

Rating object	Rating information	
Teollisuuden Voima Oyj Creditreform ID: 400988051 Incorporation: 1969 Based in: Eurajoki, Finland Main (Industry): Electric power generation CEO: Jarno Tanhua	Corporate Issuer Rating: BBB- / stable	Type: Update Unsolicited Public rating
	LT LC Senior Unsecured Issues,; BBB- / stable	Other: n.r.
	Rating date: 27 June 2022 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	
<u>Rating objects:</u> Long-term Corporate Issuer Rating: Teollisuuden Voima Oyj Long-term Local Currency (LT LC) Senior Unsecured Issues		

Content

Summary	1
Relevant rating factors	2
Business development and outlook	4
Structural risk	5
Business risk	7
Financial risk	8
Issue rating	9
Financial ratio analysis	11
Appendix	12

Analysts

Rudger van Mook
Lead Analyst
R.vanMook@creditreform-rating.de

Natallia Berthold
Co-Analyst
N.Berthold@creditreform-rating.de

Neuss, Germany

Summary

Company

Teollisuuden voima Oyj ("TVO", "the Company") is a Finnish non-listed public limited liability company and has been active in the energy industry in Finland since its establishment in 1969. The Company produces electricity by operating two nuclear power plants (Olkiluoto 1 / OL1 and Olkiluoto 2 / OL2). The construction of its third nuclear power plant (Olkiluoto 3 / OL3) has been finalized and is currently scheduled to commence regular electricity production in December 2022. The Company operates according to the Mankala principle, i.e. its primary goal is not to make profit, but to provide its shareholders – typically companies in the energy industry and large industrial companies – with electricity for which they are charged the cost price. The Olkiluoto 3 project has commenced test production after being connected to the national grid in March 2022.

During the 2021 business year the Company managed to generate revenues of EUR 299 million (2020: EUR 275 million), EBITDA of EUR 60 million (2020: EUR 73 million) and an EAT of EUR -20 million (2020: 0 EUR). TVO's total electricity production was 14,438 GWh (2020: 14,587 GWh) corresponding to approximately 17 percent of all electricity consumed in Finland and approximately 21 percent of all electricity produced. The combined load factor of OL1 and OL2 was 92.8% (2020: 93.5%)

Rating result

The current unsolicited corporate issuer rating of **BBB-** attests a highly satisfactory level of creditworthiness to Teollisuuden Voima Oyj. TVO's business model, producing electricity only for its shareholders, and at cost price, is a key rating factor and as a result the creditworthiness of its shareholders have a considerable impact on our rating assessment. We currently consider the Company's shareholder base sufficient to support the unsolicited corporate issuer rating of **BBB-**. In the event of a default of one of its shareholders, TVO could, according to its Articles of Association, immediately cut off distribution of electricity and sell it to the party submitting the best offer. TVO's estimated average cost price for production once OL3 will commence regular electricity production will be approximately EUR 30/MWh, which is significantly below the current Finnish day-ahead area prices on the Nordpool exchange.

Construction of the OL3 power plant was subject to prolonged delays and the plant was finally connected to the grid starting electricity production on 12 March 2022. A milestone that, in our

opinion, significantly reduces risk to further delays and cost overruns for the OL3 project. However, despite this achievement regular electricity production has been postponed twice due to inspection and repair needs on the generator's cooling system as well as foreign material observed in the turbine's steam reheater. The estimated start of regular electricity production has now been postponed to December 2022. According to our understanding the amendments made to the GSA in June 2021 covered delays of regular electricity production to 30 September 2022, meaning that TVO will have to bear costs related to the OL3 plant from 30 September onwards, which is currently a dampening factor for the rating.

TVO is awarded some degree of systemic relevance as it provides approximately 17% of all energy consumed in Finland and this is expected to increase to approximately 30% after the commissioning of OL3. The OL3 power plant will also decrease Finland's electricity export needs by approximately half.

Outlook

The one-year outlook for the unsolicited corporate issuer rating of TVO is stable. This assessment is based on the fact that the OL3 plant has now been connected to the grid, and is scheduled to continue with test production at the end of July, after which it will gradually increase its test electricity production to 1,600 MW. After the test-production phase, regular electricity production can commence which will significantly reduce the Company's risk profile and contribute to stable operating performance.

Relevant rating factors

Reference:

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

Table 1: Financials I Source: Teollisuuden Voima Oyj Annual Report 2021, standardized by CRA

Teollisuuden Voima Oyj Selected key figures of the financial statement analysis Basis: Annual accounts and report of 31.12. (IFRS)	CRA standardized figures ¹	
	2020	2021
Sales (million EUR)	275	299
EBITDA (million EUR)	73	60
EBIT (million EUR)	27	16
EAT (million EUR)	0	-20
EAT after transfer (million EUR)	0	-20
Total assets (million EUR)	8,208	8,645
Equity ratio (%)	25.22	23.67
Capital lock-up period (days)	11.05	69.25
Short-term capital lock-up (%)	155.86	150.27
Net total debt / EBITDA adj. (Factor)	82.29	106.64
Ratio of interest expenses to total debt (%)	0.64	0.63
Return on investment (%)	0.35	0.20

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.

General rating factors

- + Supportive regulatory framework
- + Systemic relevance
- + High entry barriers
- + High energy demand on the domestic market; Finland, has one of the highest per capita consumption rates in the world
- + Trend of CO2 reductions in the European/Finnish markets
- High mandatory provisions with regard to nuclear waste management (National Nuclear Waste Management fund)
- Delayed commissioning of the Olkiluoto 3 power plant
- All assets are located in one Finnish region (Concentration risk)
- Exposure to indirect market risks
- High level of capital intensity

Current rating factors

- + Connection of OL3 to the national grid and commencement of test production phase
- + High load factors for OL1 and OL2
- + Received first installment of EUR 207 million from the EUR 400 million TVO is entitled to according to the Global Settlement Agreement due to ongoing delays
- + High ongoing electricity price environment on the Nordpool day-ahead markets
- Regular electricity production delayed to December 2022 due to unanticipated inspection and repair needs encountered during test production
- The amendments made to the Global Settlement Agreement in June 2021 covered delays until 30 September 2022, which could pose a risk if electricity production continues to be interrupted and delayed

Prospective rating factors

- + Lower than anticipated operating costs for the OL3 power plant
- + Increase in creditworthiness in our assessment of TVO's shareholder base
- + Ongoing high area price environment on Nordpool markets
- + Deleveraging of the balance sheet structure
- Further complications with regard to the delivery of the Olkiluoto 3 power plant that would fall outside the scope of the settlement agreement
- Amendments of the nuclear energy act would increase the liabilities and/or costs for nuclear power plants
- Falling electricity spot prices

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 (-).

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

CRA generally considers ESG factors, (environment, social and governance) within its rating decisions. In the case of Teollisuuden Voima Oyj we have not identified any ESG factor with significant influence.

Teollisuuden Voima Oyj mainly generates CO₂-neutral electricity, which is in line with the general political direction of reducing CO₂-output. The production of nuclear energy and the disposal of used fuel is heavily regulated, and supervised based on Finnish nuclear energy legislation, the underlying principle of ensuring that the use of nuclear energy is safe and in line with the overall good of society. Additionally, we see it as positive from an ESG perspective that TVO relinquished its shares in the coal fired Meri-Pori power plant in 2020, which reduced its CO₂ emissions.

In February 2022 the European Commission proposed the inclusion of Nuclear Energy in the EU taxonomy, which will be addressed by the European Parliament and the council of the EU. If it is decided that nuclear energy will not be adopted in the taxonomy this could have detrimental effects on the Company as some investors might turn away from nuclear energy as an investment, which might complicate finance and capital market related matters for TVO in the future.

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-. In this scenario we assume that the scheduled commissioning for the OL3 power plant proceeds on schedule and that there are no further cost overruns that impact the Company's cost structure. We would like to see TVO improve its balance sheet structure by reducing indebtedness before it will become eligible for an upgrade.

Worst-case scenario: BB+

In our worst-case scenario, we assume a rating of BB+. The connection of OL3 to the national grid of Finland and its commencement of electricity production has significantly reduced the risk for long unexpected delays. However, in this scenario the scheduled commissioning of the OL3 plant is again delayed for a significant amount of time, due to ongoing start-up problems with the plant through which regular electricity production will be postponed indefinitely.

Business development and outlook

During 2021 TVO's total electricity production was 14,438 GWh (2020: 14,587 GWh) corresponding to approximately 17 percent of all electricity consumed in Finland and approximately 21 percent of all electricity produced. The combined load factor of OL1 and OL2 was 92.8 percent (2020: 93.5 percent), due to the refueling and maintenance outages in April and May for OL1 and May and April for OL2. During the business year TVO generated revenues of EUR 299 million (2020: EUR 275 million), EBITDA of EUR 60 million (2020: EUR 73 million) and EAT of EUR -20 million (2020: 0 EUR).

The run-up to regular electricity production for the OL3 power plant continues to encounter various obstacles, which continue to slow down the project. First criticality of the nuclear power plant was reached on 21 December 2021, and pre-operational testing commenced on 17 January 2022. On 12 March 2022 the plant was connected to the national grid and test production of electricity was started. During the testing phase, power will gradually be increased to the

ESG factors are factors related to environment, social issues and governance. For more information, please see the section "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.

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.

plant's capacity of 1,600 MW. Regular electricity production was scheduled for June 2022, but had to be postponed due to unanticipated inspection and repair needs on the generator's cooling system as well as foreign material observed in the turbine's steam reheater. The repair work will most likely take up to the end of July. OL3's test production will be resumed after repair and thus regular electricity production has thus been postponed until December 2022.

As the OL3 project was not completed before the end of June 2021, TVO is, according to the amendments made to the Global Settlement Agreement entitled to receive the maximum amount of EUR 400 million. During 2021 TVO received EUR 207 million from the plant supplier, and therefore registered non-bearing receivables of EUR 193 million. These payments will be used to reduce the capitalized construction costs of OL3, which in turn will limit the increase in production costs due to lower depreciation.

During the first quarter of 2022 the total electricity production at TVO was 3,985 GWh (Q1 2021: 3,866 GWh), of which 3,868 GWh generated by OL1 and OL2, both with a load factor of 100%. The residual amount of 117 GWh was produced by OL3 since it had been connected to the grid on 12 March 2022. During the first quarter of 2022 TVO generated revenues of EUR 83 million (Q1 2021: EUR 79 million), reported EBITDA of EUR 15,148 (Q1 2021: EUR 37,077 million), EBIT of EUR 3,754 million (Q1 2021: EUR 26,244 million) and EAT of EUR -10,268 million (Q1 2021: EUR 17,624 million).

The war in Ukraine does not have any direct material impact on our rating assessment. TVO has only limited commercial connections to Russia and the Company's procurement processes are always based on multiple sourcing. Most of the uranium procured by TVO comes from Kazakhstan, Canada and Australia and the fuel elements ordered are constructed and assembled in Germany, Spain or Sweden.

Finnish day-ahead area prices continue to be at a high level, standing at EUR 132,66/MWh on the monthly chart in May. The weekly chart shows that prices remain elevated. This is well above the cost price of TVO, which is roughly at EUR 20/MWh and is expected to rise to approximately EUR 30/MWh when OL3 commences regular electricity production. This factor does not have an immediate effect on TVO's assessment as it sells its electricity at cost price. However, it has an indirect effect on our risk assessment as an ongoing low market price environment could reduce the willingness of TVO's shareholders to remain invested in the Company.

Structural risk

Teollisuuden Voima Oyj is a non-listed public limited liability company. Its main business activities include the generation, transfer and transmission of electricity to its shareholders. The Company operates according to the Mankala principle, a Finnish operating model where electricity is produced at cost price solely for its shareholders.

According to the Company's Articles of Association, the shareholders pay the Company's annual fixed costs (including interest and principal payments on debt) in proportion to the size of their holdings, regardless of electricity they offtake. The fixed costs are paid one month in advance, while the variable costs are paid in the month in which they are incurred on a date, specified by the company.

TVO owns and operates two nuclear power plants (Olkiluoto 1 / OL1 – Olkiluoto 2 / OL2), as well as a third nuclear power plant (Olkiluoto 3 / OL3), which was recently connected to the grid and is currently being prepared for regular electricity production. OL1 and OL2 are both boiling water reactors with an annual production capacity of 880 MW and 890 MW respectively. OL3 is a pressurized water reactor with a production capacity of 1,600 MW. Following the completion of OL3, the electricity produced by TVO will account for approximately 30 percent of all electricity

consumed in Finland. Additionally TVO owns a 50 percent share of the gas turbine power unit at Olkiluoto, which has an installed capacity of 100 MW. The gas turbine is a joint venture between Fingrid Oyj and TVO and is a reserve unit and is not currently in operation other than for the purpose of periodic testing.

TVO issued three classes of shares (A class shares, B class shares, C class shares) Each class entitles the shareholder to a pro rata share of the electricity produced at a certain plant. The A class shares entitle shareholders to acquire energy from Olkiluoto 1 and Olkiluoto 2 and class B shares entitle shareholders to acquire energy from Olkiluoto 3. The C class shares entitle shareholders to electricity from TVO's 45% holding in the Meri-Pori coal-fired power plant. All class C shares were nullified when TVO relinquished its share capital in the Meri-Pori power plant. Shareholders in the Company have a preemptive right in proportion to their holdings in the Company to buy any newly issued shares.

The Company is owned by five shareholders, of which the two biggest account for approximately 84% of the shareholder base. The biggest shareholder „Pohjolan Voima Oyj” (58,5%) is a Finnish energy company which also operates according to the Mankala model. Pohjolan Voima Oyj is mainly owned by Finnish industrial companies of which the largest shareholder is UPM Energy Oy, which is part of the UPM Group. The second largest share in TVO is owned by Fortum Power and Heat (25,8%), a subsidiary of the Fortum Group (BBB / Watch NEW as of 04.03.2022). Based on our assessment and research, we consider the creditworthiness of the major shareholders on a sufficient level to support a rating of BBB-. In the event of a default of one of the five shareholders, the Company may, according to its Articles of Association, immediately terminate the distribution of electricity and sell the electricity to the party submitting the best offer, primarily to other shareholders in the Company or on the spot electricity markets. The remaining shareholders are EPV Energia Oy (6,6%), Kemira Oyj (0,9%) and Oy Mankala AB (8,2%).

TVO Nuclear Services Oy (TVONS) provides nuclear safety consultancy services and is a wholly owned subsidiary of the TVO Group and provides services about nuclear safety, cost-effective operations, nuclear waste management and services in relation to building new nuclear power plants. Furthermore, TVO has a 60% shareholding in Posiva Oyj, a joint venture of TVO and Fortum Power and Heat Oy (FPH). The company is governed by TVO and FPH according to the shareholders agreement and the articles of association. Posiva Oy is an organization which is responsible for the research and implementation of final disposal of spent nuclear fuel and is therefore of strategic importance for TVO.

Companies generating electricity from radioactive materials are subject to the Nuclear Energy Act and the Nuclear Energy Decree. The legislation defines the guidelines for the construction, as well as the management of nuclear power plants, and regulates the safe generation of nuclear energy including the disposal of nuclear waste. The Ministry of Economic Affairs and Employment (MEAE) regulates all matters pertaining to nuclear energy. It prepares operating license decisions, draft proposals to improve the legislation and oversees the planning and implementation of nuclear waste management procedures. The Radiation and Nuclear Safety Authority (STUK) supervises radiation and nuclear safety in Finland.

TVO has a moderate structural risk profile. We believe that TVO's nuclear power plants are of systemic relevance for Finland, as after the commissioning of the OL3 power plant TVO will generate approximately 30% of all electricity consumed within the country. The Group structure is transparent and its creditworthiness is heavily dependent our assessment of its shareholders. All of TVO's shareholders have been long-term investors, and have never defaulted on one of their financial obligations towards the company. We believe that the Companies within the

shareholders base have a sufficient credit profile to support its current unsolicited corporate issuer rating.

Business risk

There is a high degree of concentration risk in the asset base, due to the fact that all three power plants are located in the municipality Eurajoki in southwestern Finland. Furthermore, due to the fact that the company holds mainly nuclear power plants it has exposure to a possible trend of denuclearization in Finland.

Because Finland has a high proportion of energy intensive process industries and high requirements for space heating due to its cold winters and long transportation distances the total energy consumption per capita is one of the highest in the world. Finnish power plants do not produce enough electricity to satisfy domestic demands; the remaining electricity needs are imported from neighboring countries. With the commissioning of OL3 the import needs of electricity will be reduced by half.

Due to the fact that the Company operates according to the Mankala principle, it is largely protected against short term market- and price risks. Long-term falls in the market price could render shareholders less willing to commit themselves to the Company. TVO's production costs of approximately EUR 20/MWh at OL1 and OL2 are relatively low. The production costs of the Olkiluoto 3 plant are expected to be approximately EUR 40/MWh, which will increase the average cost of production to approximately EUR 30/MWh. The increase in production costs per MWh at the OL3 power plant is largely caused by a higher rate of depreciation, reflecting capitalized costs that have been caused by the ongoing delays.

The OL3 EPR project was commissioned as a fixed price turnkey project from a supplier consortium formed by Areva GmbH, Areva NP SAS and Siemens AG. The consortium is jointly and severally liable for the completion of the OL3 project. The original completion date was 2009, however due to several delays in the planning, construction and testing phase the project was subject to significant delays, which eventually led to arbitration proceedings under the rules of the International Chamber of Commerce to deal with disagreements between the parties with respect to the cost overruns. In March 2018, TVO signed a comprehensive settlement agreement with the supplier consortium to settle all ongoing legal matters with regard to the delay of the OL3 power plant. Following further delays beyond the schedule agreed in the settlement agreement the terms in the settlement agreement were renegotiated. On 17 May 2021 TVO published that it and the Areva-Siemens consortium had reached a consensus on the completion of the OL3 project and TVO signed the new agreement on 2 June 2021. The major terms of the agreement are that the trust mechanism as described in the settlement agreement has to be replenished with EUR 600 million as of January 2021 by the Areva companies, which would secure the financing cost for the OL3-project's completion until September 2022. Additionally, the consortium is to pay additional compensation payments if plant construction faces further significant delays. The compensation will depend on the actual completion date and is limited to an amount of EUR 56.7 million, which will also cover delays until 30 September 2022. Additional amendments to the project agreement provide TVO relief regarding the completion of the OL3 plant. Further delays, not covered by the guarantee period until 30 September 2022, constitute a risk for the Company as they do not cover the whole period until the estimated start of regular electricity production on 10 December 2022.

According to the Nuclear Energy Act, every license holder that produces nuclear waste is responsible for its disposal, all measures regarding waste management and the costs involved. Failure to comply with the rules laid out in the Nuclear Energy Act might result in an interruption of operations. For all future nuclear waste management, also after the decommissioning of the

plants the Finnish state established the "National Nuclear Waste Management Fund". This fund is controlled by the Finnish government, but the companies that produce nuclear energy, and therefore nuclear waste are responsible for the costs. The fund is controlled by the Ministry of Economic Affairs and Employment (MEAE) which estimates the liability every year.

Even full compliance with the Nuclear Energy Act cannot totally eliminate the risk of nuclear waste leakage and since the Company bears full legal and financial responsibility for the management and disposal of the nuclear waste it produces, it is obliged to take out a mandatory nuclear liability insurance, to cover a part of the losses, that would occur when contaminated material were to escape into the environment in the event of a nuclear disaster.

TVO's business risk profile is moderate to high. This is largely due to the fact that it, despite its Mankala model is exposed to market price risks. The Mankala model protect the Company against short term price declines. However if the market price falls below the cost price for an extended period of time it could possibly discourage investors to invest in the company. The estimated rise in production costs increased the market risk of the company. The general short-term and long-term risks associated with operating nuclear assets and disposing of nuclear waste are manageable.

Financial risk

Due to the fact that the Company is not profit driven, many of the financial key figures should not be interpreted as they would be for companies with a more conventional business model. TVO's profit and loss is usually zero unless specific circumstances dictate otherwise.

At the end of 2021 TVO recorded adjusted shareholders' equity of EUR 2,046 million (2021: 2,070 million), translating to an equity ratio of 23.67% (2021: 25.22%). The equity ratio includes a shareholder loan of EUR 929 million (2021: EUR 929 million), which we allocated to equity because it has a subordinated status to other outstanding indebtedness and no maturity date. The slight decline in the equity ratio at 31.12.2021 was largely caused by a growing adjusted balance sheet total, which grew to EUR 8,645 million (2020: EUR 8,208 million), resulting from growing capitalization of the OL3 power plant. Particularly due to capitalization of the provision of EUR 368 million in relation to the decommissioning of OL3, which was recognized once the power plant was made critical in December 2021. At the end of 2021 capitalized investment in OL3 was recognised at approximately EUR 5.1 billion, which according to the latest cost estimate of the plant supplier consortium will increase to approximately EUR 5.7 billion. Investments in capex will significantly decrease once the OL3 plant commences with regular electricity production.

TVO has a covenant and must maintain an equity ratio (IFRS) on group level of above 25%. As of the end of 2021 TVO maintained an equity ratio of 31.3% as in the formula the balance sheet total is adjusted by the provision related to nuclear waste management and the loan from the Finnish State Nuclear Waste Management Fund. If the covenant is not complied with, TVO has to offer repayment of the relevant loans.

Total indebtedness of TVO rose slightly to EUR 4,599 million (2020: EUR 4,569 million). Over recent years, the Company managed to keep its leverage relatively stable and the debt repayment profile is relatively well distributed. We would, however see it as positive if the Company would start deleveraging after the start of regular electricity production of OL3. We hold the view that the lifespan of TVO's debt profile is short in comparison with its long lived asset base which exposes the Company to refinancing risk.

Liquidity remained strong at the end of the year at EUR 172 million (2020: EUR 161 million) and a syndicated revolving credit facility of EUR 1,000 million and a subordinated shareholder commitment of EUR 400 million.

The company has a significant provision with regard to possible future financial obligation in relation to the decommissioning of the power plants and nuclear waste management of spent nuclear fuel (National Nuclear Waste Management Fund) in the amount of EUR 1,010 million (2020: EUR 1,030 million). This provision is built to cover all future obligations with regard to nuclear waste management (including the decommissioning of the power plant). To estimate the costs that result from the storage and handling of nuclear waste and the decommissioning of nuclear power plants TVO has developed a model, which is updated every three years, the model needs to be approved by the governmental authorities and will be updated in 2022. A large difference in the assessment of future costs could have a significant impact on the balance sheet. Due to the fact that the future costs for waste management are controlled periodically we hold the view that this event is unlikely to occur.

The Company's financial risk profile is intermediate. Liquidity is safeguarded by high undrawn credit facilities, and their cash flows are stable and predictable. The future costs of nuclear waste management are monitored closely and are assessed by a third party, and we therefore expect the future costs to be estimated correctly. We do not see any short to medium-term risks that could endanger the existence of the Company.

Issue rating

Issue Rating

The rating objects of this issue rating are exclusively the in Euro denominated long-term senior unsecured Notes, issued by Teollisuuden Voima 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 within the framework of the EMTN programme, of which the latest base prospectus dates from 8 June 2021 and a supplement was published on 22 March 2022. The current EMTN programme amounts to EUR 4 bn. The notes under the EMTN programme benefit from a negative pledge provision and a cross default mechanism. A change of control clause does not exist in the terms and conditions.

We have provided the debt securities issued by Teollisuuden Voima Oyj with a rating of **BBB-**. The rating is mainly based on the corporate rating of Teollisuuden Voima Oyj.

Other types of debt instruments or issues denominated in other currencies 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 2: Summary of CRA Ratings | Source: CRA

Ratingobjekte	Details Information	
	Datum	Rating
Teollisuuden Voima Oyj	27.06.2022	BBB- / stable
Long-Term Local Currency Senior Unsecured issues	27.06.2022	BBB- / stable

Table 3: overview of TVO Debt Issuance Programme | Source: TVO's EMTN Base Prospectus 8 June 2021

Issue Details			
Volume	EUR 4.000.000.000	Maturity	Depending on the respective bond
Issuer	Teollisuuden Voima Oyj	Coupon	Depending on the respective bond
Arrangers	Nordea Bank AB (Publ)	Currency	Depending on the respective bond
Credit Enhancement	-	ISIN	Depending on the respective bond

All future LT LC senior unsecured Notes that will be issued by Teollisuuden voima Oyj under the current EMTN programme, denominated in Euro and which are included in the list of ECB-eligible marketable assets will, until further notice, receive the same rating as the current LT LC senior unsecured notes under the EMTN programme. Notes issued under the programme in another currency other than Euro or other types of debt instruments 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.

Financial ratio analysis

Asset Structure	2018	2019	2020	2021
Fixed asset intensity (%)	82.57	84.55	81.66	83.26
Asset turnover	0.05	0.03	0.04	0.04
Asset coverage ratio (%)	42.61	63.14	59.33	48.66
Liquid funds to total assets (%)	2.89	2.99	1.97	1.99
Capital Structure				
Equity ratio (%)	22.75	22.96	25.22	23.67
Short-term-debt ratio (%)	8.07	7.06	6.57	7.31
Long-term-debt ratio (%)	12.43	30.42	23.23	16.84
Capital lock-up period (in days)	7.49	9.56	11.05	69.25
Trade-accounts-payable ratio (%)	0.09	0.08	0.10	0.66
Short-term capital lock-up (%)	131.39	173.53	155.86	150.27
Gearing	3.27	3.22	2.89	3.14
Leverage	4.40	4.37	4.15	4.09
Financial Stability				
Cash flow margin (%)	9.81	81.18	11.66	112.16
Cash flow ROI (%)	0.47	2.79	0.42	4.20
Total debt / EBITDA adj.	84.73	142.27	84.51	109.50
Net total debt / EBITDA adj.	81.57	136.75	82.29	106.64
ROCE (%)	0.24	-0.04	0.39	0.23
Total debt repayment period	-30.44	24.12	-20.13	14.06
Profitability				
Gross profit margin (%)	64.22	75.07	79.28	77.97
EBIT interest coverage	0.31	--	0.69	0.39
EBITDA interest coverage	1.47	-0.56	1.84	1.44
Ratio of personnel costs to total costs (%)	17.38	24.85	24.46	25.37
Ratio of material costs to total costs (%)	38.41	30.05	26.40	28.06
Cost income ratio (%)	100.08	107.88	97.92	102.81
Ratio of interest expenses to total debt (%)	0.80	-1.25	0.64	0.63
Return on investment (%)	0.21	-0.01	0.35	0.20
Return on equity (%)	-1.07	4.89	0.02	-0.95
Net profit margin (%)	-4.99	31.96	0.15	-6.07
Operating margin (%)	4.01	-0.89	9.19	5.03
Liquidity				
Cash ratio (%)	35.78	42.38	29.91	27.28
Quick ratio (%)	60.41	59.22	45.13	67.27
Current ratio (%)	216.03	218.81	279.08	229.13

Appendix

Rating history

The rating history is available under:

<https://www.creditreform-rating.de/en/ratings/published-ratings.html>

Table 4: Corporate issuer rating of Teollisuuden Voima Oyj | Source: CRA

Event	Rating date	Publication date	Monitoring period	Result
Update	06.12.2021	09.12.2021	Withdrawal of the rating	BBB- / stable
Initial Rating	24.10.2018	29.10.2018	Withdrawal of the rating	BBB- / stable

Table 5: LT LC senior unsecured issues by Teollisuuden Voima Oyj | Source: CRA

Event	Rating date	Publication date	Monitoring period	Result
Update	06.12.2021	09.12.2021	Withdrawal of the rating	BBB- / stable
Initial rating	24.10.2018	29.10.2018	Withdrawal of the rating	BBB- / stable

Regulatory requirements

The rating² 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	No
With access to internal documents	No
With access to management	No

The rating was conducted based on the following information.

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

² 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 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
Natallia Berthold	Analyst	N.Berthold@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 27 June 2022, the analysts presented the rating to the rating committee and the rating was determined. The rating result was communicated to the company on 27 June 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](#).

An explanatory statement of the meaning of Creditreform Rating AG's default rates are available in the credit rating methodologies disclosed on the website.

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Creditreform Rating AG

Contact information

Creditreform Rating AG

Europadamm 2-6
D-41460 Neuss

Phone: +49 (0) 2131 / 109-626
Telefax: +49 (0) 2131 / 109-627

E-Mail: info@creditreform-rating.de
Web: www.creditreform-rating.de

CEO: Dr. Michael Munsch
Chairman of the Board: Michael Bruns

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