.7	—	2.0
Global Intangible Low Taxed Income (Net of FTC)	—	—	3.7
Nontaxable bargain purchase gain (c)	—	—	(4.2)
Other	(0.4)	(0.2)	0.8
Income tax rate as reported	101.3 %	20.0 %	21.4 %

(a) On March 27, 2020, the United States Congress passed the "CARES Act" to provide taxpayer protection against the economic impacts of COVID-19. As part of the CARES Act, the Company is able to carry 2019 and 2020 tax net operating losses back to tax years when the U.S. Federal Statutory rate was 35 percent compared with the current 21 percent. The Company has recognized a $20 million tax benefit arising from the remeasured increased value of the tax net operating losses in 2019 and 2020. The Company has recorded a $33 million current receivable related to the 2019 loss carryback expected to be received in 2021 and a $10 million noncurrent receivable related to the 2020 loss carryback. Separately, the Company has a $22 million current receivable related to tax years under examination by the IRS. The Company believes the examination will be completed in time to receive this refund within the next twelve months.

(b) The tax benefit for the year ended December 31, 2020 includes an adjustment to reverse a valuation allowance, which was initially recorded for the year ended December 31, 2019, on a deferred tax asset generated from a disallowed interest deduction. Under the Internal Revenue Code Section 163(j), U.S. interest is only deductible up to 30 percent of "adjusted taxable income ("ATI"). The disallowed interest deduction can be carried forward indefinitely but will only be realized to the extent the Company has net U.S. interest expense below 30 percent of ATI in any given year after first utilizing its current year interest expense. Based on its projected interest expense and ATI, the Company does not believe it will be able to realize any of the existing suspended interest deductions and, as a result, had recorded a full valuation allowance on these deferred tax assets as of December 31, 2019. However, in December of 2019 the American Institute of Certified Public Accountants ("AICPA") issued Technical Questions and Answers ("TQA") 3300.01-02 which asserts that a valuation allowance should only be recognized to the extent that the reversal of existing deferred tax assets and liabilities is not sufficient to realize the disallowed interest carryforward, ignoring material evidence including the expectation of future earnings or losses and future interest expense. In strict compliance with the AICPA's TQA, in 2020, the Company reversed all of the valuation allowance on the deferred tax assets generated from disallowed interest through December 31, 2020 resulting in a $14 million increase in the tax benefit, of which $9 million related to recognition of deferred tax assets recorded on December 31, 2019. The Company has determined that the adjustment was not material to the December 31, 2019 consolidated financial statements. The Company's conclusion was reached in consideration of qualitative factors such as the fact that the deferred tax asset will likely never be realized or impact cash taxes and the fact that the income tax benefit does not impact operating cash flows, operating income, earnings before interest, depreciation and amortization and adjusted free cash flow. The continued application of this AICPA guidance is expected to result in future recognition of additional deferred tax assets that the Company believes will not be realized.

(c) The bargain purchase gain from the acquisition of Tembec of $20 million during the year ended December 31, 2018 was not taxable resulting in a decrease in the income tax rate.

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:

	2020	2019
Gross deferred tax assets:		
Canadian net operating losses (a)	$ 168,342	$ 205,563
Canadian pool of scientific research and experimentation deductions ("SR&ED") (a)	87,722	87,315
Property, plant and equipment basis differences	97,767	66,653
Tax credit carryforwards (a)	84,844	74,503
Pension, postretirement and other employee benefits	52,876	47,026
Environmental liabilities	39,067	39,118
Deferred interest deductions (a)	11,290	15,537
Other compensation	6,363	5,100
State net operating losses (a)	4,290	3,249
Capitalized costs	3,521	2,979
Other	14,465	12,818
Total gross deferred tax assets	570,547	559,861
Less: valuation allowance (a)	(81,133)	(94,660)
Total deferred tax assets after valuation allowance	489,414	465,201
Gross deferred tax liabilities:		
Property, plant and equipment basis differences	(103,793)	(90,290)
Intangible assets	(11,513)	(12,284)
Other	(13,111)	(2,961)
Total gross deferred tax liabilities	(128,417)	(105,535)
Net deferred tax asset	$ 360,997	$ 359,666
Included in:		
Deferred tax assets	$ 385,459	$ 384,513
Deferred tax liabilities	(24,462)	(24,847)
	$ 360,997	$ 359,666

(a) The following relates to net operating losses, tax credits, and certain other carryforwards as of December 31, 2020:

	Gross Amount	Tax Effected	Valuation Allowance	Expiration
Foreign R&D credit carryforwards	$ 52,746	$ 52,746	$ (52,746)	2020-2038
State tax credit carryforwards	$ 22,342	$ 22,342	$ (22,100)	2020-2029
State net operating losses	$ 98,058	$ 4,294	$ (3,059)	2020-2039
Canada non-capital losses	$ 770,695	$ 168,342	$ (3,191)	2024-2040
Canadian pool of SR&ED	$ 409,326	$ 87,722	$ —	None
Interest limitation carryforward	$ 51,316	$ —	$ —	None
U.S. Federal net operating losses	$ —	$ —	$ —	None

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, 2020, there were several positions resulting in unrecognized tax benefits that, if recognized, would affect income tax expense. A reconciliation of the beginning and ending unrecognized tax benefits for the three years ended December 31 is as follows:

	2020	2019	2018
Balance at January 1,	$ 10,555	$ 8,844	$ 23,804
Decreases related to prior year tax positions	(2,251)	(193)	(17,872)
Increases related to prior year tax positions	3,009	1,904	1,137
Increases related to current year tax positions	125	—	1,775
Balance at December 31,	$ 11,438	$ 10,555	$ 8,844

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 $6 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:

Taxing Jurisdiction	Open Tax Years
U.S.	2014-2020
France	2017-2020
Canada	2016-2020

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.

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

	2020	2019	2018
Net sales:			
High Purity Cellulose			
Cellulose Specialties	$ 685,177	$ 765,077	$ 831,805
Commodity Products	282,663	279,527	243,711
Other sales (a)	83,463	82,383	116,873
Total High Purity Cellulose	1,051,303	1,126,987	1,192,389
Forest Products			
Lumber	319,409	230,360	284,418
Other sales (b)	72,819	68,753	71,242
Total Forest Products	392,228	299,113	355,660
Paperboard			
Paperboard	189,882	199,987	196,866
Pulp & Newsprint			
Pulp	125,417	127,784	169,025
Newsprint	46,942	87,188	113,275
Total Pulp & Newsprint	172,360	214,972	282,300
Corporate			
Eliminations	(66,874)	(65,667)	(70,221)
Total net sales	$ 1,738,899	$ 1,775,392	$ 1,956,994

(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

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

	2020	2019	2018
Operating income:			
High Purity Cellulose	$ 6,994	$ 6,588	$ 112,308
Forest Products	79,999	(30,904)	24,850
Paperboard	17,862	4,120	4,392
Pulp & Newsprint	(25,379)	1,658	71,899
Corporate	(52,402)	(64,580)	(65,634)
Total operating income	$ 27,074	$ (83,118)	$ 147,815

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

	2020	2019
Identifiable assets:		
High Purity Cellulose	$ 1,528,929	$ 1,559,073
Forest Products	186,321	171,167
Paperboard	129,871	145,030
Pulp & Newsprint	99,374	102,959
Corporate	585,370	501,918
Total identifiable assets	$ 2,529,865	$ 2,480,147

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

	2020	2019
Long-life assets:		
United States	$ 768,111	$ 791,769
Canada (a)	898,430	905,897
France	229,613	209,304
Other	138	146
Total long-life assets	$ 1,896,292	$ 1,907,116

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

	2020	2019	2018
Depreciation and amortization:			
High Purity Cellulose	$ 116,080	$ 123,279	$ 119,231
Forest Products	11,183	9,288	6,683
Paperboard	15,420	15,587	15,674
Pulp & Newsprint	4,390	4,323	3,711
Corporate	4,389	798	658
Total depreciation and amortization	$ 151,462	$ 153,275	$ 145,957
Capital expenditures (a):			
High Purity Cellulose	$ 67,906	$ 79,293	$ 92,980
Forest Products	9,645	13,667	26,691
Paperboard	1,838	1,446	1,598
Pulp & Newsprint	6,043	4,664	4,938
Corporate	1,621	6,300	2,826
Total capital expenditures	$ 87,053	$ 105,370	$ 129,033

(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					
	2020	%	2019	%	2018	%
United States	$ 684,447	39	$ 694,785	39	$ 771,575	40
China	357,091	21	328,037	18	348,550	18
Canada	240,890	14	221,601	12	259,949	13
Japan	119,178	7	119,839	7	143,577	7
Europe	233,829	13	268,417	15	291,008	15
Latin America	12,688	1	10,223	1	11,868	1
Other Asia	73,734	4	115,332	7	125,773	6
All other	17,042	1	17,158	1	4,694	—
Total sales	$ 1,738,899	100	$ 1,775,392	100	$ 1,956,994	100

The Company had no significant customers representing over 10 percent of total sales for the years ended December 31, 2020, 2019 and 2018.

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 the Company's compliance with the published rules that govern the operation of the wholesale electricity market in Ontario, Canada. 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.

In May 2020, MACD finalized two of its four investigations into the Company's electricity management practices at its Kapuskasing facility, and orders claiming penalties of CAD $25 million in connection therewith were issued by the IESO. More particularly, the orders would require the Company to pay penalties of CAD $3 million immediately and CAD $12 million over a 10-year period, with the remaining CAD $10 million to be deferred and ultimately forgiven assuming the Company otherwise complies with the remaining terms of the orders. The Company believes it has complied in all material respects with the published rules and is vigorously contesting IESO's orders, including filing of proceedings with the divisional Court (Superior Court of Justice) of Ontario seeking invalidation of the orders. The Company does not believe the ultimate outcome of this dispute will be material to its business or financial condition, although no assurances can be given.

Duties on Canadian softwood lumber sold to the U.S.. The Company operates six softwood lumber mills in Ontario and Quebec, Canada and exports softwood lumber into the United States from Canada. In 2017, anti-dumping and countervailing duties were assessed by the United States Department of Commerce ("USDOC") 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. In December 2020, following its administrative review of the period of April 28, 2017 through December 31, 2018, USDOC determined revised rates for anti-dumping and countervailing duties, and the Company is now subject to an anti-dumping duty rate of approximately 1.6 percent and a countervailing duty rate of approximately 7.4 percent. The reduced rates will be applied by the Company for lumber sold into the U.S. in the future. Canada's legal challenge to the USDOC's assessment of duties continues in spite of the recent revision in rates.

The Company has paid approximately $91 million in lumber duties to date, recorded as expense in the periods incurred. Following the December 2020 determination of the revised rates for the 2017 and 2018 periods, the Company reversed $21 million of prior period expenses, decreasing current period duties expense, and recorded a corresponding long-term receivable included within "Other Assets" in the Consolidated Balance Sheets, as cash is not expected to return to the Company until final resolution of the softwood lumber dispute. As the duties remain subject to legal challenges and to USDOC further administrative review processes covering periods after December 31, 2018, subsequent rate adjustments may become necessary.

Other. 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 $8 million, $7 million, and $8 million in 2020, 2019 and 2018, respectively. See Note 5-*Leases*, for additional information on future minimum lease payments.

At December 31, 2020, the future minimum payments under purchase obligations were as follows:

		Purchase Obligations (a)
2021	$	138,341
2022		44,840
2023		31,030
2024		25,103
2025		10,036
Thereafter		92,675
Total	$	342,025

(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, 2020, the Company had $44 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 $82 million as of December 31, 2020, 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.

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, 2020 was $33 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, 2020, approximately 75 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, 2020, all of the Company's collective bargaining agreements covering its unionized employees were current.

23. Supplemental Disclosures of Cash Flow Information

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

		2020		2019		2018
Supplemental cash flow information:						
Cash paid for interest on debt	$	57,017	$	59,434	$	55,286
Cash paid for income taxes, net of refunds	$	1,168	$	3,266	$	12,558
Capital assets purchased on account	$	22,549	$	14,769	$	16,864
Assets acquired under operating leases	$	816		18,198	$	—

24. Quarterly Results for 2020 and 2019 (Unaudited)

	Quarter Ended				
	March 28	June 27	September 26	December 31	Total Year
2020					
Net Sales	$ 409,808	$ 396,753	$ 423,924	$ 508,415	$ 1,738,899
Gross Margin	$ 10,461	$ 20,214	$ 49,970	$ 57,139	$ 137,784
Operating Income	$ (12,008)	$ (15,420)	$ 17,388	$ 37,112	$ 27,074
Income (loss) from continuing operations	$ (24,835)	$ (12,927)	$ 28,877	$ 8,732	$ (153)
Income from discontinued operations	$ 708	$ 64	$ (17)	$ (47)	$ 708
Net Income (Loss)	$ (24,127)	$ (12,863)	$ 28,860	$ 8,685	$ 555
Basic earnings per share					
Continuing operations	$ (0.39)	$ (0.20)	$ 0.46	$ 0.14	$ —
Discontinued operations	$ 0.01	$ —	$ —	$ —	$ 0.01
Total	$ (0.38)	$ (0.20)	$ 0.46	$ 0.14	$ 0.01
Diluted earnings per share:					
Continuing operations	$ (0.39)	$ (0.20)	$ 0.45	$ 0.14	$ —
Discontinued operations	$ 0.01	$ —	$ —	$ —	$ 0.01
Total	$ (0.38)	$ (0.20)	$ 0.45	$ 0.14	$ 0.01

	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	$ 11,940	$ 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 (b)	$ 5,937	$ 4,357	$ 137	$ 85,727	$ 96,158
Net Income	$ (22,050)	$ (14,917)	$ (14,216)	$ 28,733	$ (22,450)
Basic earnings per share					
Continuing operations (a)	$ (0.64)	$ (0.46)	$ (0.29)	$ (0.91)	$ (2.33)
Discontinued operations	$ 0.12	$ 0.09	$ —	$ 1.36	$ 1.76
Total (a)	$ (0.52)	$ (0.37)	$ (0.29)	$ 0.45	$ (0.57)
Diluted earnings per share:					
Continuing operations (a)	$ (0.64)	$ (0.46)	$ (0.29)	$ (0.91)	$ (2.33)
Discontinued operations	$ 0.12	$ 0.09	$ —	$ 1.36	$ 1.76
Total (a)	$ (0.52)	$ (0.37)	$ (0.29)	$ 0.45	$ (0.57)

(a) 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.

(b) 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, 2020, 2019, and 2018
(In thousands)

Description	Balance at Beginning of Year	Additions: Charged to Cost and Expenses	Additions: Charged to Other Accounts	Additions: Acquisition	Deductions	Balance at End of Year
Allowance for doubtful accounts:						
Year ended December 31, 2020	$ 606	$ 108	$ 4	$ —	$ (231)	$ 487
Year ended December 31, 2019	$ 559	$ 232	$ 10	$ —	$ (195)	$ 606
Year ended December 31, 2018	$ 566	$ 239	$ (54)	$ —	$ (192)	$ 559
Allowance for sales returns:						
Year ended December 31, 2020	$ 730	$ 156	$ —	$ —	$ (127)	$ 759
Year ended December 31, 2019	$ 1,259	$ (346)	$ —	$ —	$ (183)	$ 730
Year ended December 31, 2018	$ 1,121	$ 969	$ —	$ —	$ (831)	$ 1,259
Deferred tax asset valuation allowance:						
Year ended December 31, 2020	$ 94,660	$ (13,527)	$ —	$ —	$ —	$ 81,133
Year ended December 31, 2019	$ 85,938	$ 8,722	$ —	$ —	$ —	$ 94,660
Year ended December 31, 2018	$ 92,081	$ —	$ 3,715	$ —	$ (9,858)	$ 85,938
Self-insurance liabilities:						
Year ended December 31, 2020	$ 1,357	$ 425	$ —	$ —	$ (754)	$ 1,028
Year ended December 31, 2019	$ 1,011	$ 622	$ —	$ —	$ (276)	$ 1,357
Year ended December 31, 2018	$ 1,289	$ 348	$ —	$ —	$ (626)	$ 1,011

Subsidiaries of Rayonier Advanced Materials Inc.
As of 12/31/2020

Name of Subsidiary	Place of Incorporation
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. 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

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We have issued our reports dated March 1, 2021, 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, 2020. We consent to the incorporation by reference of said reports in the Registration Statements of Rayonier Advanced Materials Inc. on Forms S-3 (File No. 333-212068 and File No. 333-209747) and on Forms S-8 (File No. 333-197093 and File No. 333-218975).

/s/ Grant Thornton LLP

Jacksonville, Florida
March 1, 2021

Exhibit 31.1

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 1, 2021

/s/ PAUL G. BOYNTON

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

Exhibit 31.2

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 1, 2021

/s/ MARCUS J. MOELTNER

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

Exhibit 32

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, 2020 (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 1, 2021

/s/ PAUL G. BOYNTON	/s/ MARCUS J. MOELTNER
Paul G. Boynton	Marcus J. Moeltner
President and Chief Executive Officer *Rayonier Advanced Materials Inc.*	*Chief Financial Officer and* *Senior Vice President, Finance* *Rayonier Advanced Materials Inc.*

RAYONIER
Advanced Materials™

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Chair of the Board

Charles E. Adair
Director

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Director

Julie A. Dill
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Director

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Vice President
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Senior Vice President
Manufacturing Operations

Anthony R. Matthews
Vice President
Supply Chain

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

James L. Posze, Jr.
Chief Administrative Officer and
Senior Vice President
Human Resources

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

ANNUAL MEETING OF STOCKHOLDERS

May 17, 2021
5:30 p.m.

DoubleTree Hotel
1201 Riverplace Boulevard
Jacksonville, Florida 32207

TRANSFER AGENT AND REGISTRAR

Please contact Computershare for all essential stockholder services, including:

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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

RAYONIER
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CORPORATE HEADQUARTERS

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