

Rating object	Rating information	
Teollisuuden Voima oyj Creditreform ID: 400988051 Incorporation: 1969 (Main) Industry: Electric power generation CEO: Jarmo Tanhua <u>Rating objects:</u> Long-term Corporate Issuer Rating: Teollisuuden Voima Oyj Long-term Local Currency Senior Unsecured Issues	Corporate Issuer Rating: BBB- / stable	Type: Initial rating Unsolicited
	LT LC Senior Unsecured Issues: BBB-	Other: n.r.
	Rating Date: October 24, 2018 Monitoring until: Withdrawal of the rating Publication: October 29, 2018 Rating methodology: CRA "Corporate Issuer Ratings" CRA "Non-financial Corporate Issue Ratings"	Rating history: www.creditreform-rating.de

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Abstract

Company

Teollisuuden voima oyj ("TVO", "the Company") is a Finnish non-listed public limited liability company which is active in the electricity industry in Finland since its establishment in 1969. The Company produces energy by operating two nuclear power plants (Olkiluoto 1 / OL1 and Olkiluoto 2 / OL2). A third power plant (Olkiluoto 3 / OL3) is currently under construction. The company also owns a 45% share in the Meri-Pori coal powered plant. The company operates according to the Mankala principle which means that its primary goal is not to make profit, but to provide its shareholders – typically companies in the energy industry and large industrial companies – with energy for which they are charged the cost price. The Olkiluoto 3 project was contracted as a fixed turnkey project, and its completion has been delayed several times with large cost overruns as a result. Following the opening of litigation procedures, TVO and the project consortium resolved most disagreements regarding the construction of the plant in a comprehensive settlement agreement, which came into force in March 2018. According to the latest update, Olkiluoto 3 will be ready for production in September 2019.

In the business year of 2017 the company managed to generate revenues of EUR 316 million (Previous year: EUR 340 million) with an EAT of EUR -9.4 million (Previous year: EUR 10.5 million). It produced 13.4 TWh which accounts for approximately 16% of all electricity consumed and 21% of all electricity produced in Finland.

Rating Result

The current rating attests a highly satisfactory level of creditworthiness to Teollisuuden voima Oyj, which represents a low to medium default risk in comparison with the sector and the overall economy.

TVO's business model – charging its shareholders the cost price for the electricity it provides – protects the Company against the risks of short-term changes in the market price. We hold the view that falls in the prices over the long-term would most likely have a negative impact on the willingness of shareholders to make further investments. Should one of the investors default on its obligations, the Company will be able to sell the residual electricity to another shareholder, or to the party submitting the best offer, e.g. the spot market. The ongoing delay of the Olkiluoto 3 power plant has increased the estimated average cost price per MWh significantly, which in turn increases the Company's market risk.

Due to the fact that the company produces 21% of all energy produced in Finland, we have assigned the company some degree of systemic relevance. The portion of electricity the company produces is expected to increase to approximately 30% of all energy consumed in Finland with the planned commissioning of the OL3 plant. With the settlement agreement we believe that TVO is sufficiently protected against any further cost overruns with regard to the OL3 plant.

Outlook

The one-year outlook of the rating is stable. This assessment is based on the fact that the company's power plants have a solid track record (load factors) and that most ongoing matters regarding the Olkiluoto 3 plant have been resolved.

Relevant rating factors

Table 1: Financials of TVO group | Source: Teollisuuden Voima Oyj annual report 2017, standardized by CRA

Financial ratios' extract Basis: consolidated annual report per 31.12 (IFRS)	CRA standardized figures	
	2016	2017
Turnover	EUR 343.4 million	EUR 320.9 million
EBITDA	EUR 55.8 million	EUR 74,31 million
EBIT	EUR 1,02 million	EUR 19,92 million
EAT	EUR -10,53 million	EUR -9,43 million
Total assets	EUR 7,947.5 million	EUR 7,378 million
Equity ratio	19.94%	22.65%
Capital lock-up period	18.1	7.0
Short-term capital lock-up	134.2	173.8
Neb Debt / EBITDA adj.	108.6	75.2
Return on investment	0.04%	0.29%

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 (Rating 2018)

- + Settlement agreement between TVO and the consortium parties with regard to the construction of OL3
- + High utilization rates
- Further delay to September 2019 for the Olkiluoto 3 power plant.
- Relatively high foreseeable cost of production at Olkiluoto 3 in comparison with the existing plants.

Excerpts from the financial ratios analysis 2017

- + Increasing EBITDA and EBIT
- + Adequate equity ratio
- Decreasing revenue
- High Net Debt/EBITDA adj.

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Prospective Rating Factors

- + Timely delivery of the Olkiluoto 3 power plant with no further complications
- + Rising electricity spot-prices

- 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

Best-Case-Scenario

Best case: BBB-

In our best case scenario for one year, we assume a rating of BBB-. This reflects our view that the company's operations will remain stable, and that the Olkiluoto 3 plant will not face any further significant delays.

Worst case: BB+

Worst-Case-scenario

In our worst case scenario for one year, we assume a rating of BB+. This reflects our view that the timely delivery of the Olkiluoto 3 plant is again significantly delayed due to unforeseen circumstances.

Note:

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

Business development and outlook

During the financial year 2017 the Company delivered 13,516 GWh (2016: 14,886 GWh) of electricity to its shareholders. The fall in production was caused by a longer than normal outage on the OL2 power plant due to complex maintenance work and by lower than normal production at the Meri-Pori coal powered plant. The Company generated revenues with a volume of EUR 320.9 million in 2017 (2016: EUR 343.4 million) and an EAT of -9,4 million (2016: EUR 10,5 million). During the first 6 months of 2018 the company produced 6,814 GWh, of which 6,458 GWh attributable to the OL1 and OL2 plants. This amounted to revenues of EUR 166,7 million EUR. The total load factor (utilization rate) during the first 6 months of the year was 84,2%.

On 20 September 2018, the Finnish Ministry of Economic Affairs and Employment (MEAE) approved the extension of the operating licenses for the OL1 and OL2 power plants. Without such an extension, the operating licenses for both power plants would have expired at the end of 2018. The operating licences for both plants will now be valid until 2038.

In 2005 the Finnish government approved the application for the construction of the OL3 plant. The commissioning of the plant was originally planned for 2009, but was due to various reasons several times delayed with high cost overruns as a result. TVO has assigned the construction works to a supplier consortium consisting of Areva GmbH, Areva NP SAS and Siemens AG.

The construction of the plant has been largely completed, but the electrical, instrumentation, control and mechanical installations are still in progress. According to the consortium's most recent update, the plant is now expected to be ready for production in September 2019. In December 2018, the supplier consortium will perform another schedule review.

On 11 March 2018, TVO confirmed that it had signed a comprehensive settlement agreement to settle the dispute regarding the construction of the OL3 plant. The settlement was signed by TVO, the companies within the supplier consortium (Areva NP, Areva GmbH and Siemens AG), and the parent group of Areva, Areva SA. The settlement agreement was given a consent award by the international chamber of commerce (ICC) tribunal. The agreement stipulates, among other things, that the parties will withdraw all ongoing legal action against each other related to the construction of OL3. The supplier consortium also has agreed to pay financial compensation of EUR 450 million to cover the costs and losses. This sum must be paid in two installments. The first installment has already been received, while the second installment will become due by the end of 2019.

In the event that the consortium fails to deliver the plant by the end of 2019, the consortium will have to pay a penalty to TVO. The amount of this fine is determined by the time of delivery and shall not exceed EUR 400 million. The supplier consortium shall, however, be entitled to collect an incentive payment of up to EUR 150 million, in case the OL3 project will be delivered at or before the agreed date. The Company has made a financial provision for this event.

The companies within the supplier consortium have undertaken that they will allocate sufficient funds to the OL3 project, and that they will cover all applicable guarantee periods. They also agreed, to set up a trust mechanism funded by Areva companies to secure the financing costs of the OL3 project's completion.

During the extraordinary general meeting it was decided that TVO per July 2020 will relinquish all shares it holds in the Meri-Pori coal powered plant. The extraordinary general meeting voted to change the Articles of Association by removing all clauses pertaining to the Meri-Pori plant and to reduce the share capital by the proportionate amount which corresponds to the Meri-Pori shares. The reason for this is because the company's shareholders believe that coal does not offer any good future prospects.

TVO estimates that the remaining capital expenditure for the OL3 plant will total EUR 900 million. After completion of the OL3 plant, the total annual capital expenditure is expected to amount to EUR 100 million.

The electricity prices in Finland have recovered throughout 2018. We believe that with the planned commissioning of the OL3 power plant, and the estimated higher production costs that the Company will be exposed to higher levels of business risk. We furthermore hold the view that the settlement agreement provides the company with a sufficient degree of protection against any further cost overruns with regard to the commissioning of the Olkiluoto 3 power plant.

Structure 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 which means that it provides its shareholders with energy for which it charges them the cost price.

The Company owns and operates two nuclear power plants (Olkiluoto 1 / OL1) – Olkiluoto 2 / OL2) while a third nuclear power plant (Olkiluoto 3 / OL3) is under construction. 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 and will have an annual production capacity of 1600 MW. Following the completion of OL3, the electricity produced by TVO will account for approximately 30% of all electricity produced in Finland. The Company also owns a 45% shareholding in the Meri-Pori coal-fired power plant which is managed and operated by its largest shareholder, Fortum Power and Heat Oy.

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. The class B shares entitle shareholders to acquire energy from Olkiluoto 3 and the class C shares entitle shareholders to acquire electricity from the Meri-Pori coal fired plant.

The shareholders have to compensate the variable costs for the amount of electricity acquired, and have to pay the fixed costs in proportion to their holdings in the Company as stipulated in the Articles of Association. 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 six 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 majority shareholder is UPM Energy Oy, which is part of the UPM Group. The second largest share is owned by Fortum Power and Heat (25,8%), a subsidiary of the Fortum Group, which is owned for over 50% by the Finnish Prime Minister's office. Based on our assessment and research, we consider the creditworthiness of the major shareholders on a sufficient level to support a rating of BBB- of TVO. In case of a default of one of the six shareholders, the Company can, according to its Articles of Association, immediately cut off the distribution of electricity and sell the electricity to the party submitting the best offer, primarily

to other shareholders in the Company. The remaining shareholders are EPV Energia Oy (6,5%), Loiste Holding Oy (0,1%), Kemira Oyj (1,0%), Oy Mankala AB (8,1%).

TVO Nuclear Services Oy (TVONS) provides nuclear safety consultancy services and is a wholly owned subsidiary of the TVO Group. Posiva Oy is a joint venture of TVO and Fortum Power and Heat Oy (FPH). TVO has a 60% shareholding in Posiva Oy and is accounted for by the equity method in its consolidated statements. 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 final disposal of spent nuclear fuel and is therefore of strategic importance for TVO.

Companies generating electricity out of 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.

The Company prepares its financial statements in accordance with IFRS and operated with an average headcount of 801 employees during the business year 2017.

TVO has a moderate structural risk profile. We hold the view that the Company is of systemic relevance for Finland. Following the commissioning of the Olkiluoto 3 plant, it will generate almost one third of all electricity produced in Finland. The Company's shareholders – all of whom have been holding their shares for long periods of time – seem to be invested in the Company. No shareholder has ever defaulted on one of its financial obligations.

Business Risks

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 South-Western Finland. Furthermore, due to the fact that the company mainly holds 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 needs are imported from neighboring countries. The nuclear power plants of TVO are kept on a high level of productivity with a total load factor of 87.2% in 2017 and 84,2% during the first 6 months of 2018.

Due to the fact that the Company operates according to the Mankala model, it is largely protected against short term market- and price risks. Long-term falls in the market price could make the shareholders less willing to commit themselves to the company. The Company'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 at approximately EUR40/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 mainly caused by a higher rate of depreciation, reflecting capitalized costs that have been caused by the ongoing delays.

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, the company 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 case of a nuclear disaster.

The Company has a high business risk profile. Mainly due to the fact that it, despite its *mankala* model is exposed to market price risks. Due to its *mankala* model it is protected against short term price declines, but if the market price falls below the cost price for a longer period of time it will most likely discourage investors to invest in the company. The estimated increase in production costs has increased the market risk of the company significantly. The general short-term and long-term risks associated with operating nuclear assets and disposing of nuclear waste are manageable.

Financial risks

Due to the fact that the Company is not profit driven, some of the financial key ratios are distorted.

TVO operates with a very high capital intensity ratio of 84.39% (31.12.2017). The company maintains, despite the large provisions it has built (see below) an equity ratio of 22.65%. The company has a shareholder loan with no maturity date of EUR 579 million per 31.06.2018 which we accounted for in equity which results in an improvement of the equity ratio. During the business year 2017 the shareholders granted an additional 100 million EUR as a loan, which, according to our view, confirms their willingness to continue their investment in TVO.

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 the amount 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 which is specified by the company.

As per 30 June 2018, TVO disposed of undrawn credit facilities with a total volume of EUR 1.400 million and of cash and cash equivalents of EUR 102 million. The Company is furthermore entitled to borrow an amount of up to 75% of its share in the Finnish state nuclear waste management fund (TVO's share in the Fund per 31.12.2017: EUR 1.436.600 million). TVO needs to comply with a financial covenant which requires the company to pay back several bank loans if its equity ratio falls below 25%. The company did not violate this covenant, because the calculation adjusts the balance sheet total with the provision related to nuclear waste and the loan from the Finnish State nuclear waste fund.

TVO's debt profile is well distributed, with approximately 10% of its financial obligations reaching maturity in 2018. We hold the view that the lifespan of the company's debt profile is short in comparison with its long lived asset base which exposes the company to refinancing risk.

The company has two significant provisions with regard to possible future financial obligations. The largest provision is related to nuclear waste management (National Nuclear Waste Management Fund) with EUR 966 million (31.12.2017: EUR 953 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. The last update took place in June 2016. A large difference in the assessment of the future costs might have an 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 happen.

The second provision was built in the first quarter of 2018 and relates to the arbitration settlement in the ICC in relation to the Olkiluoto 3 plant. The settlement stipulates that the supplier consortium companies will be entitled to receive an incentive payment of up to EUR 150 million if the consortium delivers the project before the end of June 2019. The company made a provision for this eventuality.. However, the provision was reduced by EUR 50 million after receiving an updated schedule for the commissioning of the Olkiluoto 3 plant.

The company's financial risk profile is intermediate. The Company's liquidity is safeguarded by high undrawn credit facilities, and their cash flows are stable and predictable. The future costs of the 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 mid-term risks that could endanger the existence of the Company.

Issuer / Issue Rating Details

Issue Rating

The rating objects of this issue rating are exclusively the in Euro denominated long-term senior unsecured issues, 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 29 June 2018. 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	24.10.2018	BBB- / stable
Euro Medium Term Note Programme (EMTN)	24.10.2018	BBB- / stable

Table 3: overview of TVO Debt Issuance Programme | Source: TVO's EMTN Base Prospectus 29 June 2018

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

At the time of the rating, the following EUR-denominated Notes have been rated by Creditreform Rating AG:

Table 4: Overview of the unsolicited ratings of Teollisuuden Voima oyj's LC senior unsecured issues | Source: TVO

ISIN	EUR	Issue Date	Maturity Date	Unsolicited Rating
XS0926478628	23.000.000	03.05.2013	03.05.2030	BBB-
XS1816329418	400.000.000	08.05.2018	08.05.2024	BBB-
XS1043513529	500.000.000	17.03.2014	07.03.2021	BBB-
XS1050663258	45.000.000	31.03.2014	31.03.2032	BBB-
XS1514470316	500.000.000	04.11.2016	13.01.2023	BBB-
XS1183235644	500.000.000	04.02.2015	04.02.2025	BBB-
XS0779279644	30.000.000	09.05.2012	09.05.2022	BBB-
XS0862347852	75.000.000	14.12.2012	14.12.2027	BBB-
XS0850228577	20.000.000	08.11.2012	08.11.2032	BBB-
XS0740810881	193.452.000	02.02.2012	04.02.2019	BBB-

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	2015	2016	2017
Fixed asset intensity (%)	78.29	75.59	84.39
Asset turnover	0.04	0.05	0.04
Asset coverage ratio (%)	44.06	42.26	42.15
Liquid funds to total assets (%)	1.61	3.93	1.90
Capital Structure			
Equity ratio (%)	21.46	19.94	22.65
Short-term-debt ratio (%)	9.55	6.54	8.19
Long-term-debt ratio (%)	13.03	12.01	12.92
Capital lock-up period (in days)	17.17	18.07	7.01
Trade-accounts-payable ratio (%)	0.17	0.21	0.08
Short-term capital lock-up (%)	245.22	134.21	173.77
Gearing	3.58	3.82	3.33
Leverage	4.59	4.84	4.71
Financial Stability			
Cash flow margin (%)	46.42	7.78	12.94
Cash flow ROI (%)	1.77	0.35	0.59
Debt / EBITDA adj.	43.68	114.18	77.07
Net Debt / EBITDA adj.	42.78	108.58	75.18
ROCE (%)	0.38	0.02	0.35
Debt repayment period	6.36	-42.02	31.59
Profitability			
Gross profit margin (%)	77.33	57.01	66.34
EBIT interest coverage	0.73	0.03	0.46
EBITDA interest coverage	2.49	1.86	1.73
Ratio of personnel costs to total costs (%)	20.78	16.80	17.29
Ratio of material costs to total costs (%)	25.15	44.71	36.22
Cost income ratio (%)	89.75	102.74	97.89
Ratio of interest expenses to debt (%)	1.11	0.47	0.75
Return on investment (%)	0.64	0.04	0.29
Return on equity (%)	0.29	-0.66	-0.58
Net profit margin (%)	1.62	-2.97	-2.83
Operating margin (%)	16.62	0.29	5.97
Liquidity			
Cash ratio (%)	16.90	60.10	23.22
Quick ratio (%)	34.30	108.58	33.24
Current ratio (%)	227.34	373.36	190.70

Appendix

Rating history

Table 5: Corporate issuer Rating of Teollisuuden Voima oyj | Source: CRA

Event	Rating Date	Publication Date	Monitoring period	Result
Initial rating	24.10.2018	29.10.2018	Withdrawal of the rating	BBB- / stable

Table 6: LT LC senior unsecured issues issued by Teollisuuden Voima oyj | Source: CRA

Event	Rating Date	Publication Date	Monitoring period	Result
Initialrating	24.10.2018	29.10.2018	Withdrawal of the rating	BBB-

Regulatory requirements

The present rating is an unsolicited rating. Creditreform Rating AG was not commissioned by the Issuer with the preparation of the rating. The present analysis was prepared on a voluntary basis.

The rating is based on the analysis of published information and on internal evaluation factors. The quantitative analysis is primarily based on the last annual report of the Issuer, the basis prospectuses and on press releases of the company. The information and documents meet the requirements and are in accordance with the published Creditreform Rating AG's rating methodology.

The rating was conducted on the basis of Creditreform Rating's "Corporate Issue Ratings" methodology and the "Corporate Issuer Rating" methodology. A complete description of Creditreform Rating's rating methodologies is published on the following internet page: www.creditreform-rating.de.

The documents submitted and information gathered were sufficient to meet the requirements of Creditreform Rating AG's rating methodology. A complete description of Creditreform Rating's rating methodologies and Creditreform's basic document "Rating Criteria and Definitions" is published on the following internet page:

www.creditreform-rating.de/en/regulatory-requirements/

This rating was carried out by analysts Rüdger van Mook (r.vanmook@creditreform-rating.de) and Elena Alexeenco (e.alexenco@creditreform-rating.de), both located in Neuss, Germany. A management meeting did not take place.

The rating was presented to the rating committee on 24 October 2018. The company examined the rating report prior to publication and was given at least one full working day to appeal the rating committee's decision and to provide additional information. The rating decision was not amended following this examination.

The rating will be monitored until CRA removes the rating and sets it to non-rated (n.r.).

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

Please note:

This report exists in an English version only. This is the only binding version.

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, CRA 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, CRA has used following substantially material sources:

Corporate Issuer rating:

1. Annual report
2. Website
3. Internet research

Corporate Issue rating:

1. Issuer corporate rating incl. information used for the Issuer corporate 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 CRA website. Furthermore, CRA 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' 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 'Basic Data' information card.

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