

Rating object	Rating information	
Stora Enso Oyj Creditreform ID: 400987968 Incorporation: 1998 Based in: Helsinki, Finland Main (Industry): Packaging materials, , Pulp, Biomaterials, Wood products and Paper CEO: Annica Bresky <u>Rating objects:</u> Long-term Corporate Issuer Rating: Stora Enso Oyj Long-term Local Currency (LT LC) Senior Unsecured Issues, Issued by Stora Enso Oyj	Corporate Issuer Rating: BBB / stable	Type: Initial rating Unsolicited Public rating
	LT LC Senior Unsecured Issues: BBB / stable	Other: n.r.
	Rating date: 04 March 2021 Monitoring until: withdrawal of the rating Rating methodology: CRA "Corporate Ratings" CRA "Non-Financial Corporate Issue Ratings" CRA "Rating Criteria and Definitions" Rating history: www.creditreform-rating.de	

Summary

Company

Stora Enso Oyj hereinafter also referred to as - "the Company" - is the parent Company of the Stora Enso Group – hereinafter also referred to as "Stora Enso" or "the Group" - and is one of the leading providers of renewable products in packaging, biomaterials, wooden construction and paper. Additionally it is one of the largest private forest owners in the world. It is now in the last stages of finalizing its long restructuring process from a traditional paper and board producer, to a Group providing renewable products and solutions for products that are currently based on finite resources and have a large carbon footprint. The corporate structure consists out of six divisions; Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest, and Paper. The Company is headquartered in Helsinki, Finland and its shares are listed on the Helsinki and Stockholm stock exchanges.

During the business year 2021 the Group generated revenues of EUR 10,164 million (2020: EUR 8,553 million) EBITDA of EUR 1,941 million (2020: EUR 1,163 million), EBIT of EUR 1,385 (2020 EUR 619 million) and net profit of EUR 1,266 million (2020: EUR EUR 626 million)

Rating result

The current rating attests Stora Enso Oyj a highly satisfactory level of creditworthiness, representing a low-to medium default risk. The main positive factors contributing to the rating result are the Group's leading market position, its high degree of diversification and its strong financial profile with strong cash flow generation and high deleveraging capabilities. Additionally, the Group has successfully changed its strategic growth focus from the paper market, which is in structural decline, to growth markets in renewable packaging, sustainable wood-based solutions, and bio-based solutions to replace fossil-based and hazardous materials.

These factors are in part offset by the Group's high exposure to fluctuations in input costs. Despite the fact that approximately one third of fiber supply comes from own forest assets and that the majority of electricity needs are covered by the Group's own production, fluctuations in these commodities significantly impact the Group's financial performance. Additionally, the market price development of other input costs such as logistics and commissions, chemicals and fillers as well as other costs also impact the Group's performance. The high exposure to these price fluctuations currently are a limiting factor for the rating.

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Further negative pressure on the rating is caused by the current geopolitical situation with regard to the war in Ukraine, the heightened geopolitical tensions between the European Union and the Russian Federation and the current sanctions in place. It is currently difficult for us to assess the precise economic implications. However, due to the fact that approximately 3% of the Group's external sales, 1% of its operating capital and approximately 10% of its wood procurement takes place in Russia we believe the impact of the Group will remain somewhat limited for the time being, assuming there is no significant escalation.

Outlook

The one-year outlook for the rating is stable. This assessment is based on the current demand in the Group's business divisions. At the end of 2021 all of the Group's businesses were fully booked in the first quarter of the year. Additionally, the Company expects to generate operating EBIT in line with last years results.

We do not currently derive any immediate material impact, but see an increased risk of escalation regarding the geopolitical situation surrounding the war in Ukraine and the increased tensions between the European Union and the Russian Federation. These factors could have a negative impact on the Group's business development and therefore our rating assessment.

Relevant rating factors

Table 1: Financials I Source: Stora Enso Oyj Annual Report 2021, standardized by CRA

Stora Enso Oyj Selected key figures of the financial statement analysis Basis: Annual accounts and report of 31.12. (IFRS, etc.)	CRA standardized figures ¹	
	2021	2020
Sales (million EUR)	10,164	8,553
EBITDA (million EUR)	1,941	1,163
EBIT (million EUR)	1,385	619
EAT (million EUR)	1,269	617
Total assets (million EUR)	16,047	14,893
Equity ratio (%)	56.11	50.94
Capital lock-up period (days)	61.19	56.08
Short-term capital lock-up (%)	10.00	12.88
Net total debt / EBITDA adj. (Factor)	3.32	5.55
Ratio of interest expenses to total debt (%)	2.12	2.00
Return on investment (%)	8.84	5.09

General rating factors

- + Stable financial profile
- + High degree of diversification
- + Raw material needs partially met by own production
- + Decreased dependency on paper
- + Strong market position in growth markets for renewable products

Reference:

The relevant rating factors (key drivers) mentioned in this section, are predominantly based on internal analyses, evaluations of the rating process, the derived valuations of the analysts participating in the rating and, if applicable, other rating committee members. The fundamental external sources used, are specified in the section "Regulatory requirements" and "Rules on the presentation of credit ratings and rating outlooks".

Excerpts from the financial key figures analysis 2021:

- +Sales, EBITDA, EBIT, EAT
- +Equity ratio
- + Return on Investment

-Ratio of interest expenses to total debt

General rating factors summarize the key issues that – according to the analysts as per the date of the rating – have a significant or long-term impact on the rating, whether positive (+) or negative (-).

¹ For analytical purposes, CRA adjusted the original values in the financial statements in the context of its financial ratio analysis. For example, when calculating the analytical equity ratio, deferred tax assets, goodwill (entirely or partly), and internally generated intangible assets are subtracted from the original equity, whilst deferred tax liabilities are added. Net total debt considers all balance sheet liabilities. Therefore, the key financial figures shown often deviate from the original values of the company.

- High exposure to market price changes in input costs
- Declining paper market

Current rating factors

- + Fair value increases in forest assets
- + Fair value increases of Pohjolan Voima at-equity participation
- + Strong demand in 2021 and the first quarter 2022
- + Revenues stabilized to pre-pandemic levels
- + Improvement of financial key figures following improved business development
- + Discontinuation of pulp and paper production at Kvarnsveden and Veitsiluoto
- Increased geopolitical tensions resulting from the war in Ukraine and the increased tensions between the European Union and the Russian Federation.
- Negative operating profit paper division due to restructuring and declining demand
- Decline in demand in 2020 due to COVID-19 pandemic
- Increasing energy and commodity prices

Prospective rating factors

- + Higher degree of input costs from own production
- + Successful implementation of innovative products in Biomaterials division
- + Strong economic development in Stora Enso's key markets
- + Increase in operating cash flow
- Further escalation in the war in Ukraine and tensions between EU and the Russian Federation
- Economic downturn
- Deteriorated operating cash-flow generation
- Fair value decreases leading to deterioration of financial key figures
- Increasing competition
- Wildfire, diseases or insect plagues negatively affecting forest assets

ESG-factors

CRA generally considers ESG factors (environment, social and governance) within its rating decisions. In the case of Stora Enso Oyj we have identified ESG factors with significant influence on the following categories, which is described in the sections below.

(E) Environment (S) Social (G) Governance

(E): Stora Enso has a well-defined sustainability framework and defined clear science based targets with regard to its sustainability strategy. In terms of the environment, the Group has an overall positive net CO₂ removal² from the atmosphere of 17.2 million tonnes. This is achieved through sustainable management of its forest assets, as well as its products portfolio, which focuses on substitution of fossil based products, and carbon storing.

In 2021 Stora Enso launched a new sustainability agenda. The Group targets a 50% reduction of CO₂ (Scope 1, 2, 3) emissions by the end of 2030 against the base year of 2019, and strives for a product portfolio of 100% technically recyclable products and to maintain a level of at least 96% of owned and leased lands in wood production and harvesting covered by forest certification

² As calculated by the Swedish University of Agricultural Sciences in 2021, based on its production, forest and wood use and emission figures

Current rating factors are the key factors that, in addition to the underlying rating factors, have an impact on the current rating.

Prospective rating factors are factors and possible events which – according to the analysts as of the date of the rating – would most likely have a stabilizing or positive effect (+) or a weakening or negative effect (-) on future ratings, if they occurred. This is not an exhaustive list of possible future events with potential relevance for future ratings. Circumstances can arise that are not included in the list of prospective factors whose effects are impossible to assess at the time of the rating, either because these effects are uncertain or because the underlying events are deemed unlikely to occur.

ESG factors are factors related to environment, social issues and, governance. For more information, please see the "Regulatory requirements". CRA generally takes ESG relevant factors into account, when assessing the rating object and discloses them when they have a significant influence on the creditworthiness of the rating object, leading to a change in the rating result or the outlook.

schemes. At the end of 2021 the reduction of fossil CO₂ emissions against 2019 was 14% (Scope 1 and 2).

The Group also has a green bond framework, which links the proceeds of the bond issuance to sustainability targets. In total the Group issued 7 green bonds or bilateral loans in the period between 2019 and 2021 with a total nominal amount of EUR 1,500 million. 90% of these proceeds have been allocated to sustainable forest management, 8% to renewable, low-carbon and eco-efficient products, product technologies and processes and 2% to renewable energy and waste to energy.

The EU Taxonomy is still under development and the forest industry and its main products are currently still largely out of the scope of the EU Taxonomy, which is why the categories reported on for Stora Enso Oyj with regard to the Taxonomy remain limited.

A general valid description of Creditreform Rating AG, as well as a valid description of corporate ratings for understanding and assessing ESG factors in the context of the credit rating process, can be found [here](#).

Best-case scenario: BBB+

In our best-Case scenario for one year, we assume a rating of BBB+. Such a scenario would be possible if the geopolitical tensions in Europe ease. Additionally, the Group should at least achieve performance in line with the Group's results of 2021, as well as further deleverage its financial profile.

Worst-case scenario: BB+

In our worst-Case scenario for one year, we assume a rating of BB+. Such a scenario would be possible if the geopolitical tensions in Europe would escalate and could potentially have a significantly detrimental effect on the Group's economic environment, causing its sales to decrease and input costs to increase, resulting in poor financial performance and an increase in leverage.

Business development and outlook

The direct and indirect impact caused by COVID-19 during 2020 was significant in both sales deliveries, and sales prices. Overall, Stora Enso was faced with a relatively low price environment, as well as declining market demand, which caused the Group to move lower volumes of all products than in the prior year, except containerboard, leading to significantly lower revenues and a decline in operating profit. The strongest decline was suffered by the divisions Biomaterials and Paper. The Biomaterials division was faced with significantly lower pulp sales and market prices, while the Paper division was in the restructuring process and is facing a structural decline in demand, which was exacerbated by the COVID-19 pandemic.

Table 2: The development of business of Stora Enso Oyj, standardized by CRA | Source: Annual Report 2021 and 2020

In million EUR	2021	2020	2019
Sales	10,164	8,553	10,164
EBITDA	1,941	1,163	1,694
EBIT	1,385	619	1,148
EBT	1,420	773	1,137
EAT	1,269	617	856

Please note:

The scenarios are based on information available at the time of the rating. Within the forecast horizon, circumstances may occur that could lead to a change of the rating out of the indicated range.

In 2021 Stora Enso managed to stabilize revenue to pre-pandemic levels and generated slightly higher revenue than 2019 at EUR 10,164 million (2020: EUR 8,553 million). Operating profit, as well as net earnings improved significantly against both 2020 and 2019 due to strong market dynamics. EBITDA and EBIT increased to EUR 1,941 million (2020: EUR 1,163 million) and EUR 1,385 million (2020: EUR 619 million) respectively and EAT stood at EUR 1,269 million (2020: EUR 617 million).

The Packaging Materials division increased both sales and operating profit due to ongoing high demand as well as higher sales prices achieved in containerboard. Although fixed costs were significantly higher, these were compensated for by sales price increases. The Packaging Materials division is the most important EBIT driver and generated a little over one third of the Group's operating profit adjusted by non-recurring events.

The Packaging Solutions divisions increased sales as well, but recorded lower operating profit due to very high containerboard costs and investments in innovation and service led businesses. The Biomaterials division recorded a significant increase in both sales and operational EBIT due to significantly higher pulp prices during the year. As a result, adjusted by non-recurring events the Biomaterials division also provided a little of one third to the Group's operating profit.

The Wood Products division performed well due to favorable market conditions and high sales, and the Forest division was also back to its pre-pandemic level. The Paper division continued its decline, which is mainly rooted in the restructuring of the business to make it cash-flow positive in the future. Adjusted by fair-value changes and non-recurring events the Packaging Materials division, Biomaterials and Wood Products were the most important drivers for EBIT during the business year 2021.

Due to these challenging market conditions for the paper market, the Group continued its restructuring of the Paper division and further reduced capacity by 35% in 2021 to 2.6 million tons per year by closing their paper mills at Kvarnsveden and Veitsiluoto in Sweden and Finland. In August 2021 Stora Enso divested its Sachsen paper Mill in Germany, but will continue to sell and distribute its paper products under a contract manufacturing agreement for 18 months after closure of the transaction. The site closures of Veitsiluoto and Kvarnsveden, and the Oulu conversion for production of packaging board had a negative effect of EUR 434 million on revenues.

Table 3: Development of sales and operating profit development adjusted by non-recurring events and fair value changes of the Group's divisions before consolidation adjustments | Source: Annual report Stora Enso Oyj 2021

In million EUR	Sales			Operational EBIT		
	2021	2020	2019	2021	2020	2019
Packaging Materials	3,898	3,115	3,254	556	403	339
Packaging Solutions	723	594	698	26	33	46
Biomaterials	1,728	1,193	1,464	495	8	233
Wood Products	1,872	1,386	1,569	410	160	153
Forest	2,311	2,046	2,321	267	162	99
Paper	1,703	1,979	2,856	-124	-38	213
Other	1,092	928	1,076	-48	-35	-32

It is in the nature of the Group's business model to have deviations in the Group's earnings driven by fair value changes. Particularly in its forest assets. The Group's biological assets have significantly increased Stora Enso's earnings over recent years. There was a net positive impact of EUR 328 million (2020: EUR 412 million) on the Group's earnings in 2021, mainly due to higher market prices and increased standing stock estimates for its forest assets in Sweden, as well as

fair value increases in its Tornator at-equity investment. Further non-recurring events registered during the year by the Group amounted to EUR -354 million (2020: EUR -90 million) and predominantly concern impairments of EUR 149 million and EUR 227 million restructuring costs. The restructuring costs mainly related to the paper division. The net effect of non-recurring events including fair value changes in 2021 was EUR 40 million (2020: EUR 271 million).

The capital expenditure allocation of the Group is roughly in line with its growth strategy for the packaging, Biomaterials, and Wood Products divisions. Stora Enso invested EUR 666 million during the business year of 2021 (2020: EUR 689 million), of which approximately 50% in the Packaging Materials division, 13% in Biomaterials, 10% in Packaging Solutions, 10% in wood products, 8% in paper, 4% in biological assets, 3% in Forest, and 2% in other. The Group's capital expenditure has been stable over the last years, and for the business year of 2022 the Group expects capital expenditure to be in the range of EUR 640 – 680 million.

As a part of the Group's profit protection program in order to manage the macroeconomic uncertainties, the Group decided to reduce its planned capex in 2020 from EUR 750 million to EUR 689 million, and also in 2021 its investments were a little under the expected EUR 675 – 725 million of capital expenditure. Long reduced levels of capital expenditure may, in the long term, be the cause for losing the competitive advantage, deterioration of production facilities or causing new bottlenecks as capacity might not be able to keep up with new demand.

The Group performed well over the last years and managed to successfully reduce its dependency on the Paper division and decreased its sales percentage relative to revenue from 70% in 2006 to 14% in Q4 2021 while at the same time reducing its capacity from 12.3 million tons in 2006 to 2.6 million tons in 2021. The paper market is in structural decline, with the European paper market recording a negative CAGR of -4.6% between the period of 2008 and 2018. These effects have been exacerbated by the COVID-19 pandemic resulting from lower advertisement revenues during lockdowns, lower sales of newspapers and magazines as well as a rise in work-from-home arrangements which led to a reduction in printing revenues. The Group shifted its strategy and now focuses predominantly on growth in Packaging, Biomaterials, and Wood Products, all which are areas that are expected to grow in demand over the coming years, as demand for containerboard, consumer board as well as pulp and wooden building market overall is expected to grow over the coming years. Demand at the start of 2022 remained strong. This is partially confirmed by the fact that all divisions have been fully booked in the first quarter of 2021, and the Company expects to generate operating EBIT approximately on the same level as it did in 2021.

Structural risk

Stora Enso Oyj is the parent Company of the Stora Enso Group. It is one of the largest forestry companies worldwide, as well as an integrated paper, packaging and forest products Group. It is headquartered in Helsinki, Finland and its shares are listed on the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges. The Company issued both "A" shares and "R" shares, which entitle holders to the same dividend but carry different voting rights. Each "A" share and every 10 "R" shares entitle the holder to one vote at the shareholders meeting. As of the end of year 2021 the two largest shareholders, Solidium Oy and FAM AB, held in total 54.6% of the voting rights in the Company. Solidium Oy is a holding Company that is fully owned by the Finnish government and a minority owner in nationally important companies. Solidium holds 10.7% of the outstanding shares and 27.3% of the voting rights. FAM AB is a Swedish holding company that holds participations in a number of long-term strategic holdings. FAM AB holds 10.2% of outstanding shares and 27.3% of voting rights. We do not derive any material positive influence

on the unsolicited corporate issuer rating of Stora Enso from the indirect ownership of the Finnish government.

Stora Enso's organisational structure is comprised of six different divisions. The six divisions are Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest, and Paper. The Packaging Materials and Packaging Solutions divisions mainly focus on the sale and development of recyclable packaging materials based on both virgin and recycled fibre, as well as offering packaging services. The Biomaterials division offers a variety of pulp grades for its own production as well as to customers. Additionally it focuses on developing new solutions for biomass with new applications in order to replace fossil-based materials in a variety of industries. The Wood Products division is a leading sawn wood producer and provider of wood-based solutions for building and housing. Its product range covers all areas of construction, including massive wood elements. The Forest division focuses on sustainable forest management and contributes to the Group's value by its competitive wood supply. As of the end of 2021 the Group owned 1.14 million ha of Swedish productive Forests, a 41% interest in Tornator (0.26 million ha) in Finland and multiple large forests in other countries in the world, totalling standing stock of approximately 196 million cubic metres. The Group is one of the largest private forests owners globally. The Paper division produces paper products from recycled and virgin fibre. The Packaging divisions, Biomaterials innovations and building solutions are the areas that are focussed on growth, whereas the Forest division, the traditional wood products and Biomaterials pulp productions are the foundation of the Group. Over the last years, Stora Enso significantly reduced its dependency on its paper division by reducing its capacity and selling uncompetitive production units. The Paper Division has now largely finalized its restructuring process and expects it to contribute positively to profitability and cash-flow generation.

The day to day management of the Group is overseen by the Group's CEO, Annica Bresky, and the Group Leadership Team ("GLT"). The GLT is chaired by the Group's CEO, and is supported by the CFO as well as the heads of the division and support functions of Stora Enso. It supports the CEO with the day-to-day management and performance of the individual divisions. The individual heads of divisions are appointed by the CEO and are approved by the Board of Directors. The Board of Directors supervises the GLT, oversees the operation and day-to-day management of the Group and has to make decisions on significant matters relating to strategy, investments, organisation and finance. For matters that might have a large material impact on the Group, the Board of Directors is required to request prior approval of the shareholders meetings. The individual members of the Board of Directors are also appointed at the annual general meetings of shareholders.

We consider the structural risk profile of Stora Enso Oy to be low. The Group has well developed corporate governance structures, which comply with both the Finnish and Swedish corporate governance codes. Furthermore, we believe that the Company's product mix has a much better positioning than five years ago, as it now targets growth markets and is less dependent on the paper market. Additionally, we believe that the organisational structure of the Group fits well with the current strategy. We have not identified any core risks regarding the Group's structure.

Business risk

The Group has a diversified product mix, with 37% of revenues contributed by the Packaging Materials division, 17% by the Wood Products division, 16% from the Papers division, 15% by the Biomaterials division, 8% by the Forest division and 7% by the Packaging Solutions division. Its business strategy focuses on the transformation from a traditional paper and board producer to a Company providing renewable products and solutions for products that are currently based on finite resources and have a large carbon footprint. Once fully restructured, the paper

division expects to represent approximately 10% of Group revenues. All divisions report directly to the Group's CEO.

One of the largest risks Stora Enso is exposed to is fluctuations in commodity prices. As can be read from table 4, more than half of Stora Enso's cost structure in 2021 was subject to commodity and general market pricing, which can be subject to strong fluctuations depending on market capacity, demand and the overall economic situation.

Table 4. Overview of Stora Enso's cost structure relative to total cost in 2021 | Source: Stora Enso's consolidated annual report 2021 and 2020

Overview Cost Structure 2021	2021 (%)	2020 (%)
Fiber	37	32
Personnel	15	16
Logistics and Commission	11	11
Chemicals and fillers	9	9
Other	9	13
Energy	7	6
Material	6	6
Depreciation	6	7

Stora Enso seeks to mitigate the risk of price fluctuations by trying to accommodate its own needs in raw materials. Approximately 30% of its fiber needs are covered by own forest assets and long-term supply agreement and the Group has an 15.6% interest in Pohjolan Voima Oyj, a privately-owned Group of companies that produce electricity and heat for its shareholders at cost price. With this, along with additional hedging, approximately 80% of the Group's energy needs are fixed for 2022, and 70% for 2023, as well as a significant share of the Group's fiber needs, which reduces the Group's exposure to fluctuations in commodity prices. Despite these mitigating measures, relative increases of 10% in raw material prices, especially fibre could have a significant negative impact on the Group's profitability and overall financial performance.

The Group's diversification in terms of its assets is rather limited, with 71% of its assets being located in Finland and Sweden. This is however, mainly due to the Group's biological assets and forest land with a total fair value of EUR 8 billion (incl. the equity-invested 41% participation in Tornator asset). Additionally the at-equity valued holding in Pohjolan Voima Oyj, also increased considerably in price to a fair value of EUR 900 million (2020: EUR 394 million). The Group's geographical diversification profile in terms of sales is good. However, it is noteworthy that approximately 70% of its sales are generated in Europe.

We consider the business risk profile to be moderate. The Group is active within a business environment in which it is exposed to a high degree of commodity and general market price changes and it successfully tries to reduce exposure by increasing own supply of necessary commodities. We believe, however, that the growth strategy could, despite the intended increase of 10-15% in sustainable harvesting, possibly lead to more external wood sourcing and a higher degree of exposure to raw material prices. Additionally, despite its own supply of these materials, it continues to have high exposure to fluctuations in commodity prices, which could potentially be detrimental to the Group's financial stability.

Financial risk

For analytical purposes, CRA adjusted the original values in the financial statements in the context of its financial ratio analysis. The following description and indicators are based primarily on these financial ratios.

The adjusted balance sheet total of the Group has seen significant increases over the past few years to EUR 15,972 million (2020: EUR 14,893 million). This has mainly been driven by the fair value of its forest assets, particularly caused by increases in market transaction based prices for forests in Sweden. As well as a change in an accounting principle from cost to the revaluation method under IAS 16 for forestlands in 2020. It is worth noting that the Group's forest assets account for approximately 40% of the Group's balance sheet. Additionally, fair value changes with regard to its holding in Pohjolan Voima Oy, which is accounted for at-equity, also recorded a significant change in fair value over the past year resulting from higher forward electricity prices.

The fair value changes caused the Group's equity to increase, as well as due to increases in retained earnings. At the end of 2021 the Group's adjusted equity ratio stood at 56.12% (2020: 50.94%). The Group's dividend policy is to distribute approximately 50% of EPS excluding fair valuation effects on average over the long term, allowing Stora Enso to grow its equity in a sustainable manner. Following the strong results in 2021 the Board of Directors will propose a dividend for the 2021 business year of EUR 434 million. This still is awaiting approval by the AGM.

The Group's financial indebtedness stood at EUR 3,938 million (2020: EUR 4,756 million) at the end of 2021, with a well-diversified maturity profile. During the financial year EUR 940 million of financial debt was redeemed, reducing its outstanding financial debt significantly. Stora Enso has strong deleveraging capabilities, as well as upside potential for investment decisions with FFO of EUR 1,501 million (2020: EUR 933 million) and cash flow after investments and dividends of EUR 790 million (2020: EUR 224 million). This is also confirmed by other financial metrics such as net financial debt /EBITDA adj. of 3.32 (2020: 5.55), which has improved significantly due to the improvement in EBITDA, as well as the reduction in financial debt over the past year.

The Group's liquidity was strong at the end of the year with cash and cash equivalents of EUR 1,480 million, undrawn committed revolving credit facility of EUR 700 million as well as EUR 1,000 million statutory pension premium loans available and strong capital market access. Additionally, the Group had positive working capital of EUR 1,344 million (2020: EUR 1,260 million). It is the policy of the Group to have available cash and cash equivalents and undrawn committed credit facilities to cover all debt maturing within the next 12 months, including supply chain financing and factoring.

We believe the financial risk profile of the Group to be sound. This assessment is based on Stora Enso's asset and financing structure, and its strong cash generation capacity. The Company's financial needs for ongoing operations as well as the envisaged investments according to the capex plan until 2022 should be able to be covered from operating cash flow, and the Company should have further deleveraging capabilities at its disposal. The Group's debt profile is well distributed and currently disposes over sufficient liquidity.

Issue rating

The rating objects of this issue rating are exclusively the long-term senior unsecured Notes, denominated in euro, issued by Stora Enso Oyj, and which are included in the list of ECB-eligible marketable assets. The ECB list of eligible marketable assets can be found on the website of the ECB.

The notes have been issued under the EMTN program with its latest prospectus of 29 April 2021. This EMTN program amounts to EUR 4 billion. The senior Notes and coupons under the EMTN program constitute direct, unconditional, unsecured, unsubordinated obligations of the Issuer, and rank at least pari passu among themselves and with all other present and future unsecured obligations of the issuer.

Corporate issue rating result

We have provided the debt securities issued by Stora Enso Oyj. with a unsolicited corporate issue rating of **BBB** with **stable** outlook. The rating is predominantly based on the corporate rating of Stora Enso Oyj. Other types of debt instruments or issues denominated in other currencies of the issuer have not been rated by CRA. For a list of all currently valid ratings and additional information, please consult the website of Creditreform Rating AG.

Overview

Table 5: Overview of CRA Ratings | Source: CRA

Rating objects	Details	
	Date	Rating
Stora Enso Oyj.	04.03.2022	BBB / stable
Long-Term Local-Currency Senior-Unsecured Issues	04.03.2022	BBB / stable
Other	--	n.r.

Table 6: Overview of 2020 Euro Medium Term Note Program | Source: Eurogrid GmbH, Base Prospectus dated 30 April 2020

Overview 2020 EMTN Program			
Volume	EUR 4,000,000,000	Maturity	Depending on the respective bond
Issuer	Stora Enso Oyj	Coupon	Depending on the respective bond
Arranger	Citigroup	Currency	Depending on the respective bond
Credit enhancement	none	ISIN	Depending on the respective bond

All future LT LC senior unsecured Notes issued by Stora Enso Oyj with similar conditions to the current EMTN program, denominated in euros and included in the list of ECB-eligible marketable assets will, until further notice, receive the same ratings as the current LT LC senior unsecured Notes issued under the EMTN program. Notes issued under the program in any currency other than euro, or other types of debt instruments, have not yet been rated by CRA. For a list of all currently valid ratings and additional information, please consult the website of Creditreform Rating AG.

Financial ratio analysis

Table 7: Financial key ratios |Source: Stora Enso Oyj annual report 2021, structured by CRA

Asset Structure	2018	2019	2020	2021
Fixed asset intensity (%)	70.35	80.44	77.63	80.33
Asset turnover	0.96	0.79	0.59	0.66
Asset coverage ratio (%)	88.01	79.77	84.53	84.03
Liquid funds to total assets (%)	9.77	6.42	11.15	9.23
Capital Structure				
Equity ratio (%)	48.55	50.48	50.94	56.11
Short-term-debt ratio (%)	27.22	21.39	19.45	17.82
Long-term-debt ratio (%)	13.37	13.69	14.68	11.39
Capital lock-up period (in days)	48.11	48.35	56.08	61.19
Trade-accounts-payable ratio (%)	11.95	9.77	8.82	10.62
Short-term capital lock-up (%)	12.07	10.69	12.88	10.00
Gearing	0.86	0.85	0.74	0.62
Leverage	2.08	2.02	1.97	1.86
Financial Stability				
Cash flow margin (%)	13.29	9.94	8.50	13.45
Cash flow ROI (%)	12.19	7.25	4.83	8.62
Total debt / EBITDA adj.	3.52	5.88	7.18	4.20
Net total debt / EBITDA adj.	2.85	5.12	5.55	3.32
ROCE (%)	16.97	6.79	4.83	10.56
Total debt repayment period	4.51	2.30	4.79	2.90
Profitability				
Gross profit margin (%)	42.48	39.67	40.06	42.80
EBIT interest coverage	5.84	6.75	4.24	9.30
EBITDA interest coverage	8.15	9.84	7.97	13.03
Ratio of personnel costs to total costs (%)	12.53	13.37	15.00	13.13
Ratio of material costs to total costs (%)	58.02	59.92	59.55	57.71
Cost income ratio (%)	89.75	88.31	92.00	87.89
Ratio of interest expenses to total debt (%)	3.48	2.52	2.00	2.12
Return on investment (%)	10.11	7.46	5.09	8.84
Return on equity (%)	18.66	13.70	8.53	15.30
Net profit margin (%)	9.32	8.60	7.29	12.34
Operating margin (%)	11.39	11.53	7.31	13.46
Liquidity				
Cash ratio (%)	35.90	30.02	57.35	51.80
Quick ratio (%)	56.45	40.61	67.51	55.75
Current ratio (%)	108.89	91.43	115.02	110.42

Appendix

Rating history

The rating history is available under <https://www.creditreform-rating.de/en/ratings/published-ratings.html>.

Table 8: Corporate Issuer Rating of Stora Enso Oyj

Event	Rating created	Publication date	Monitoring until	Result
Initial rating	04.03.2022	www.creditreform-rating.de	Withdrawal of the rating	BBB / stable

Table 9: LT LC Senior Unsecured Issues issued by Stora Enso Oyj

Event	Rating created	Publication date	Monitoring until	Result
Initial rating	04.03.2022	www.creditreform-rating.de	Withdrawal of the rating	BBB / stable

Regulatory requirements

The rating³ was not endorsed by Creditreform Rating AG (Article 4 (3) of the CRA-Regulation).

The present rating is, in the regulatory sense, an unsolicited rating, that is public. The analysis was carried out on a voluntary basis by Creditreform Rating AG, which was not commissioned by the Issuer or any other third party to prepare the present rating.

The rating is based on the analysis of published information and on internal evaluation methods for the assessment of companies and issues. The rating object was informed of the intention of creating or updating an unsolicited rating before the rating was determined.

The rating object participated in the creation of the rating as follows:

Unsolicited Corporate Issuer / Issue Rating	
With rated entity or related third party participation	Yes
With access to internal documents	No
With access to management	No

³ In these regulatory requirements the term "rating" is used in relation to all ratings issued by Creditreform Rating AG in connection to this report. This may concern several companies and their various issues.

The rating was conducted based on the following information.

List of documents
Accounting and controlling
<ul style="list-style-type: none"> ▪ Consolidated annual report of Stora Enso 2021, 2020, 2019, 2018 ▪ Stora Enso Consolidated Q4- and Full year-Report ▪ Investor-Kit presentation March 2022 ▪ Presentation Q4 and full year 2022
Finance
<ul style="list-style-type: none"> ▪ Base Prospectus April 2021
Additional documents
<ul style="list-style-type: none"> ▪ Base Prospectus April 2021 ▪ Investor-Kit presentation March 2022 ▪ Presentation Q4 and full year 2022 ▪ Stora Enso ESG Presentation ▪ Press-releases ▪ Internet research ▪ Stora Enso Website ▪ Stora Enso ESG Presentation

A management meeting did not take place within the framework of the rating process.

The documents and information gathered were sufficient to meet the requirements of Creditreform Rating AG's rating methodologies.

The rating was conducted based on the following rating methodologies and the basic document.

Rating methodology	Version number	Date
Corporate Ratings	2.3	29.05.2019
Non-financial Corporate Issue Ratings	1.0	October 2016
Rating Criteria and Definitions	1.3	January 2018

The documents contain a description of the rating categories and a definition of default.

The rating was carried out by the following analysts:

Name	Function	Mail-Address
Rudger van Mook	Lead-analyst	R.vanMook@creditreform-rating.de
Artur Kapica	Analyst	A.Kapica@creditreform-rating.de

The rating was approved by the following person (person approving credit ratings, PAC):

Name	Function	Mail-Address
Philip Michaelis	PAC	P.Michaelis@creditreform-rating.de

On 4 March 2022, the analysts presented the rating to the rating committee and the rating was determined. The rating result was communicated to the company on 7 March 2022. There has not been a subsequent change to the rating.

The rating will be monitored until Creditreform Rating AG withdraws the rating. The rating can be adjusted as part of the monitoring, if crucial assessment parameters change.

In 2011, Creditreform Rating AG was registered within the European Union according to EU Regulation 1060/2009 (CRA-Regulation). Based on this registration, Creditreform Rating AG is allowed to issue credit ratings within the EU and is bound to comply with the provisions of the CRA-Regulation.

ESG-factors

You can find out whether ESG factors were relevant to the rating in the upper section of this rating report "Relevant rating factors".

A general valid description for Creditreform Rating AG, as well as a valid description of corporate ratings for understanding and assessing ESG factors in the context of the credit rating process, can be found [here](#).

Conflict of interests

No conflicts of interest were identified during the rating process that might influence the analyses and judgements of the rating analysts involved or any other natural person whose services are placed at the disposal or under the control of Creditreform Rating AG and who are directly involved in credit rating activities or in approving credit ratings and rating outlooks.

In the event of providing ancillary services to the rated entity, Creditreform Rating AG will disclose all ancillary services in the credit rating report.

Rules on the presentation of credit ratings and rating outlooks

The approval of credit ratings and rating outlooks follows our internal policies and procedures. In line with our "Rating Committee Policy", all credit ratings and rating outlooks are approved by a rating committee based on the principle of unanimity.

To prepare this credit rating, Creditreform Rating AG has used following substantially material sources:

Corporate issuer rating:

1. Annual report
2. Website
3. Internet research

Corporate issue rating:

1. Corporate issuer rating incl. information used for the corporate issuer rating
2. Documents on issues / instruments

There are no other attributes and limitations of the credit rating or rating outlook other than those displayed on the Creditreform Rating AG website. Furthermore, Creditreform Rating AG considers as satisfactory the quality and extent of information available on the rated entity. With respect to the rated entity, Creditreform Rating AG regarded available historical data as sufficient.

Between the time of disclosure of the credit rating to the rated entity and the public disclosure, no amendments were made to the credit rating.

The Basic Data Information Card indicates the principal methodology or version of methodology that was used in determining the rating, with a reference to its comprehensive description.

In cases where the credit rating is based on more than one methodology or where reference only to the principal methodology might cause investors to overlook other important aspects of

the credit rating, including any significant adjustments and deviations, Creditreform Rating AG explains this fact in the credit rating report and indicates how the different methodologies or other aspects are taken into account in the credit rating. This information is integrated in the credit rating report.

The meaning of each rating category, the definition of default or recovery and any appropriate risk warning, including a sensitivity analysis of the relevant key rating assumptions such as mathematical or correlation assumptions, accompanied by worst-case scenario credit ratings and best-case scenario credit ratings are explained.

The date at which the credit rating was initially released for distribution and the date when it was last updated, including any rating outlooks, is indicated clearly and prominently in the Basic Data Information Card as a "rating action"; initial release is indicated as "initial rating", other updates are indicated as an "update", "upgrade" or "downgrade", "not rated", "confirmed", "selective default" or "default".

In the case of a rating outlook, the time horizon is provided during which a change in the credit rating is expected. This information is available within the Basic Data Information Card.

In accordance with Article 11 (2) EU-Regulation (EC) No 1060/2009, a registered or certified credit rating agency shall make available, in a central repository established by ESMA, information on its historical performance data including the rating transition frequency and information about credit ratings issued in the past and on their changes. Requested data are available at the [ESMA website](#).

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