

MTÜ Eesti Tuumajaam

Estonian Nuclear Powerplant Association



Kalev Kallemets
Secretary General



The mission

Founded 2008

In Statutes: "The mission of the Society is to inform and create awareness among Estonian population on advantages and risks of nuclear powerplant newbuild and to make development process of Estonian NPP transparent to the public."



Members

- Private individuals - academics, business, politicians
- Companies – 7 major power consumers (ca 1,2TWh), 3 construction companies (KMG, Scanweld, Estanc)
- Society – Estonian Homeowners Association
- Youth organisation
- 4-6 new member companies in few months

Estonian capacities

TSO Elering: 2020. peak demand 1714 to 2016 MW

Deficit in Estonia 800MW in 2020.

| | Net capacity, MW 2010 | Available capacity, MW | Net capacity, MW 2020 | Available capacity, MW 2020 |
|-------------------------------------|--------------------------|------------------------------|-----------------------------|-----------------------------------|
| Narva power plants | 2000 | 1788 | 1030 | 900 |
| Narva new CFB | | | 300?? | 300?? |
| Iru CHP | 156 | 0 | 156 | 0 |
| Ahtme CHP | 24,5 | 9,2 | 0 | 0 |
| VKG Põhja ja Lõuna elektrijaamad | 44 | 17 | 74 | 57 |
| Other CHPs and hydro plants | 78 | 71,5 | 150 | 130 |
| Wind power | 115 | 0 | 400 | 0 |
| | 2 421 | 1 888 | 2 110 | 1 387 |

Nord Pool capacities 2020

- Imports in Baltics: LT – 4TWh; LV – 2 TWh; EST – 2TWh
- Finland (increased consumption 10TWh)
 - Imports 13TWh
 - Coal plant closure – 5-8TWh
 - Olkiluoto 3 + 12TWh
 - Loviisa 1/2 closure 2030 – 8TWh
- Sweden (increased consumption +20TWh)
 - Ringhall 1/2 ja Oskarshamn 1/2 closure 2030 – 20TWh
 - +2 new reactors 2025-2030 30TWh
- Denmark (increased consumption 5TWh)
 - +7 TWh wind power
 - -16TWh Coal plant closure

New oil shale CFB- only with subsidy (10,8€/MWh- defeated)



Põlevkivi kasutava uue 300 MW CFB ploki konkurentisvõime hinnang Balti elektriturul

| | | | | | |
|-----------------------------------|------|------|------|------|------|
| CO2 hind, EUR/t | 0 | 10 | 20 | 30 | 40 |
| Keskmine turuhind*, EUR/MWh | 33 | 39 | 47 | 49 | 59 |
| Uue CFB muutuvkulu, EUR/MWh | 20 | 30 | 39 | 46 | 54 |
| Uue CFB kapitalikulu**, EUR/MWh | 32 | 32 | 32 | 32 | 32 |
| Uue CFB täiskulu, EUR/MWh | 61 | 70 | 79 | 86 | 95 |
| Kogu aastane kapitalikulu**, MEEK | 827 | 827 | 827 | 827 | 827 |
| Vajalik toetus, MEEK | 494 | 516 | 587 | 625 | 627 |
| Toetus, MEEK/MW | 1,65 | 1,72 | 1,96 | 2,08 | 2,09 |
| Toetus, s/kWh (8000 h***) | 20,6 | 21,5 | 24,5 | 26,0 | 26,1 |

*Turuhind on leitud vastavalt turul olevatele tootmisvõimsustele ja sõltub osaliselt CO2 hinnast.

**Kapitalikulu on arvatud brutoinvesteeringu 1500 EUR/kW järgi 20 aastaks, WACC 10%.

***8000 h on võimsuse kasutatavus aastas.

| | | | | | |
|------------------------------|--------|--------|-------|-------|-------|
| Reaalselt töötatud tunnid | 4200 | 4200 | 2700 | 1900 | 1000 |
| Reaalne toodang, GWh | 1392,3 | 1392,3 | 941,9 | 627,9 | 395,9 |
| Toetuse arvestus tunnid | 8000 | 8000 | 8000 | 8000 | 8000 |
| Toetus seaduseelnõus, s/kWh | 0,0 | 22,0 | 25,0 | 25,0 | 25,0 |
| Aastane kulu toetusele, MEEK | 0 | 528 | 600 | 600 | 600 |

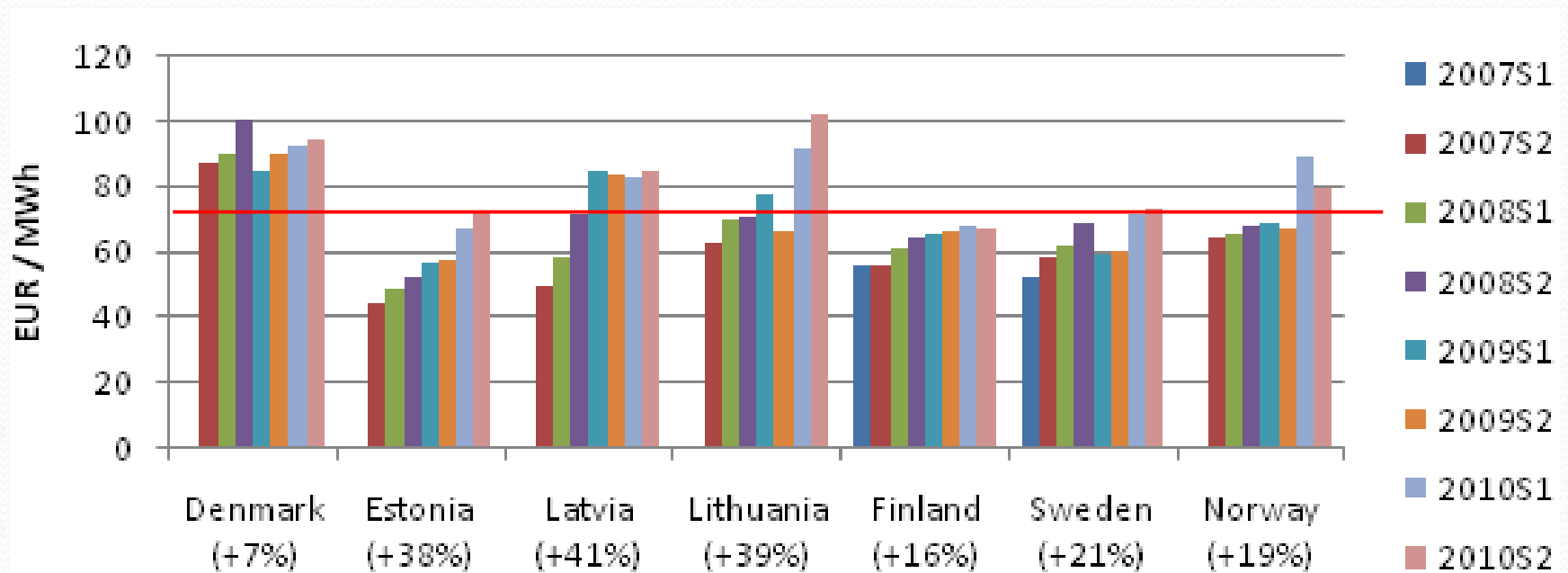


Subsidies to renewable energy

- Current subsidy 9€/MWh. Next year likely 11-12€/MWh
- Potentially 30€/MWh if 900MW wind energy plan in Renewable Energy Action Plan realizes with full consumer cost

Total power costs +38%

Electricity prices for 2-20 GWh consumers excluding VAT; *Source: (Eurostat, 2011)*



Cooperation with decisionmakers

- 3 of 4 parties in parliament supporting nuclear power in election platforms
- Government working plan: Ministry of Economy has to work out feasibility study by QII 2012
- Nuclear law legislation worked out - adoption 2012
- Nuclear regulatory body (Slovenia good benchmark)
- Nuclear engineering masters course in 2012
- As there is few expertise in Estonia, technical siting work has to be outsourced (Pöyry, Atkins, CH2M Hill).

Reactor choice

- Enhanced CANDU6 (740 MWe)
 - Depends on Chernavoda 3/4 new build
- AP 1000 (1100 MWe)
 - Rather large unit for Estonia
- Small modular reactors
 - Generation mPower 136MWe
 - Westinghouse SMR 200MWe
 - HTR-PM 210MWe
 - Licensing and commercialisation?





Questions?

Thank you for invitation!