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CREDIT OPINION
14 February 2023

Update

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RATINGS

Stora Enso Oyj

Domicile	Helsinki, Finland
Long Term Rating	Baa3
Type	LT Issuer Rating - Fgn Curr
Outlook	Positive

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Stora Enso Oyj

Update following outlook change to positive

Summary

On 10 February 2023, we affirmed the Baa3 issuer rating of Stora Enso and changed the outlook to positive from stable reflecting a track record of performance and credit metrics improvements supported by the gradual shift of its business profile further away from graphic paper. While we expect a more challenging operating environment ahead, the positive outlook reflects the potential for a rating upgrade provided that the company sustains its recent credit metrics and performance improvements.

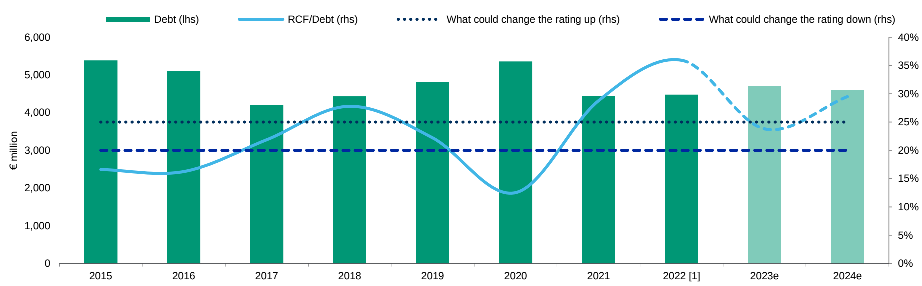
Stora Enso Oyj's Baa3 issuer rating with a positive outlook is primarily supported by the company's sizeable scale, with annual sales of around €11.7 billion and a number of market-leading positions across its fairly wide product portfolio; good level of vertical integration into wood, pulp and energy; well-managed and continuing diversification into businesses with positive structural growth, such as pulp, wood products and paper-based packaging; and track record of reducing leverage through EBITDA growth and debt repayments.

Stora Enso's Baa3 issuer rating is primarily constrained by the company's exposure to the risk of volatility in its credit metrics because input costs and prices of most of its products are volatile, which reflects the cyclical demand in some of its end markets, at times exacerbated by periods of oversupply; the risk of debt-funded growth within Stora Enso's publicly communicated net leverage ceiling of 2.0x (0.7x in 2022); and the challenges arising from high cost inflation, which is likely to endure, at least for 2023.

Exhibit 1

We expect Stora Enso's cash flow coverage to normalise in 2023

Moody's-adjusted debt and RCF/debt



[1] 2022 numbers are based on preliminary results, not audited financial statements.
Sources: Moody's Financial Metrics™ and Moody's Investors Service estimates

Credit strengths

» Sizeable scale with segmental diversification, which supports its business profile

» Track record of successful and continued transformation beyond graphic-grade paper, into structurally growing paper-based packaging, pulp and wood products

» Track record of balance-sheet strengthening, supported by conservative financial policies

Credit challenges

» Operating profitability exposed to volatile input costs and product pricing

» Challenges presented by high cost inflation likely to endure, at least for 2023

» Some risk of further debt-funded growth, which could (at least temporarily) increase the company's leverage

Rating outlook

The positive outlook reflects our expectation that Stora Enso will adhere to its net leverage ceiling and keep its Moody's-adjusted debt/EBITDA below 2.5x, with an EBITDA margin in the high-teen percentages in the next 12-18 months, even if global GDP growth slows and demand for its products softens significantly, while executing its strategic investments. Additionally, the outlook incorporates the company's ongoing commitment to maintain an investment-grade rating.

Factors that could lead to an upgrade

» Moody's-adjusted EBITDA margin remaining in the high-teen percentages

» Moody's-adjusted retained cash flow (RCF)/debt above 25% on a sustained basis

» Moody's-adjusted gross debt/EBITDA remaining below 2.5x on a sustained basis

» Sustained significant free cash flow (FCF) and a further strengthening of its liquidity, with reduced reliance on short-term debt

Factors that could lead to a downgrade

» Sustained deterioration in operating performance, with its Moody's-adjusted EBITDA margin declining towards the low-teen percentages

» Moody's-adjusted RCF/debt declining below 20% on a sustained basis

» Moody's-adjusted debt/EBITDA remaining above 3.5x (including significant forest holdings) on a sustained basis

» Sustained negative FCF and a weakening of its liquidity

» Inability to proactively address upcoming debt maturities

Key indicators

Exhibit 2

Stora Enso Oyi [1]

	Dec-17	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22 [2]	next 12 to 18 months [3]
Revenue (USD billion)	$11.3	$12.4	$11.3	$9.8	$12.0	$12.1	$11.2-$12.1
EBITDA Margin %	15.1%	17.5%	18.5%	17.9%	20.0%	23.1%	17%-18%
EBITDA Margin % excl. FV changes	15.9%	17.7%	14.2%	14.4%	17.0%	20.8%	17%-18%
RCF / Debt	21.9%	27.8%	22.2%	12.5%	28.8%	35.9%	21%-29%
(RCF - CAPEX) / Debt	4.5%	14.4%	7.9%	-1.4%	12.3%	18.6%	-8%-5%
FCF / Net debt	7.4%	10.9%	14.7%	7.2%	16.1%	8.4%	-8%-7%
Debt / EBITDA	2.8x	2.4x	2.6x	3.5x	2.2x	1.7x	2.2x-2.5x
Debt / EBITDA excl. FV changes	2.6x	2.4x	3.4x	4.4x	2.6x	1.8x	2.2x-2.5x
EBITDA / Interest Expense	7.6x	9.7x	10.7x	10.2x	14.7x	19.4x	11x-13x

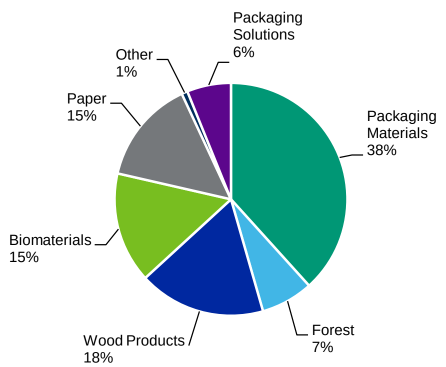
[1] All ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. FV: Fair Value changes in Forest assets.
[2] 2022 numbers are based on preliminary results, not audited financial statements.
[3] Forward view represents our view, not the view of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Investors Service estimates

Profile

Headquartered in Helsinki, Finland, Stora Enso Oyj is among the world's largest paper and forest products companies, with sales of around €11.7 billion in 2022. Its fairly broad portfolio comprises production of paper-based packaging, pulp and wood products. Stora Enso had a market capitalisation of around €12.3 billion as of 6 February 2023, and its shares are listed on the Helsinki Stock Exchange and the Stockholm Stock Exchange. As of 31 December 2022, Solidium Oy, which is 100% owned by the Finnish state, was the company's single-largest shareholder, with a 10.7% stake, followed by Foundation Asset Management, with a 10.2% interest. Stora Enso has around 21,800 employees worldwide and generates about three-quarters of its revenue in Europe.

Exhibit 3

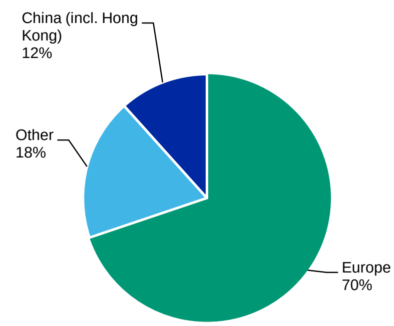
Revenue breakdown by product (2022)



Source: Company

Exhibit 4

Revenue breakdown by geography (2021)



Source: Company

Detailed credit considerations

Sizeable scale and broad product diversification, with a number of leading positions globally and good vertical integration

With sales of around €11.7 billion for 2022, Stora Enso is among the world's largest paper and forest products companies. While traditionally focused on the fairly mature European market, the company has an operational footprint in all of the world's major regions and has shifted its production towards paper-based packaging, pulp and wood products. It has also built one of the widest product portfolios among the paper and forest products companies that we rate, with a number of leading positions in its five segments:

» **Packaging Materials** (38% of revenue and 32% of operational EBIT for 2022): It covers all major consumer board and containerboard categories, with a growing focus on stable and profitable liquid packaging boards and food service boards. With 4.6 million tonnes delivered for 2022, Stora Enso is among the leaders in consumer board products in Europe, competing primarily with Metsa Board Corporation (Baa2 stable), BillerudKorsnas and Iggesund. In containerboard products, it primarily competes with Mondi Plc (Baa1 stable), International Paper Company (Baa2 stable), WRKCo Inc. (Baa2 stable), Saica and Prinzhorn.

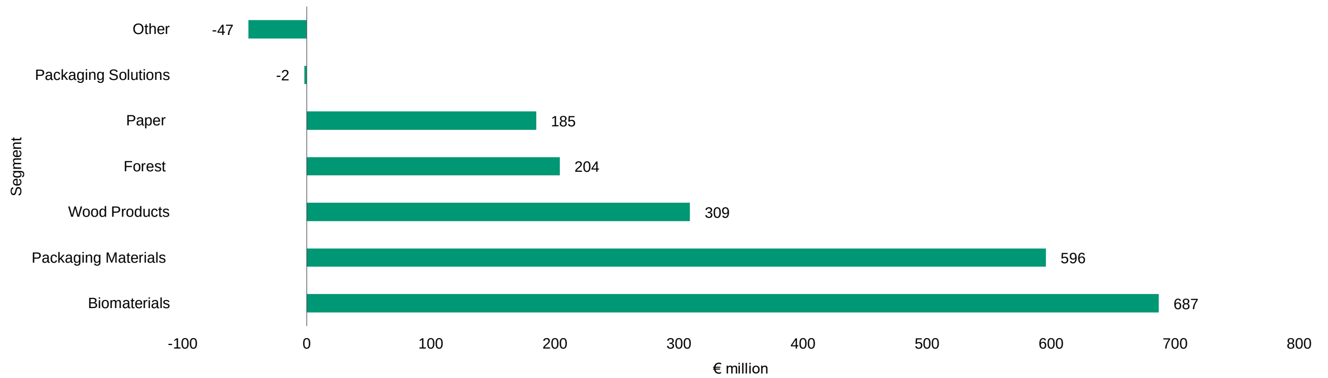
» **Packaging Solutions** (6% and 0%): It had an annual production of around 0.8 million square metres of corrugated packaging and 0.8 million square metres of corrugated packaging deliveries for 2022. Although Stora Enso's packaging business is clearly smaller than that of the European leaders, such as Smurfit Kappa Group plc (Baa3 stable) and DS Smith, the company already has leading positions in its core regions (the Nordic countries, the Baltic countries and Poland), where its key assets are located, thereby benefiting from low transport costs. The acquisition of De Jong Packaging Group (De Jong) will increase production capacity to more than 2 million square metres and further enhance Stora Enso's European market presence in corrugated packaging, providing an entry into the Netherlands, Belgium, Germany and the UK.

» **Biomaterials** (15% and 36%): It primarily includes one of the industry's broadest portfolios of unbleached and bleached hardwood and softwood pulp, as well as fluff pulp used in hygiene products. With an annual production capacity of around 5.9 million tonnes in 2022, Stora Enso is among the world's top 10 pulp producers. However, around two-thirds of the production volume is consumed internally.

» **Wood Products** (18% and 16%): It mostly includes the supply of sawn goods in which Stora Enso is the European market leader. Stora Enso is also a pioneer in various building components and systems.

» **Forest**(7% and 11%): This division, which started operations in the beginning of 2020, includes Stora Enso's Swedish forest assets and the 41% share of Tornator, with most of its forest assets located in Finland. Stora Enso is currently one of the biggest private forest owners in the world. The division also includes wood supply operations in Finland, Sweden, Russia and the Baltic countries. The division's key focus areas are sustainable forest management, competitive wood supply to Stora Enso's mills and forest products innovation.

Exhibit 5
Operational EBIT breakdown by segment (2022)



Data as reported and defined by Stora Enso.
Source: Company

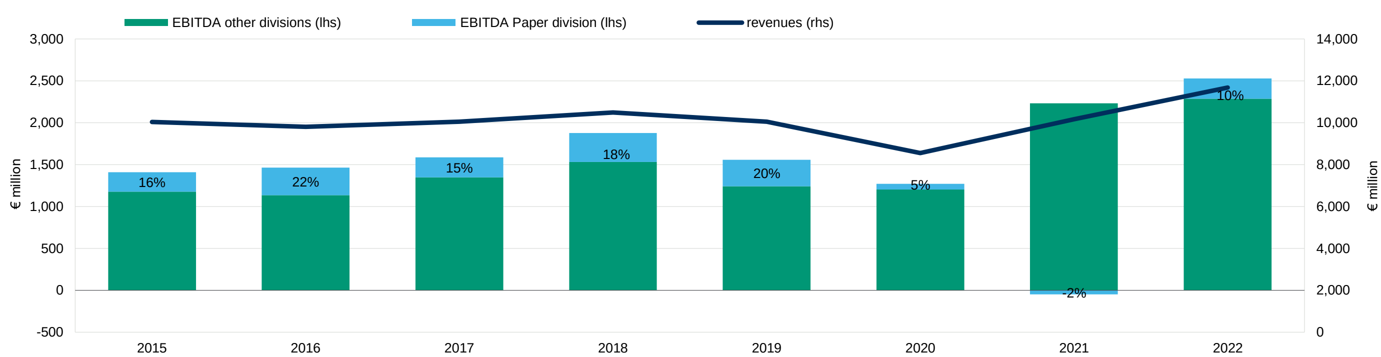
Stora Enso's Baa3 issuer rating also reflects the company's fairly good level of vertical integration into wood, energy and pulp. Stora Enso achieved around 75% energy self-suffiency in 2022 (excluding divested paper assets and including the impact of the Olkiluoto 3 [OL3] power plant) and directly or indirectly owned one of the largest areas of forest land within the peer group of European forest products companies (more than 2 million hectares, valued at around €8.1 billion as of December 2022), enabling it to internally cover some of the group's wood needs. The company has also hedged 80% of its energy needs for 2023. Stora Enso's paper and containerboard production is also well integrated into pulp, and the company is long on pulp at the group level, which is an advantageous position at times when pulp prices are rising and are at a high level.

Track record of successful and continued transformation beyond the structurally declining graphic paper market, shifting growth focus to eco-friendly and circular solutions

One of the key factors supporting Stora Enso's Baa3 issuer rating is its successful and ongoing business transformation beyond graphic paper, the demand for which is subject to an average secular decline of 5%-6% per year across all major grades, driven by digital substitution, although the rate of decline will continue to vary depending on the grade and the phase of the general business cycle. To reflect this demand trend, during the last 15 years until December 2022, Stora Enso closed or converted an annual production capacity of around 8.7 million tonnes of graphic paper. More recently, Stora Enso has ceased production in its 1.1 million tonnes of coated wood-free production capacity at its Oulu mill, and completed the conversion to 0.45 million tonnes of kraftliner whilst modified its Oulu pulp mill production to 0.55 million tonnes of unbleached softwood pulp followed by the disposal of the Maxau and Nymölla paper sites with total capacity of 1 million tonnes. As a result, the proportion and importance of the company's graphic-grade paper products will further decline to less than 10% of the group's revenue and EBITDA (as defined by Stora Enso) for 2023 from nearly 50% in 2012. Additionally, during that period, Stora Enso's EBITDA almost doubled, although the group's revenue remained mostly flat because paper volume continued to decline. Stora Enso has also dissolved its paper business since January 2023. The Langerbrugge and Anjala sites, retained by Stora Enso, are reported as part of the Packaging Materials segment going forward.

Exhibit 6

The relative importance of businesses with structural growth in Stora Enso's EBITDA generation has significantly increased



Data as defined and reported by Stora Enso.
Source: Company

To further diversify beyond graphic paper, Stora Enso has focused on growth areas of packaging, wood products and biomaterials, which support its environmentally responsible approach and provide circular solutions. We generally view this diversification as credit positive, given their positive industry fundamentals with underlying demand growth normally ranging between 2% and 4% and occasionally up to 10% per year depending on the product. Furthermore, megatrends, such as urbanisation, growing shift to e-commerce, higher ecological awareness and sustainability, add to underlying growth prospects. We expect Stora Enso's packaging business to be the main driver of the envisaged transformation benefiting from high demand for plastic-free and eco-friendly circular packaging, along with a wide spectrum of available investment options and leading market positions. Pulp innovations and building solutions through wood products are also likely to contribute significantly through their high-growth end-product markets where Stora Enso can leverage its proprietary technologies and value proposition.

However, some of these businesses are subject to volatile pricing, which may translate into volatility in Stora Enso's credit metrics. Some of Stora Enso's end markets are cyclical, and even when demand is growing, there are periods of oversupply because new capacity coming to the market can be sizeable at times, exceeding demand growth. However, the company's broad product portfolio, which addresses a number of end markets (including the more stable food and hygiene products markets), serves as a mitigating factor.

Accelerating growth and diversification towards paper packaging through inorganic growth

In January 2023, Stora Enso completed the acquisition of corrugated packaging producer De Jong. Founded in 1996, De Jong is one of the largest corrugated packaging producers in the Benelux countries. The company specialises in corrugated trays and boxes mainly for fresh products, e-commerce and industry. De Jong is also active in containerboard production. With sales of around €1 billion in 2022, De Jong has 17 sites in the Netherlands, Belgium, Germany and the UK, and employs around 1,300 people.

Stora Enso has paid an enterprise value of €1.02 billion, including the transfer of lease liabilities amounting to €250 million, which represents a multiple of 8.9x EBITDA pre-synergies. The transaction was closed in January 2023, and was financed with existing liquidity and bilateral loan arrangements. Stora Enso may in 2024 make a maximum additional earnout payment in cash of €45 million, subject to De Jong achieving certain earnings thresholds. The acquisition will enhance Stora Enso's European market presence in corrugated packaging, and provides an entry into the Netherlands, Belgium, Germany and the UK.

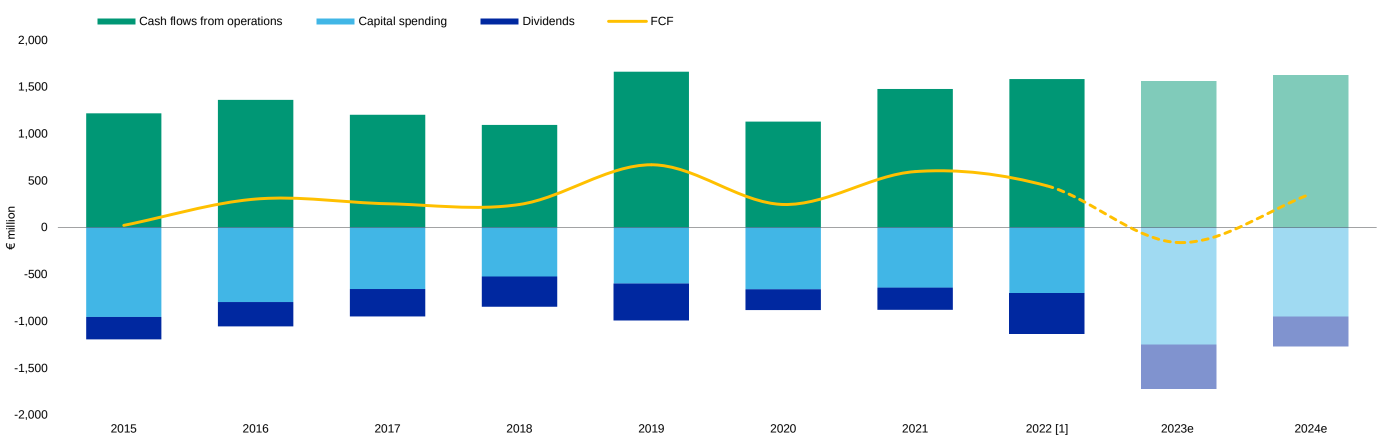
De Jong will be integrated within Stora Enso's Packaging Solutions division and will increase its corrugated packaging capacity by around 150%, including De Jong's ongoing expansion projects, to more than 2000 million square metres. The investment in De Jong also demonstrates the continued execution of the company's strategy of moving away from graphic paper, including the divestment of paper assets, and investing in renewable paper packaging, which provides an improved basis for a higher degree of earnings stability in the future. The acquisition will add around €115 million of EBITDA to the group without taking into account any synergies and expansion projects, leading to incremental EBITDA contribution of €70 million by 2025. Stora Enso has started a feasibility study at its paper production site in Langerbrugge, Belgium, for the conversion of one of the two paper lines into a high-volume recycled containerboard line. If Stora Enso decides to proceed with the conversion, further synergies will be possible.

FCF will decline because of high transformation capital spending

Stora Enso's capital spending substantially increased to more than €700 million per year between 2013 and 2016 from around €500 million per year until 2012. This led to a period of lower FCF because the company had not cut dividends to support its investments. This spending included a number of projects: among the most recent and notable ones are the conversion of the mill in Varkaus, Finland, from graphic-grade paper into kraftliner and the construction of a new consumer board machine in Beihai, China, both of which have been fully ramped up. Thus, the execution risks related to those projects have significantly reduced.

Exhibit 7

Stora Enso is likely to continue to generate significant FCF, after temporarily turning FCF negative in 2023 in the context of high capital intensity related to its strategic investments



[1] 2022 numbers are based on preliminary results, not audited financial statements.
The forward view is our view, not the view of the issuer.
Data as defined by us, but without our adjustments.
Sources: Company and Moody's Financial Metrics™

The company also converted its mill in Oulu, Finland, in 2020, which produced around 1 million tonnes of coated fine paper, into around 450,000 tonnes of virgin fibre-based kraftliner and modified its local pulp production to 550,000 tonnes of unbleached softwood pulp, with an estimated value of around €350 million.

Stora Enso's FCF improved significantly in 2021 and 2022, with Moody's-adjusted FCF of €478 million and €370 million, respectively, compared with €268 million in 2020. The main driver of the improvement in FCF was higher profitability, partly offset by significant working capital consumption, particularly during 2022. We expect FCF to turn negative in 2023 as a result of the significant increase in capital spending towards strategic transformation projects.

In the context of its strategic transformation, Stora Enso announced, in October 2022, its plans to convert its idle paper machine at its Oulu site in Finland into a high-volume consumer board production line for folding box board and coated unbleached kraft. The project's €1 billion capital investment over 2022-25 will increase the company's Packaging Materials division's total annual capacity by 750,000 tonnes of consumer board. The company expects production on the converted machine to begin around early 2025. The investment will significantly strengthen Stora Enso's global market position in renewable packaging and improve its profitability. It will also reduce the company's market pulp position by 250,000 tonnes, which will effectively reduce earnings volatility. The main end markets for the new consumer board line are food and beverage packaging, especially frozen and chilled, and dry and fast food mainly in Europe and North America. Stora Enso's management expects the new consumer board line to be among the most cost-efficient assets and to generate annual sales of around €800 million, with profitability target aligned with that of its Packaging Materials division. We expect the investment to be financed by excess liquidity and cash flow for 2022-25.

Financial policies commensurate with an investment-grade rating, demonstrated by net leverage commitment

We expect Stora Enso to operate with Moody's-adjusted debt/EBITDA of around or below 3.5x (including significant forest holdings), which is consistent with a Baa3 rating. Stora Enso has also stated that an investment-grade rating is an important element in its financing strategy. However, because the company is currently operating well below its net debt/operational EBITDA ceiling of 2.0x (as defined by Stora Enso, compared with 0.7x in 2022 and 1.1x in 2021), we see a temporary re-leveraging risk in the context of its strategic investments towards paper packaging in the form of either organic or inorganic growth. Nevertheless, we expect Stora Enso to operate with capacity under the ceiling; in the case of extraordinary debt-funded growth, we expect the company to focus on leverage reduction to regain the capacity within reasonable time because of its strong cash flow generation capabilities and track record of repaying debt from generated cash. Furthermore, we also expect Stora Enso to be prepared to divest non-core assets to restore leverage in line with the target.

Stora Enso's operating performance improved significantly in 2022 on the back of a favourable pricing environment in all of its segments, particularly in paper and biomaterials, partially offset by lower volumes and input cost inflation. Driven by robust global demand, revenue increased by 15% to €11.7 billion in 2022 while successful selling price increases offset rising input costs. The segments Biomaterials and Packaging Materials maintained their strong momentum in 2022 fuelled by solid demand and high pricing level. The Paper segment delivered significantly improved profitability as a result of favourable market conditions for Stora Enso's products.

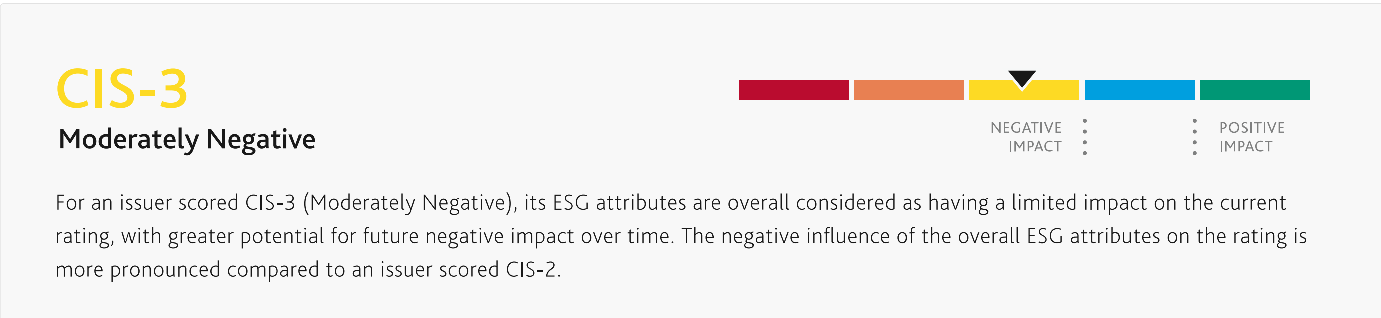
Improving operating performance and stronger profitability with EBITDA margin increasing to 23.1% in 2022, from 20% in 2021, contributed to a significant reduction in leverage, with Moody's-adjusted debt/EBITDA declining to 1.7x in 2022, from 2.2x in 2021, positioning Stora Enso strongly in the Baa3 rating category. Supported by a solid operating performance fully offsetting significant working capital consumption and high capital spending intensity, Stora Enso generated solid FCF of €370 million in 2022, compared with €478 million in 2021. We expect credit metrics to weaken towards a more sustainable level during 2023 as a result of softening demand for most its product segments, more particularly for wood products, combined with lower pulp prices because of new capacity in Latin America and persisting input cost inflation, leading to Moody's-adjusted debt/EBITDA increasing towards 2.5x and a Moody's-adjusted EBITDA margin of around 18% in 2023. However, Stora Enso's strengthened business profile provides a good basis for a higher degree of performance stability and a rising likelihood that credit metrics could meet the requirements for the Baa2 rating category in the next 12-18 months.

While we also expect Stora Enso to prioritise growth investments to further diversify beyond graphic paper, extraordinary shareholder distributions cannot be entirely excluded if the company does not find a better use of excess cash and continues to operate below its leverage ceiling for a prolonged period. However, given a robust pipeline of potential projects, some of which are sizeable, such a scenario is currently unlikely. Additionally, so far, management's track record with regard to shareholder distributions has been conservative. Stora Enso's dividend policy is to distribute 50% of earnings per share excluding fair valuation over the cycle. The company distributed total dividends of €434 million for 2021, and we expect dividend distribution of around €470 million for 2022.

ESG considerations

Stora Enso Oyj's ESG Credit Impact Score is Moderately Negative CIS-3

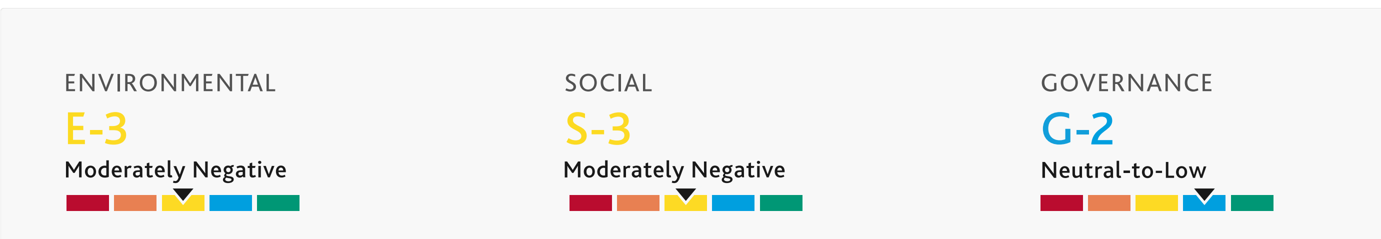
Exhibit 8
ESG Credit Impact Score



Source: Moody's Investors Service

Stora Enso's ESG Credit Impact Score is Moderately negative (**CIS-3**), reflecting the company's moderate environmental and social risk scores supported by a low governance risks.

Exhibit 9
ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

Environmental risks are considered to be moderately negative, which reflects the industry's general exposure to environmental risks. The company's environmental risks are mitigated to a degree by its commitment to reduce carbon emissions, water usage and waste in its manufacturing process.

Social

Social risks are moderately negative, driven by the industry-wide exposure to health & safety and human capital risks, while the company has neutral to low exposure to customer relations, responsible production and demographic and societal trends. The divestment of graphic paper assets along with increased exposure to paper packaging further mitigates Stora Enso's social risks with regards to demographic and societal trends.

Governance

Governance risks are neutral to low. This reflects Stora Enso's conservative financial policies, a well-established governance structure and a high degree of board independence.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

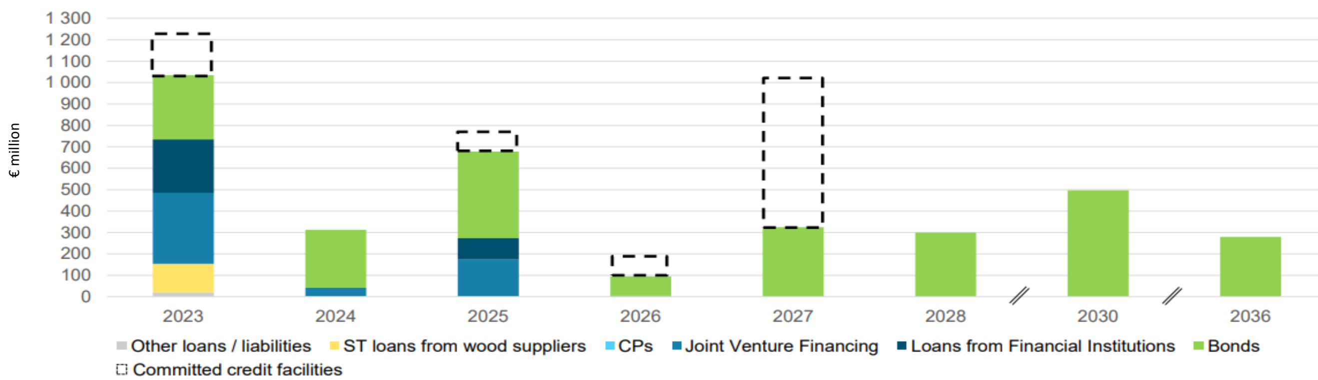
Liquidity analysis

Stora Enso's liquidity is excellent, benefiting from around €1.9 billion of cash and cash equivalents on its balance sheet as of December 2022, further supplemented by an undrawn €700 million syndicated revolving credit facility maturing in 2027, along with €400 million committed credit facilities that were fully undrawn over the same period. The syndicated revolving credit facility is of high quality, containing neither covenants nor a Material Adverse Change clause. It is linked to sustainability targets and has a one-year extension option.

We expect these sources to be sufficient to cover Stora Enso's liquidity needs, as well as weather any intra-year cash flow seasonality. As of December 2022, the company reported around €1.2 billion in short-term debt, including about €150 million from forest owners' deposits, which are long term in nature.

Exhibit 10

Stora Enso's maturity profile
As of the end of December 2022



Committed credit facilities are fully undrawn and mature in 2023 (€200 million) and 2027 (€700 million). A €100 million undrawn bank loan matures in 2025 and another €100 million undrawn bank loan matures in 2026.
Source: Company

Structural considerations

Stora Enso's financing structure is relatively complex. It consists of debt issued by the holding entity, Stora Enso Oyj, constituting around 75% of consolidated debt (including the Baa3-rated bonds) and debt sitting at operating subsidiaries, such as local financing in China and project financing related to the 50-50 pulp joint ventures in Latin America. While debt at operating subsidiaries is relatively sizeable, potentially creating a structural subordination issue for the bonds issued by Stora Enso Oyj, a downward notching of the bonds is not warranted because the debt at the operating subsidiaries is amortising and its proportion has gradually reduced; Stora Enso Oyj is also an operating entity and a significant cash flow contributor to the group, generating around half of the group's cash flow from operations in 2022; and our decision to not notch the bonds down is supported by Stora Enso's relatively low chances of default, taking into account its investment-grade rating.

Methodology and scorecard

We use our global Paper and Forest Products rating methodology, published in December 2021, as the primary methodology for analysing Stora Enso. Our scorecard indicated outcome also takes into account significant forest holdings that lead to a notch uplift for Stora Enso. The scorecard indicates an A3 outcome (Baa1 before notching adjustments) for our current view and a Baa2 outcome (Baa3 before notching adjustments) for our 12-18-month forward view, which is one notch above the actual assigned rating of Baa3.

The main reason for the notching difference is the fact that Stora Enso's strong operating performance has been achieved in a fairly benign operating environment along with higher expected capital intensity as a result of the growth projects that will negatively weigh on (RCF-Capex)/Debt factor.

Exhibit 11

Rating factors

Stora Enso Oyj

Paper and Forest Products Industry Grid [1][2]	Current FY 12/31/2022 [3]		Moody's 12-18 Month Forward View As of 2/6/2023 [4]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Revenue (USD Billion)	$12.1	Baa	$11.2 - $12.1	Baa
Factor 2 : Business Profile (30%)				
a) Product Line Diversification	A	A	A	A
b) Geographic and Operational Diversification	Baa	Baa	Baa	Baa
c) Market Position, Cyclicality and Growth Potential	Baa	Baa	Baa	Baa
Factor 3 : Profitability and Efficiency (15%)				
a) EBITDA Margin	23.1%	Baa	17% - 18%	Ba
b) Fiber and Energy Flexibility and Cost	Baa	Baa	Baa	Baa
Factor 4 : Leverage and Coverage (30%)				
a) RCF / Debt	35.9%	A	21% - 29%	Baa
b) (RCF - CAPEX) / Debt	18.6%	Baa	-8% - 5%	Caa
c) Debt / EBITDA	1.7x	A	2.2x - 2.5x	Baa
d) EBITDA / Interest	19.4x	A	11x - 13x	Baa
Factor 5 : Financial Policy (15%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Rating:				
Indicated Outcome before Notching Adjustments		Baa1		Baa3
Notching Adjustments		1.0		1.0
a) Scorecard-Indicated Outcome		A3		Baa2
b) Actual Rating Assigned				Baa3

[1] All ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of 31 December 2022.
[3] FY 2022 numbers are based on preliminary results, not audited financial statements.
[4] Forward view represents our view, not the view of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Investors Service estimates

Ratings

Exhibit 12

Category	Moody's Rating
STORA ENSO OYJ	
Outlook	Positive
Issuer Rating	Baa3
Senior Unsecured	Baa3
Other Short Term	(P)P-3

Source: Moody's Investors Service

Appendix

Exhibit 13

Peer comparison

	Stora Enso Oyj Baa3 Positive			UPM-Kymmene Baa1 Stable			Smurfit Kappa Group plc Baa3 Stable			Sappi Limited Ba2 Positive		
(in USD million)	FYE Dec-20	FYE Dec-21	FYE Dec-22 [1]	FYE Dec-20	FYE Dec-21	LTM Sep-22	FYE Dec-20	FYE Dec-21	LTM Jun-22	FYE Sep-20	FYE Sep-21	FYE Sep-22
Revenue	$9,762	$12,026	$12,147	$9,793	$11,612	$12,108	$9,736	$11,958	$13,324	$4,609	$5,265	$7,296
Operating Profit	$1,056	$1,783	$2,257	$945	$1,564	$1,924	$1,008	$1,265	$1,617	$4	$173	$945
EBITDA	$1,746	$2,409	$2,805	$1,485	$2,117	$2,438	$1,640	$1,918	$2,273	$330	$513	$1,258
Total Debt	$6,558	$5,054	$4,657	$3,187	$3,594	$6,156	$5,052	$4,986	$4,631	$2,633	$2,686	$2,146
Cash & Cash Equivalents	$2,032	$1,684	$1,994	$2,105	$1,660	$1,559	$1,090	$972	$504	$279	$366	$780
EBIT / Interest Expense	6.1x	10.7x	15.6x	17.5x	32.6x	27.6x	5.4x	7.6x	9.3x	0.1x	1.3x	8.0x
Debt / EBITDA	3.5x	2.2x	1.7x	2.0x	1.8x	2.8x	2.9x	2.7x	2.2x	8.0x	5.2x	1.7x
RCF / Net Debt	18.1%	43.2%	62.8%	44.3%	40.1%	31.6%	29.5%	28.1%	33.5%	11.2%	16.3%	82.9%
FCF / Debt	5.0%	10.8%	8.3%	-22.9%	-30.2%	-45.9%	10.5%	4.6%	0.9%	-2.2%	0.5%	24.9%

All ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[1] FY 2022 numbers are based on preliminary results, not audited financial statements.
Source: Moody's Financial Metrics™

Exhibit 14

Reconciliation of Moody's-adjusted EBITDA
Stora Enso Oyj

(in EUR million)	FYE Dec-17	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22 [1]
As Reported EBITDA	**1,405.0**	**1,829.0**	**1,901.0**	**1,528.0**	**2,247.0**	**2,516.0**
Pensions	0.0	-1.0	-1.0	1.0	-2.0	0.0
Leases	98.0	96.0	0.0	0.0	0.0	0.0
Securitization	10.4	9.2	4.3	0.9	1.3	0.0
Unusual Items	65.0	79.0	184.0	0.0	-67.0	0.0
Non-Standard Adjustments	-66.0	-181.0	-229.0	0.0	-143.0	181.0
Moody's Adjusted EBITDA	**1,512.4**	**1,831.2**	**1,859.3**	**1,529.9**	**2,036.3**	**2,697.0**

As reported, EBITDA is as defined by us (pretax income plus interest expense plus depreciation and amortisation).
[1] FY 2022 numbers are based on preliminary results, not audited financial statements.
Source: Moody's Financial Metrics™

Exhibit 15

Moody's-adjusted debt
Stora Enso Oyj

(in EUR million)	FYE Dec-17	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22 [1]
As Reported Total Debt	**3,016.0**	**3,344.0**	**4,193.0**	**4,756.0**	**3,938.0**	**3,972.0**
Pensions	353.0	376.0	431.0	449.0	322.0	322.0
Securitization	355.0	240.0	255.0	155.0	184.0	184.0
Non-Standard Adjustments	-41.0	-81.0	-70.0	0.0	0.0	0.0
Moody's Adjusted Total Debt	**4,204.6**	**4,435.5**	**4,809.0**	**5,360.0**	**4,444.0**	**4,478.0**

[1] FY 2022 numbers are based on preliminary results, not audited financial statements.
Source: Moody's Financial Metrics™

Exhibit 16

Overview of Moody's-adjusted financial data

Stora Enso Oyj

(in EUR million)	FYE Dec-17	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22 [1]
INCOME STATEMENT						
Revenue	10,045	10,486	10,055	8,553	10,164	11,680
EBITDA	1,512	1,831	1,859	1,530	2,036	2,697
EBIT	947	1,284	1,313	914	1,487	2,170
Interest Expense	198	189	174	151	138	139
BALANCE SHEET						
Cash & Cash Equivalents	607	1,130	876	1,661	1,481	1,917
Total Debt	4,205	4,436	4,809	5,360	4,444	4,478
Net Debt	3,598	3,306	3,933	3,699	2,963	2,561
CASH FLOW						
Funds from Operations (FFO)	1,212	1,556	1,462	894	1,516	2,043
Cash Flow From Operations (CFO)	1,288	1,275	1,657	1,237	1,447	1,582
Capital Expenditures	(731)	(593)	(686)	(746)	(732)	(778)
Dividends	292	323	394	223	237	434
Retained Cash Flow (RCF)	920	1,233	1,068	671	1,279	1,609
RCF / Debt	21.9%	27.8%	22.2%	12.5%	28.8%	35.9%
(RCF - CAPEX) / Debt	4.5%	14.4%	7.9%	-1.4%	12.3%	18.6%
Free Cash Flow (FCF)	265	359	577	268	478	370
FCF / Debt	6.3%	8.1%	12.0%	5.0%	10.8%	8.3%
PROFITABILITY						
% Change in Sales (YoY)	2.5%	4.4%	-4.1%	-14.9%	18.8%	14.9%
EBIT margin %	9.4%	12.2%	13.1%	10.7%	14.6%	18.6%
EBITDA margin %	15.1%	17.5%	18.5%	17.9%	20.0%	23.1%
INTEREST COVERAGE						
EBIT / Interest Expense	4.8x	6.8x	7.6x	6.1x	10.7x	15.6x
EBITDA / Interest Expense	7.6x	9.7x	10.7x	10.2x	14.7x	19.4x
LEVERAGE						
Debt / EBITDA	2.8x	2.4x	2.6x	3.5x	2.2x	1.7x
Net Debt / EBITDA	2.4x	1.8x	2.1x	2.4x	1.5x	0.9x

[1] FY 2022 numbers are based on preliminary results, not audited financial statements.
All ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Source: Moody's Financial Metrics™

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