

TEOLLISUUDEN VOIMA OYJ

NEA-IFNEC Financing Initiative
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**TVO – AN
EXPERIENCED
PIONEER**

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- Non-listed public limited liability company producing electricity to its shareholders at cost
- Annual production (14.4 TWh), approximately 17% of the total electricity consumption (86 TWh*) in Finland (2021)
- Annual turnover EUR 299 million
- Approximately 980 employees
- Rated BB+ (positive outlook) and BBB- (stable outlook) by S&P and Fitch
- ESG Risk Rating of 23.0 by Sustainalytics, the low-end of the Medium risk category

*) Finnish Energy, Energy Year 2021 (Feb 2022)
Source: TVO, TVO annual report 2021

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OVERVIEW OF UNITS

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Olkiluoto 1 (OL1) and Olkiluoto 2 (OL2)

- OL1 890 MW, OL2 890 MW (BWR), Westinghouse Atom
- Commercial operation since 1979 and 1982
- Modernisation and upgrade in several stages from 660 MW to 890 MW

Olkiluoto 3 EPR* (OL3)

- 1,600 MW (PWR), AREVA-Siemens Consortium
- Under test production phase

Posiva Oy (Subsidiary, 60%)

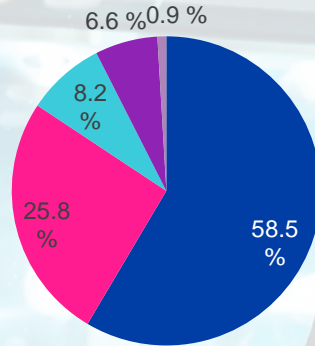
- Responsible for the final disposal of spent fuel produced by its shareholders

*) European Pressurized Reactor
BWR: Boiling water reactor
PWR: Pressurized water reactor

TVO OWNERSHIP STRUCTURE

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Dec 31, 2021



- Pohjolan Voima Oyj (PVO), 58.5%
- Fortum Power and Heat Oy, 25.8%
- Oy Mankala Ab, 8.2%
- EPV Energia Oy, 6.6%
- Kemira Oy, 0.9%

Underlying shareholders by sector

Industrial companies	47%
Municipalities	27%
Fortum	26%

*) UPM Energy Oy is the subsidiary of UPM-Kymmene Oy, rated Baa1 by Moody's and BBB by S&P

Main shareholders of PVO (Dec 31, 2021):

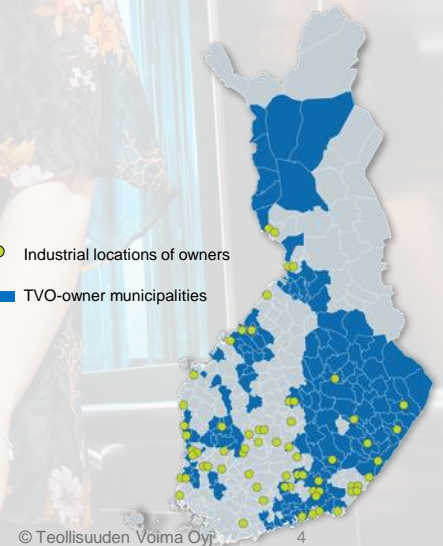
- UPM Energy Oy*: 47.73%
- Stora Enso Oyj (*Baa3, BBB*): 15.61%

Shareholder of Fortum Power and Heat Oy:

- Fortum Oyj (*BBB, BBB*): 100%

TVO's shareholders are Finnish industrial and energy companies - the latter are owned by **131 municipalities**

- Industrial locations of owners
- TVO-owner municipalities



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KEY TOPICS OF OL3 FROM A FINANCIAL POINT OF VIEW

BOTH EQUITY AND DEBT

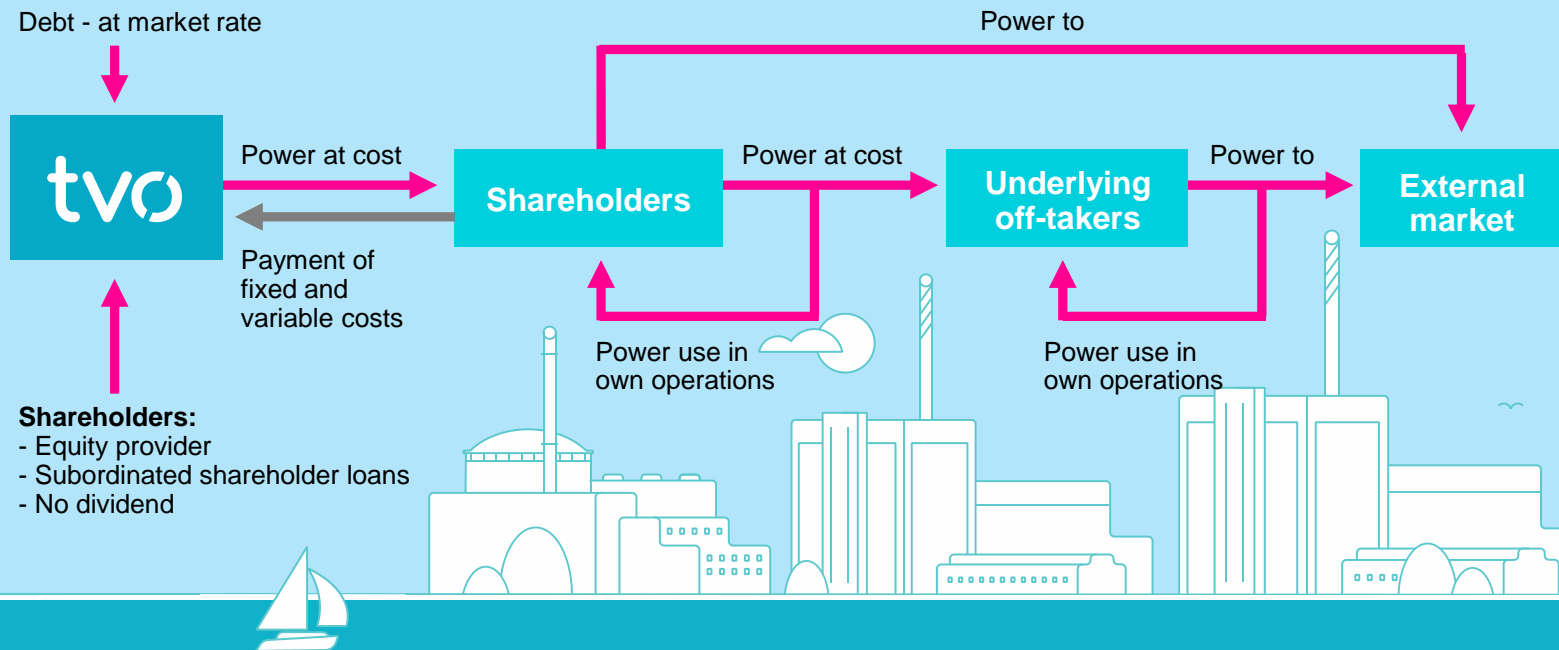
- **General acceptance of nuclear power**
 - Political, general public
 - Sustainability
- **Competitiveness in the long term**
 - Construction, operation, life cycle costs
 - Funding structure and costs
 - Subsidies?
 - Power market exposure?
- **Risk management**
 - Proven and proper risk management

KEY TOPICS, RISK MANAGEMENT

- **Understanding the risks and opportunities**
 - Reference projects, construction and operation
 - Each nuclear project has, at least for now, had its own characteristics
 - Political, reputational, regulatory, legal, financial etc. risks
- **Risk mitigation**
 - Contractual risk sharing, construction and operation phase
 - Which party was best positioned to carry certain risks?
- **Risk limits**
 - Ability to carry risks
 - Which risks could be acceptable?
- **Contingency plan**
 - What if risk limits are broken?

TVO'S OPERATING MODEL

Mankala model benefits both TVO as well as its shareholders and off-takers



TVO'S OPERATING MODEL



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- TVO is run according to **the Mankala Principle**, which is a unique model widely applied in the Finnish energy industry
 - Different share classes give access to the output of TVO's different assets proportionally to a shareholder's stake
- Shareholders are **severally responsible** for the annual costs of the respective asset as **defined in the articles of association** of TVO
 - TVO is a limited liability company, and its shareholders have no personal liability for the indebtedness of TVO
 - Only the company has the sole right to call upon the responsibility of the shareholders
- In the event a shareholder does not make its payments, TVO has the right to sell the non-paying shareholder's electricity to other shareholders or to third parties at market price
- Existing shareholders have a right of first refusal to buy shares that may be offered for sale

BENEFITS OF THE MANKALA MODEL

- Smaller companies and utilities can also invest
- Benefits of large-scale production can be shared with more players → risk is also shared
- Benefits of lower cost of nuclear power will be shared with large number of end-users
- "Public Private Partnership"
- Due to risk sharing structure and excellent track record of the existing operating units, relatively low equity component was required for the investment

WHY THE OL3 INVESTMENT HAS BEEN A STRONG PACKAGE FOR THE FINANCING MARKET (1/2)

- Stable political environment in Finland
 - Favourable public opinion
- Waste management solution agreed
 - Political decision
 - Site selected and construction ongoing
 - Technology available
 - Fully funded State nuclear waste management fund



WHY THE OL3 INVESTMENT HAS BEEN A STRONG PACKAGE FOR THE FINANCING MARKET (2/2)

- Financing on balance sheet (not project financing)
- Excellent operational performance on the two existing nuclear reactors
- High credit quality owners severally liable for annual costs as determined in the Articles of Association of TVO → committed lifetime off-take by the owners
- Continued support by the shareholders even after delays in completion
- Full turnkey delivery
- Joint and several liability by the suppliers

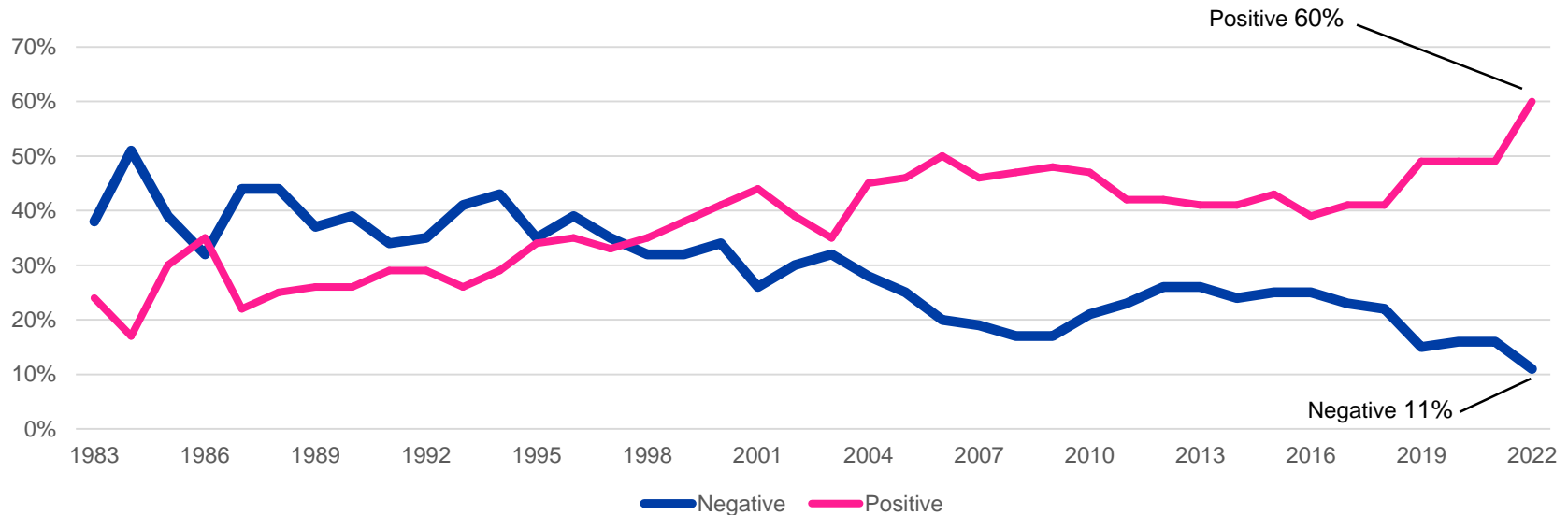


LESSONS LEARNED FROM A FINANCING POINT OF VIEW

- Buyer's credit may be the critical component in the financing structure
- Large enough bank group to support
 - Banks or strategies may change during the process
 - Big part of the bank support is based on trust → transparency
- Big enough liquidity buffers
 - Surprises will come
- Careful thinking of the risk appetite and risk sharing
 - Need to understand what are the risks and how to control the risk exposure
- Prepare for contingency plan
 - Strong enough owners who are fully committed
- Benefits of Mankala model will apply when you have other valuable asset also
- Good enough credit rating is a prerequisite for successful use of bond markets

DEVELOPMENT OF NUCLEAR POWER ACCEPTANCE, FINLAND, 1983–2022

Public support exists for nuclear power



Thank you!

