Research Update:

Finnish Nuclear Producer Teollisuuden Voima Upgraded To 'BB+' From 'BB' On OL3 Plant's Startup; Outlook Positive

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Rating Action Overview

- Teollisuuden Voima Oj (TVO) successfully starting up and connecting its OL3 nuclear power plant to the national grid is in our view a very important milestone because it implies a significant lower risk of additional delays and uncertainty of timely completing the plant, which has historically suffered from many delays.
- As regular electricity production is expected to begin in July 2022, we assume TVO will be able to fully cover its operational costs by charging the incurrent costs from its shareholders. This allows debt deleveraging on the TVO level to begin from 2023.
- The utility has no direct exposure to Russia or Russian suppliers.
- We therefore raised our long-term issuer credit ratings on TVO to 'BB+' from 'BB' and affirmed our 'B' short-term rating on TVO.
- The positive outlook reflects our expectation continuation of progress for OL3, such as plant completion and full operations by July 2022, and start its lengthy deleverage path in 2023.

Rating Action Rationale

The risk of overrun costs have decreased following OL3's start-up, and we assume TVO should start deleverage in 2023. After more than 12 years of delays, the project has, in our view, progressed significantly and reached several important milestones. The reactor was started up Dec. 21, 2021, and was connected to the grid on March 12, 2022. OL3 has entered a four-month testing period and will gradually increase capacity, delivering 3-4 terawatt-hours (TWh) into the electricity grid during this phase. We therefore see less risk of additional delays that could lead to increased costs, either for the construction consortium (Areva-Siemens Consortium [ASC]) or for TVO and its shareholders. The next step is now commercial electricity production of the OL3 reactor, which is planned for the end of July, also leading to TVO making a provisional takeover of the plant. After that, we expect the utility will start a lengthy deleverage path, which is equal to depreciation of its assets adjusted for capex, in 2023. TVO charges its shareholders fixed costs one month in advance based on proportion of shareholding; variable costs are invoiced monthly based on electricity consumed by each shareholder, as stated in the group's articles of association. This implies that the company will reduce leverage by about €100 million-€150 million in the first years of production, which should result in debt to EBITDA below 20x. We view this as highly leveraged.

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. But OL3 is not commissioned yet, so TVO does not receive fixed costs from the owners, as it does for both OL1 and OL2. The utility will initiate its fixed costs charging to its owners when OL3 commercial operation begins, and that's when it can start its lengthy deleveraging path.

We believe TVO has sufficient liquidity for its final construction payments and milestone payments related to OL3. According to the utility, total capital expenditure (capex) costs in 2022 could reach €600 million. This includes maintenance capex and spare parts of €130 million-€140 million for its three plants, general construction costs for finalizing OL3 of about €180 million, and milestone payments of €290 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 €230 million from ASC because of the delays. This penalty transaction is triggered by completion of OL3, simultaneously with the €290 million milestone payment. TVO had about €170 million of cash by end of 2021 and a shareholder facility of €400 million that it could draw upon until December 2022 and, if used, has no fixed repayment terms. We treat shareholder loans as equity, so these would not affect the utility debt metrics.

Production costs for TVO's nuclear power plants are well below market prices, which benefits shareholders. The utility average nuclear production costs will be about €30 per megawatt-hour (/MWh), including OL3 operational costs, increasing from approximately €20/MWh currently. The increase reflects the depreciation when OL3's capitalized costs and interest commences. Current power prices in Finland have on average been above €100/MWh in 2022 and was on average close to €70/MWh in 2021. That is well above recent levels, but we expect that electricity prices will remain to be elevated because of the geopolitical situation and energy transition. TVO's shareholders will benefit greatly as market prices are well above the cost of production for the nuclear power plants. Also, we believe that less dependence on electricity imports is even more important owing to geopolitical factors. And as Finland imports 20%-25% of its electricity demand, the commissioning of OL3 would reduce imports significantly. OL3 has installed capacity of 1,600 megawatts (MW) and is expected to produce about 12 TWh annually when commissioned. This represents about 14% of Finland's electricity consumption.

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, while some items have guarantee periods extending beyond two years. According to TVO's management, the trust mechanism has sufficient liquidity to cover remaining construction costs for OL3 within the current schedule. As a result, we see less risk that Areva would not have sufficient liquidity to timely honor the trust mechanism liquidity agreement. 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, which should limit downside risk, as Areva and Siemens are each responsible for finalizing the OL3 project.

Outlook

The positive outlook indicates that we could raise the ratings in the next year, when OL3 is in commercial operation and started to deleverage, meaning that OL3 is fully operational.

Upside scenario

We could raise the ratings if:

- OL3 is completed and TVO has entered commercial operation without any substantial technical or operational with an operational track record of an average load factor at around 80%.
- The utility demonstrates that it has initiated its deleveraging path.

Downside scenario

We could take a negative rating action or revise the outlook to stable if the test phase of OL3 results in technical, operational, or regulatory issues that could lead to completion delays and cause uncompensated cost overruns not fully covered by the shareholders. This would lead to more external debt than assumed in the previous schedule, which has a total estimated cost of €5.7 billion, and external debt of about €4.7 billion.

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 17% (14.4 TWh) of annual electricity consumption in Finland (86 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.

The company owns and operates two nuclear power plants (OL1 and OL2) that have about 1,780 MW of installed capacity. A third nuclear plant (OL3) with 1,600 MW of installed capacity, is under test production phase by ASC. 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%. TVO's operating license has been renewed until 2038, guaranteeing predictable cash flows until that year. 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 Oy, a subsidiary of UPM-Kymmene Corp. (BBB/Stable/A-2) and Stora Enso Oyj. Fortum Power and Heat, which is 100% owned by Fortum Oyj (BBB/Negative/A-2), the other major shareholder, owns 25.8%. The remaining shares are split between Oy Mankala (8.2%), EPV Energia and (6.6%), and Kemira Oyj (0.9%).

Our Base-Case Scenario

Assumptions

- No additional external debt raised due to project delays beyond June 2021. We expect no more external debt than assumed in the previous schedule and total costs of €5.7 billion.
- Our revenue and capex model assumption that OL3 enters commercial electricity production by July 31, 2022.
- Maintenance capex of €130 million-€150 million annually for OL 1, 2, and 3.
- OL3 construction costs of about €180 million, included in capex, and a completion payment of €290 million in 2022.
- ASC to settle penalties to TVO at OL3 completion of about €230 million.
- TVO's combined nuclear production costs at €30 per MWh when OL3 becomes operational, increasing from approximately €20/MWh currently, reflecting the depreciation of OL3's capitalized costs and interest.
- Shareholders continuing to fully cover the company's production costs under the Mankala model.

Key metrics

We expect that 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 flows 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 adequate as of Dec. 31, 2021, based on liquidity sources exceeding liquidity uses by just above 1.3x for the next 12 months. However, the company has a short-dated debt maturity profile of about four years, compared with the asset base's economic life of over 40 years. In addition, TVO has no track record of sustainable cash flow during the OL3 construction period. Refinancing needs will heighten in 2024 and 2025, when about €2 billion of debt is due (about 45% of total debt outstanding). This could increases the company's exposure to refinancing risk. However, it has a good track record of refinancing despite the construction delays. TVO maintains a €1 billion RCF that matures in 2024.

TVO also has ha €400 million shareholder loan facility. But as the facility matures in December 2023, which is within 12 months, we do not include it in our liquidity calculations. We do not expect the company to draw on the facility with the current timetable for OL3.

Principal liquidity sources include:

- Unrestricted cash and cash equivalents of about €170 million.
- RCF line of €1 billion, maturing in June 2024.
- Penalties received from ASC of about €230 million related to OL3 delays at completion.

Principal liquidity uses include:

- Debt maturities of about €440 million within the next 12 months.
- About €600 million of capex within the next 12 months, which includes a completion payment of €290 million to ASC.

Debt maturities include:

- 2022: €442 million
- 2023: €364 million
- 2024: €1.07 billion
- After 2024: €2.45 billion

Issue Ratings - Recovery Analysis

Key analytical factors

- The issue-level and recovery ratings on the senior unsecured €1 billion RCF and €4.0 billion euro medium-term note program are 'BB+' and '4', respectively.
- The issue rating is constrained by the large amount of senior unsecured debt.
- Our recovery expectations are in the lower half of the 30%-50% range (rounded estimate: 30%). This means there is limited headroom for cost overruns leading to external financing.
- In our default scenario, we assume the default of one of TVO's shareholders, combined with ongoing price pressures in the wholesale market.

- We value the company as a going concern, given its importance to the Finnish electricity market, since it will meet approximately 30% of national electricity requirements once OL3 is on stream.
- We understand that an amendment to Article 4 of the articles of association requires prior written consent of the majority lenders.

Simulated default assumptions

- Year of default: 2026
- Minimum capex: 6% of sales
- Emergence EBITDA after recovery adjustments: €228 million
- Implied enterprise value multiple: 6x
- Jurisdiction: Finland

Simplified waterfall

- Gross enterprise value at default: €2.1 billion
- Administrative costs (5%): €100 million
- Net value available to creditors: €2 billion
- Senior unsecured debt claims: €6.4 billion
- --Recovery expectations: 30%-50% (rounded estimate: 30%)

Ratings Score Snapshot

Issuer Credit Rating: BB+/Positive/B

Business risk: Strong

- Country risk: Very low
- Industry risk: Moderately high
- Competitive position: Excellent

Financial risk: Highly leveraged

- Cash flow/leverage: Highly leveraged

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: bb+

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

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
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Recovery Rating Criteria For Speculative-Grade Corporate Issuers, Dec. 7, 2016
- 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
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, 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

Ratings List

Upgraded; Ratings Affirmed

	To	From
Teollisuuden Voima Oyj		
Issuer Credit Rating	BB+/Positive/B	BB/Positive/B
Senior Unsecured	BB+	BB
Recovery Rating	4(30%)	4(30%)

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors,