



FENNOVOIMA

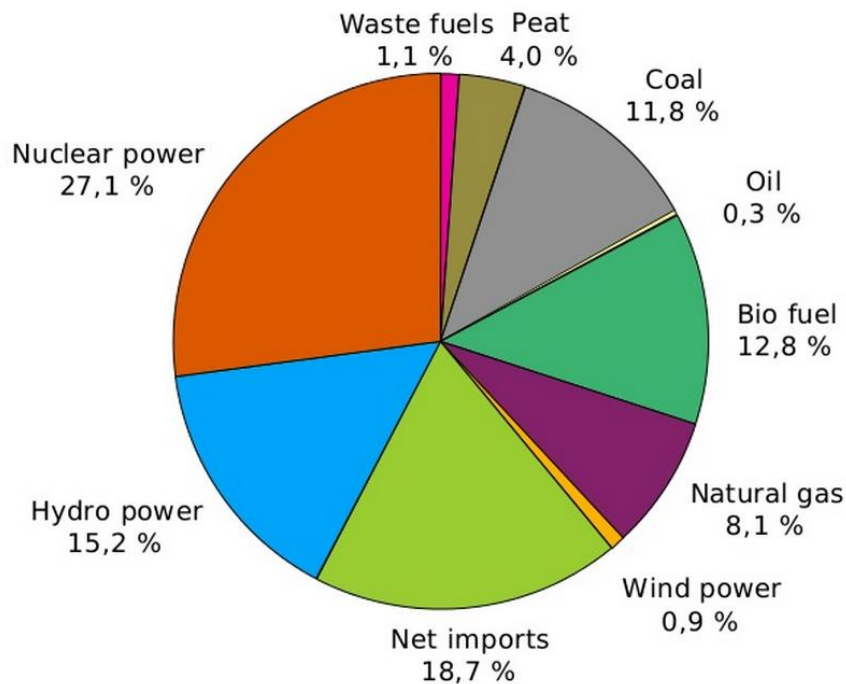
Balancing out a competitive investment solution. Case: New nuclear power plant in Finland

AtomExpo
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Project Director

Need for new power in Finland

Electricity supply by energy sources, 2013
(83,9TWh):



Finnish Energy Industries

- Future targets:
 - Aging capacity needing to be replaced
 - Up to 5000MW by 2030, including Loviisa NPP (2x VVER 440)
 - Reduction of greenhouse gas emissions
 - Increase in self-sufficiency of electricity supply
 - Securing the competitiveness of Finnish industry by offering reasonably priced electricity for a long period of time
- Only nuclear power can meet all of these goals

Fennovoima

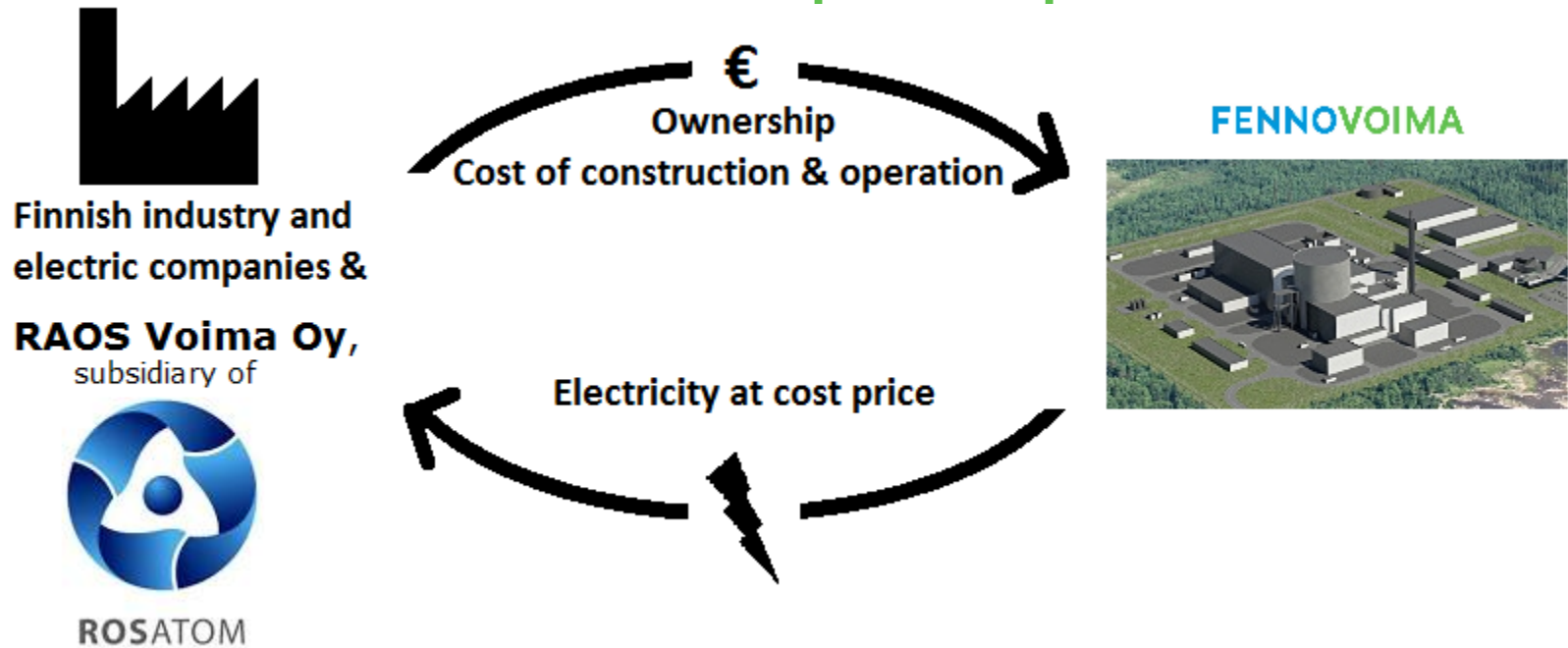
- Fennovoima is a non-profit LLC owned by industrial and electricity companies in Finland and Rosatom
- Goal is to offer clean, reasonably priced, dependable electricity to its owners for decades to come



Owners



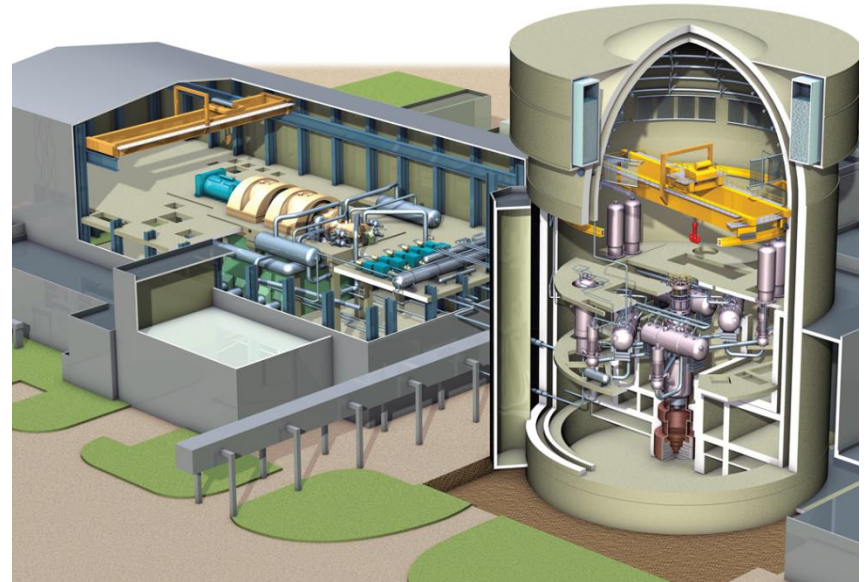
Mankala principle



- Partners fund the construction and maintenance of the power plant, and in return they get the electricity at cost price, in proportion to their ownership share
- Mankala principle enables several smaller electricity users to join forces for building and operating a NPP

Rosatoms role

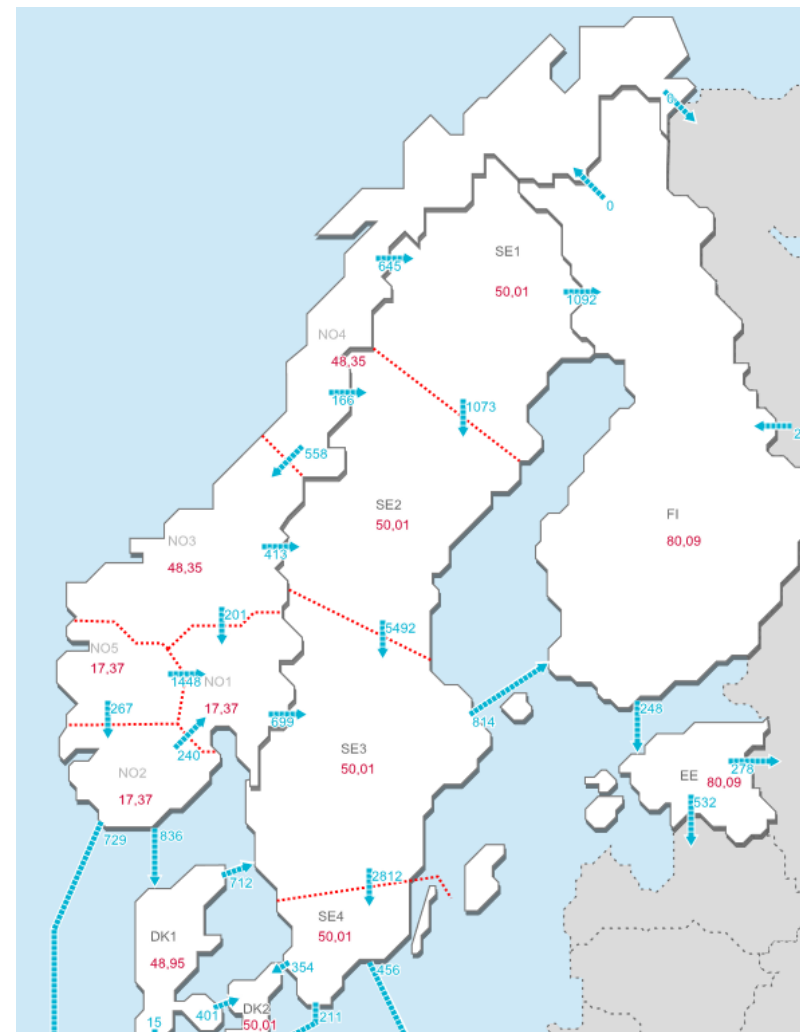
- Rusatom Overseas will construct an AES-2006 (V491) type nuclear power plant with turnkey delivery, including complete nuclear and turbine islands
- Also offers financing for the project
- Fennovoima operates the plant, Rosatom owns 34% share



Nord pool

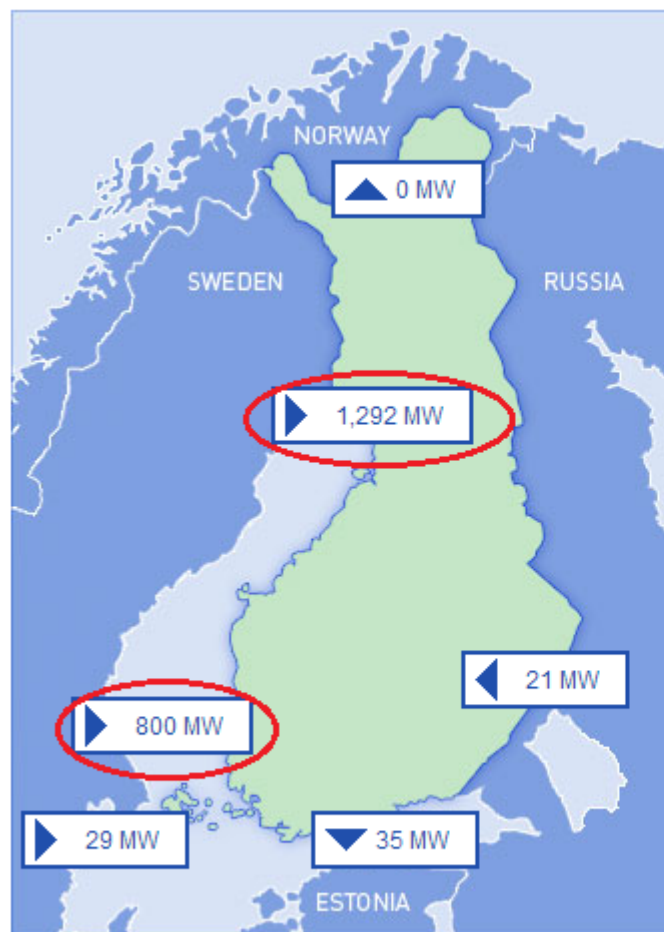


- More than 70% of the total consumption of electrical energy in the Nordic market is traded through Nord Pool Spot (intraday and day-ahead)
- Also possible to buy electricity for the future and secure the price up to 10 years ahead (NASDAQ OMX Commodities Europe)
- Prices vary according to demand, transmission capacity etc, averaging 36 – 56 €/MWh in Finland during 2010-2013



State of the nordic power system

26.5.2014



Consumption and production in Finland

[Info](#)

Consumption	9,266 MW
Production	7,188 MW
- Hydro power	2,231 MW
- Nuclear power	1,830 MW
- Condensing power	538 MW
- Cogeneration district heating	1,251 MW
- Cogeneration industry	1,130 MW
- Wind power (partly estimated)	168 MW
- Other production (estimate)	40 MW
- Peak load power	0 MW
Net import/export	2,078 MW

Power balance

[Info](#)

Production surplus/deficit in Finland	178 MW
Surplus/deficit, cumulative	65 MWh
Instantaneous freq. measurement	49.90 Hz
Time deviation	-7.62 s

Electricity price in Finland

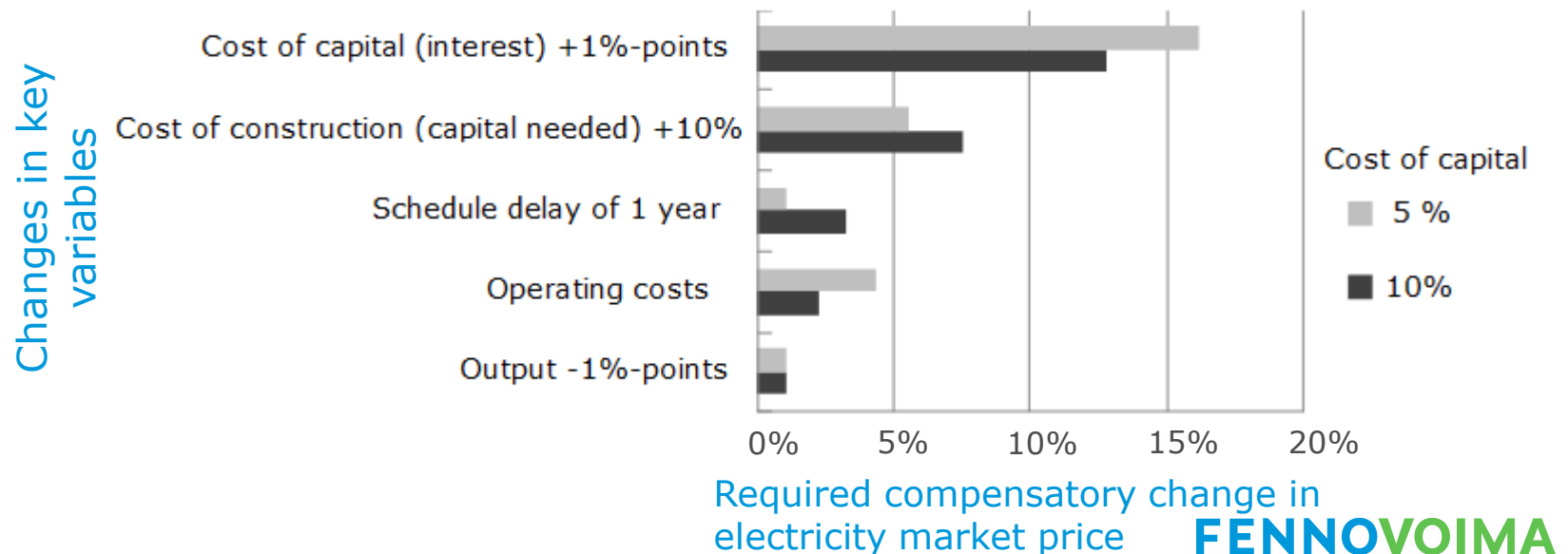
[Info](#)

Elsport area price	105.39 EUR/MWh
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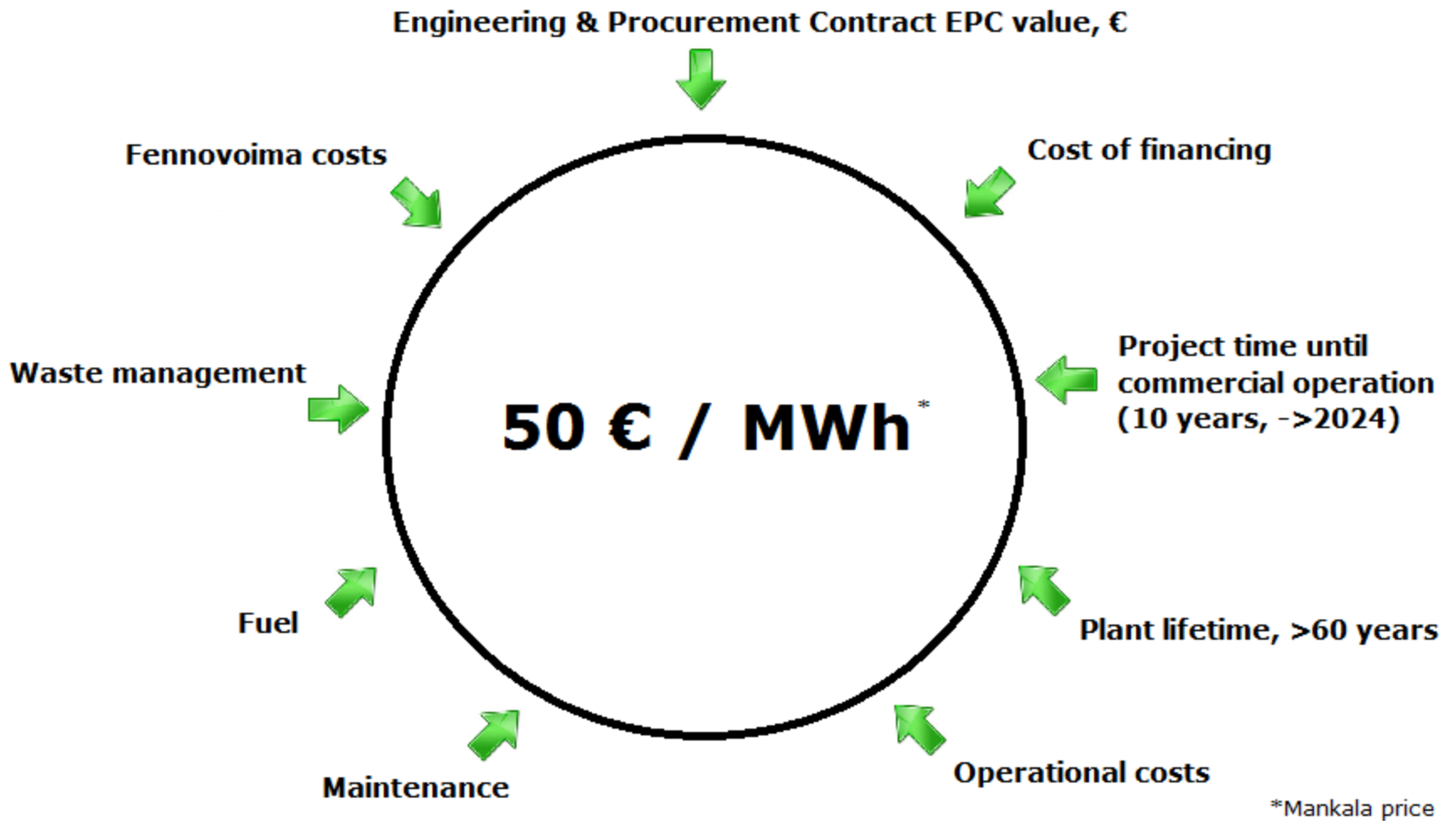
Nuclear as a business case: what's actually important?

- As known, nuclear is highly capital intensive. But what exactly determines the final total price, €/MWh?
 - the amount and cost of capital are by far the most critical
 - if those are favorable, the project feasibility is highly secured for adverse changes in other key variables

Sensitivity of project feasibility



Fennovoima – Rosatom as a business case



Rosatom – Fennovoima milestones

April 2013 ● Fennovoima and Rosatom started direct negotiations

Dec 2013 ● Plant supply contract signed between Fennovoima and Rosatom

March 2014 ● Rosatom acquired 34% share of Fennovoima

April 2014 ● Owners made final commitment to Fennovoima

Next milestones:

fall 2014 ○ Approval of the supplement to the Decision-in-Principle by the Parliament

summer 2015 ○ Submit the construction licence application to the Radiation and Nuclear Safety Authority (STUK)





Thank you for your attention!

Minna Forsström
Project Director