

Research Update:

Finnish Nuclear Producer Teollisuuden Voima Upgraded To 'BBB-' From 'BB+' On OL3 Plant Commissioning; Outlook Stable

April 26, 2023

Rating Action Overview

- Teollisuuden Voima Oj (TVO) announced on April 20, 2023, that the provisional takeover certificate has been submitted to the plant supplier and commercial operation of its OL3 nuclear power plant will start on May 1, 2023.
- This is a crucial milestone for TVO as it means from 2023 it will start deleveraging its €5.1 billion adjusted debt by €100 million-€150 million annually and that funds from operations (FFO) will increase to €300 million in each of 2024 and 2025 from negative €30 million before 2023, raising its FFO cash interest coverage ratio to 4x from negative 0.5x in 2022.
- We think the company has a solid track record of running its other nuclear plants, and believe management will run OL3 successfully.
- We therefore raised our long-term issuer credit ratings on TVO to 'BBB-' from 'BB+' and our short-term rating on TVO to 'A-3' from 'B'.
- The stable outlook indicates that we expect TVO to operate OL3 successfully and receive the full pass-through of its costs from its shareholders for a gradual repayment of its debt.

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Rating Action Rationale

The plant's operations materially decreases construction risk. TVO confirmed on April 20 that OL3's commercial electricity production will start on May 1. As provisional takeover has been achieved and the project phase has ended, no risk of further cost overruns is possible. This after €8 billion of cost overruns and 13 years of delays, mostly covered by the construction consortium (Areva-Siemens Consortium [ASC]). The consortium continue to be liable for operating defects for two years, adequately protecting TVO for the first years of the plant's commercial operations. A remaining test with Fingrid TSO needs to be implemented but does not require any plant outage and is of low risk of material operating or financial impact for TVO, in our view. In addition, since its connection to the grid in March 2022, the plant has produced a significant amount of electricity

already in its testing phase. Notably, it has operated at full power since mid-March 2023.

We expect TVO to start on its lengthy deleveraging path in 2023, with FFO fully servicing debt obligations. The capitalization of project costs ends and the recognition of depreciation commences May 1. Shareholders' right to the electricity produced by OL3 and their liability for the annual costs of electricity production are determined in compliance with the company's articles of association, i.e., the Mankala model. We now expect TVO will start its lengthy deleveraging path, which is equal to depreciation of its assets adjusted for capex, in 2023. The company charges its shareholders the full fixed and variable costs for the electricity production from OL3. This implies it will reduce leverage by €100 million-€150 million in the first years of production, independently of the volumes or price of power produced, which should result in debt to EBITDA below 12x from 2024. Although we view this as highly leveraged, we perceive strong improvements on TVO's debt service ratios of FFO cash interest coverage from negative pre-commissioning to 4x in 2023-2025, reflecting the company's ability to service its albeit-large liabilities. We consider this ratio very stable and predictable because all fixed costs, including cost of debt, are fully passed through to shareholders via the price they pay for the power, which is a strong support. As a result, we assess the company's financial risk profile as aggressive (compared with highly leveraged previously).

TVO is insulated from market price, which support the business risk profile because all costs related to the nuclear plants are passed through to the owners. Based on the utility's articles of association, the owners must cover all annual costs regardless of the market price of electricity, because they are charged incurred costs in proportion with their ownership and receive electricity as compensation. Nevertheless, annual costs are allocated into two categories: variable and fixed.

- Variable costs include those incurred directly related to the production, such as storage, acquisition of fuel, handling of fuel, and taxes related to production.
- Fixed costs include operating costs such as maintenance and insurance, installments, and related financing costs such as interest, depreciation, and nuclear waste management.

Fixed costs are charged one month in advance. In other words, after OL3 is in commercial operation, it will charge its owners its annual fixed costs related to OL3 in advance, regardless of electricity output. In our view, this is very supportive for the utility, because it limits risk of lower cash flows due to potential operational disruptions. From May 1, 2023, TVO will receive fixed costs for OL1, OL2, and OL3 from its owners.

We perceive counterparty risk as manageable because TVO's shareholders benefit strongly from the access to cheap nuclear production. TVO's main shareholders are industrial and energy companies: the two major forest product companies through their shareholding in Pohjolan Voima Oyj (UPM Energy Oy), a subsidiary of UPM-Kymmene Corp. (BBB/Positive/A-2), and Stora Enso Oyj (not rated); and Fortum Oyj (BBB/Stable/A-2), which owns 25.8% of TVO's shares and owns and operates the other Finnish nuclear plant located in Loviisa. No shareholder has control over the company and the remaining shares are spread across a large number of Mankala-model companies or municipalities, about 130 in total. In the current market, TVO's shareholders benefit greatly as market prices are well above the cost of production for the nuclear power plants and this lessen counterparty risk in our view. The utility average nuclear production costs will be about €33 per megawatt-hour (/MWh), including OL3 operational costs, increasing from approximately €20/MWh currently. Power prices in Finland were on average well above €100/MWh in 2022 and were on average close to €70/MWh in 2021. That is well above recent levels, but we expect that electricity prices will remain elevated because of the geopolitical

situation and energy transition. We forecast a Nord Pool system price averaging €70/MWh-€80/MWh in 2023, and €65/MWh-€75/MWh in 2023 and 2024. Also, we think that less dependence on electricity imports is more important owing to geopolitical factors. Before the commissioning of OL3, Finland imported 20%-25% of its electricity demand. We expect OL3 to reduce imports significantly. OL3 has installed capacity of 1,600 megawatts (MW) and is expected to produce about 12 terawatt-hours (TWh) annually when commissioned. This represents about 14% of Finland's electricity consumption.

Continuous support from shareholders provides liquidity as needed under the trust

mechanism. Following commissioning, total capital expenditure (capex) costs could reach €500 million in 2023 from €336 million in 2022. This includes maintenance capex and spare parts of €130 million-€140 million for its three plants, general construction costs for finalizing OL3 of about €45 million, and milestone payments of €260 million to be paid at OL3's completion. We believe that TVO has sufficient liquidity to meet the expected outflows. The utility has a revolving credit facility (RCF) of €1 billion that it could use to cover the costs. Also, the Global Settlement Agreement (GSA) between ASC and TVO stipulates that TVO will receive penalties of about €250 million from ASC because of the delays. This penalty transaction is triggered by completion of OL3, simultaneously with the €260 million milestone payment. TVO had about €360 million of cash at end-2022; and a shareholder facility of €400 million that it could draw upon until December 2023 and, if used, has no fixed repayment terms. We treat shareholder loans as equity, so these would not affect the utility's debt metrics.

The companies in the ASC have joint and several liability for the contractual obligations until the end of the OL3 guarantee period, which limits risks. The ASC comprises AREVA GmbH (not rated), AREVA NP SAS (not rated), and Siemens AG (A+/Negative/A-1+). Under the 2018 GSA, the ASC is committed to ensuring that funding is reserved to finalize OL3, as well as the guarantee period, which lasts for two years after the provisional takeover, although some items have guarantee periods extending beyond then. Of importance, the plant contract stipulates the ASC companies have joint and several liability for the contractual obligations. We believe that the joint liability clause gives TVO solid protection and limits risk because Areva and Siemens are each responsible for the warranty period of two years after OL3's commissioning.

Outlook

The stable outlook reflect the strong protective features from the Mankala model on TVO's debt service coverage ability, the healthy shareholder relationship, and the track record of solid operating performance on all nuclear reactors.

Downside scenario

We could take a negative rating action should we observe:

- Increased counterparty risk that would threaten TVO's recovery of costs; or
- Material operational setbacks that would drain liquidity without additional shareholders support.

Upside scenario

We see upside potential as remote because this would require significant deleveraging, which we don't expect under the utility's cost-price remuneration model.

Company Description

TVO is a not-for-profit Finnish company created in 1969 that generates electricity in Finland from nuclear power. In 2021, the company produced about one-fifth (16.4 TWh) of annual electricity consumption in Finland (85 TWh), which it expects will rise to about 30% once OL3 is fully operational. TVO sells all electricity generated to its shareholders according to a cost-price principle known as the Mankala model. Shareholders are charged incurred costs in proportion to their ownership and receive electricity as compensation.

In addition to OL3, which has 1,600 MW of installed capacity, the company owns and operates two nuclear power plants (OL1 and OL2) that have about 1,780 MW of installed capacity. TVO expects annual generation to almost double when OL3 comes into operation (to 27 TWh from about 14 TWh). OL1 and OL2 have been operational for about 40 years, with significant reliability and a load factor of about 95%. The utility's operating license has been renewed until 2038, guaranteeing predictable cash flows until then. In addition, the company has a 60% stake in Posiva Oy, another joint venture with Fortum, which is responsible for the final disposal of spent nuclear fuel produced by its owners. Fortum and TVO therefore share the cost of nuclear waste management.

TVO is owned by five shareholders. PVO owns 58.5% and is also a Mankala company that is primarily owned by two major forest product companies: UPM Energy, and Stora Enso. Fortum Power and Heat, which is 100% owned by Fortum Oyj, the other major shareholder, owns 25.8%. The remaining shares are split between Oy Mankala (8.2%), EPV Energia (6.6%), and Kemira Oyj (0.9%).

Our Base-Case Scenario

Assumptions

- Commercial operations and provisional takeover of OL3 starting May 1.
- Revenue related to expected delays in our modeling.
- About 90%-93% load factor for OL1 and OL2, taking into account planned annual outages. We expect an 85% load factor for OL3 for the first two years of operations.
- Annual maintenance capex on OL1 and OL2 amounting to €60 million-€80 million, and higher than the maintenance capex expected for OL3 once it is operational (about €30 million).
- Combined nuclear production costs of €33 per MW hour (/MWh) with OL3, increasing from €20/MWh in 2022, reflecting the start of the depreciation of OL3's capitalized costs and interest.
- TVO's shareholders continuing to fully cover the company's production costs under the Mankala model.
- No material unexpected outages at OL1, OL2, or OL3.

- No dividend payments.

Key metrics

We expect TVO will initiate the annual fixed costs charging to its owners, which includes fixed costs for plant operations, waste management, and depreciation for the OL3 nuclear power plant. This is similar to the current scheme for OL1 and OL2, and will result in increased cash flow and positive discretionary cash flow, allowing for debt reduction. We expect that TVO-level deleveraging will start in 2023, and that funds from operations (FFO) to debt and debt to EBITDA will start improving beyond 2023 and reach 2%-6% and below 20x by end-2023, respectively. We consider this highly leveraged.

Liquidity

We assess TVO's liquidity as of Dec. 31, 2022, as adequate because liquidity sources will exceed liquidity uses by about 2.0x for the next 12 months. However, the company has a relatively short-dated debt-maturity profile (about four years) compared with the asset base's economic life of over 40 years. Notably, in 2024, refinancing needs will be high, since more than €1 billion of debt is due, or about 20% of total debt outstanding. This increases the company's exposure to refinancing risk, although it has a good track record of refinancing, and we expect OL3 commissioning to help the refinancing process. TVO maintains a €1 billion undrawn RCF maturing in June 2025. It also has a committed €400 million shareholder loan facility, but because this matures in December 2023, we do not include it in our liquidity calculations.

Principal liquidity sources for the 12 months started Dec. 31, 2022, include:

- Unrestricted cash and cash equivalents of about €340 million; and
- €1 billion of undrawn RCF, maturing in June 2025.

Principal liquidity uses for the same period include:

- Debt maturities of about €258 million within the next 12 months and about €1.1 billion for the subsequent 12 months; and
- About €250 million of capex net of penalties in 2023.

Debt maturities include the following:

- 2023: €258.03 million
- 2024: €1.07 billion
- 2025: €1.18 billion
- After 2025: €2.35 billion

Environmental, Social, And Governance

ESG credit indicators: To E-2, S-2, G-3; From E-3, S-2, G-4

Environmental factors are a neutral consideration in our credit analysis of TVO. We revised our

environmental credit indicator to E-2 from E-3 because we consider that the utility is not bearing the risk on its nuclear fleet waste management and decommissioning provisions. To cover the costs of nuclear waste management, TVO makes contributions to the Finnish State Nuclear Waste Management. However, those contributions are passed through to the utility's shareholders. In addition, its nuclear generation has a very low carbon footprint, and we understand that there is broad acceptance of nuclear in Finland. Finally, the company completed OL3's commissioning, diminishing considerably any reputational risk on the construction phase.

Governance factors are a moderately negative consideration in our credit analysis of TVO. This partly reflects the observed delays in completing OL3. We revised this indicator to G-3 from G-4 as the construction phase is now over. Other governance factors are immaterial to our analysis.

Issue Ratings - Subordination Risk Analysis

Capital structure

TVO's €4.8 billion debt comprises senior unsecured debt issued at the parent level only.

Analytical conclusions

The issue rating on the utility's senior unsecured debt is 'BBB-', in line with the issuer credit rating, because no significant elements of subordination risk are present in the capital structure.

Ratings Score Snapshot

Issuer Credit Rating	BBB-/Stable/A-3
Business risk:	Strong
Country risk	Very low
Industry risk	Moderately high
Competitive position	Excellent
Financial risk:	Aggressive
Cash flow/leverage	Aggressive
Anchor	bb+
Modifiers:	
Diversification/Portfolio effect	Neutral (no impact)
Capital structure	Neutral (no impact)
Financial policy	Neutral (no impact)
Liquidity	Adequate (no impact)
Management and governance	Fair (no impact)
Comparable rating analysis	Positive (+1 notch)
Stand-alone credit profile:	bbb-

Related Criteria

- General Criteria: Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria | Corporates | General: The Treatment Of Non-Common Equity Financing In Nonfinancial Corporate Entities, April 29, 2014
- Criteria | Corporates | Industrials: Key Credit Factors For The Unregulated Power And Gas Industry, March 28, 2014
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Stand-Alone Credit Profiles: One Component Of A Rating, Oct. 1, 2010

Related Research

- Finland-Based Power Co. Fortum Outlook Revised To Stable From Negative; 'BBB/A-2' Ratings Affirmed On Strategy Update, March 9, 2023
- Forest Products Group UPM-Kymmene Corp. 'BBB/A-2' Rating Affirmed; Liquidity Assessment Revised To Adequate From Strong, Sept. 15, 2022

Ratings List

Upgraded

	To	From
Teollisuuden Voima Oyj		
Issuer Credit Rating	BBB-/Stable/A-3	BB+/Positive/B
Senior Unsecured	BBB-	BB+
Recovery Rating	NR	4(30%)

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