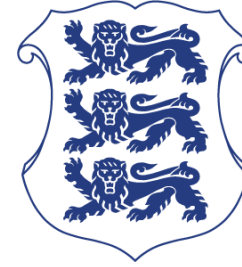




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REPUBLIC OF ESTONIA
MINISTRY OF CLIMATE

Energy Security issues in Estonia

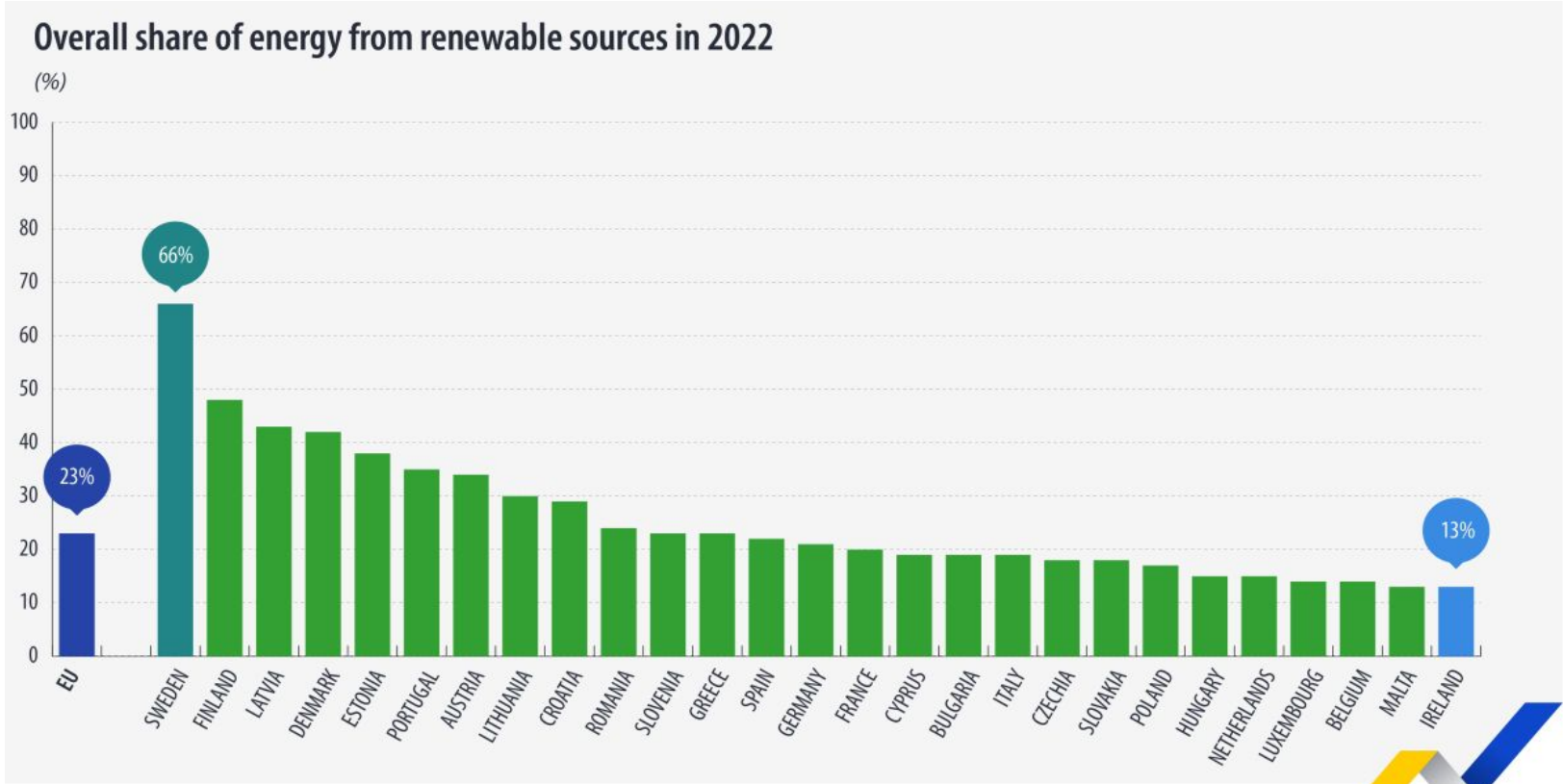
A NEW REALITY FOR ENERGY SECURITY IN THE BALTIC REGION

Karin Maria Lehtmets,
Head of Energy Markets, Energy Department,
Ministry of Climate of Estonia

Vilnius, October 2024



Global position of Estonia



eurostat

5th in overall share of energy from renewable sources

1 System performance 2023; 2 Transition readiness 2023 **Note:** The average score for 2023 is 56.3.

WEC Trilemma energy sustainability index (security, equity, sustainability)

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[World_Energy_Trilemma_2024_Full_Report.pdf](#) (worldenergy.org)

| Country | Rank | 2022 Rank |
|----------------|------|-----------|
| Denmark | 1 | 3 |
| Sweden | 1 | 1 |
| Finland | 2 | 4 |
| Switzerland | 3 | 2 |
| Canada | 4 | 7 |
| Austria | 5 | 6 |
| France | 6 | 8 |
| Germany | 7 | 9 |
| Estonia | 7 | 12 |
| United Kingdom | 8 | 5 |
| Norway | 8 | 10 |
| New Zealand | 9 | 11 |
| United States | 10 | 12 |

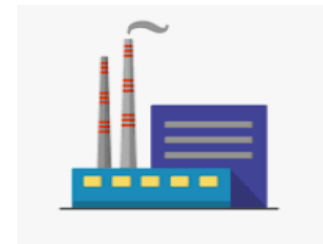


Goals in Estonian Energy policy

- **2030** production of renewable electricity = yearly consumption (29% in 2024)
 - Estonia becoming again net producer
 - Share of renewable energy in final energy consumption 65% (current state 40%)
 - Share of renewable energy in building heating 70% (66% in 2024)
 - Share of renewable energy in transport 29% (16 in 2024%)



- **2035** end of oil shale usage in electricity production



- **2040** climate neutrality in electricity production



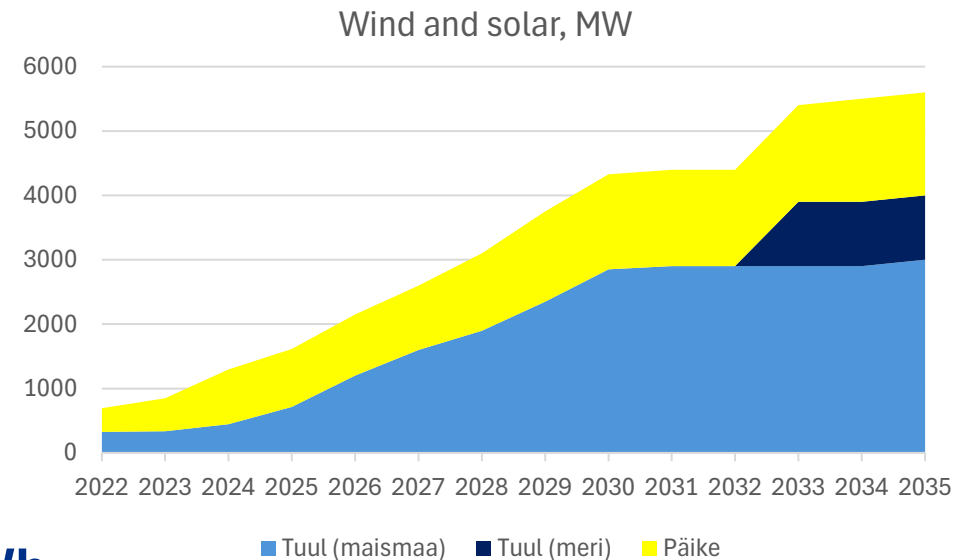


Road to 100% renewable electricity by 2030

- ✓ Target 2030: renewable electricity production at least **10 TWh**
- ✓ Renewable electricity production in 2021 was **2,88 TWh**
- ✓ Need for additional production **~7 TWh**

How?

- ➡ Bioenergy: keep today's production
- ➡ Solar: **current 0,8 TWh, plan to double -> +0,8 TWh**
- ➡ Wind: Need of additional production **6,2 TWh -> plan to bring at least 8 TWh**
- ➡ Storage: cuts down the volatility of prices, allows more renewables to add in the system, currently ca 700 MW in grid connection process





Main challenges for keeping energy security

- **Synchronization** project (Feb. 2025)
 - One additional oil-shale unit in reserve during winter 2025
 - New frequency reserve markets -> procurement ongoing for additional capacity 500 MW
- **Keep enough dispatchable electricity generation capacity** (at least 1000 MW).
 - Setting up electricity reserve capacity mechanisms (2027 and 2032+)
- **Strengthening grids**
 - Developing Transmission grid in front for renewables -> fixed connection fee
 - New external links, Estlink 3 and EstLat 4
- **Strengthening critical infrastructure resilience, security and monitoring** (undersea as well on-land) -> being ready for hybrid attacks
 - Considering cyber Threats
 - Undersea monitoring system piloting
 - MoU with Finland



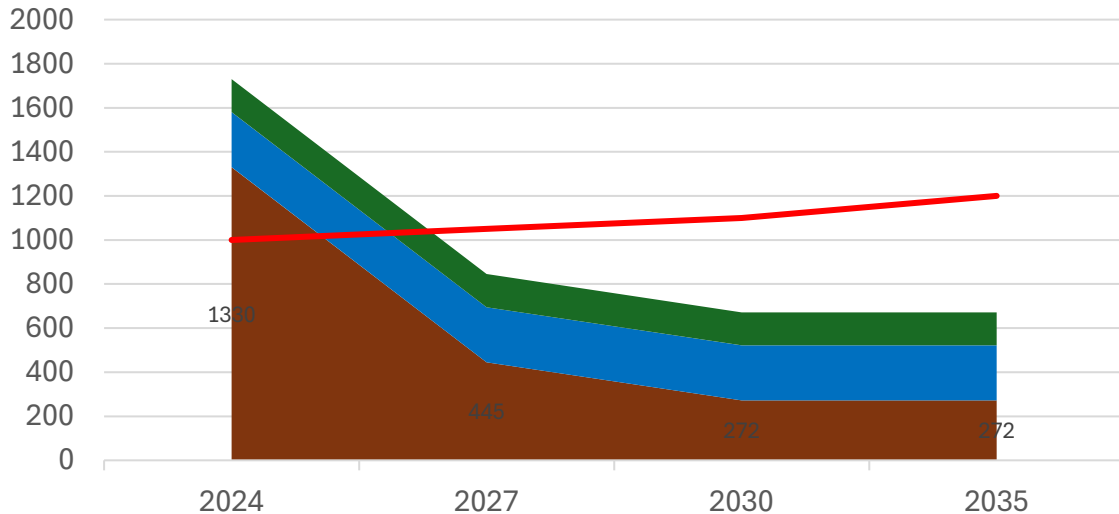
Dispatchable generation capacity challenges

Phase out from oil shale based production/ close down of units:

- 2020-2023 4 units 600 MW
- 2027 4 units 850 MW
- Remaining: ca. 494 MW

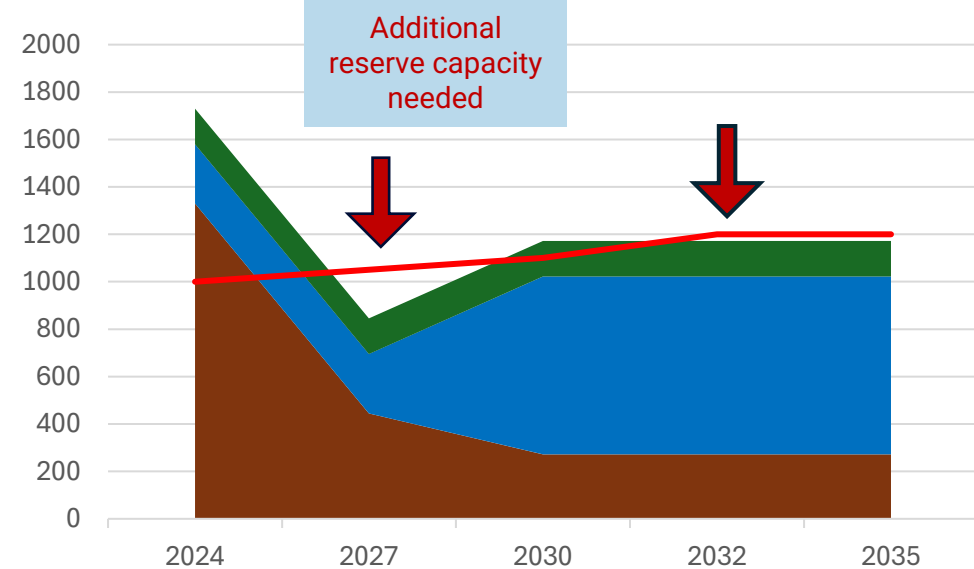
1000 MW dispatchable generation needed (1200 MW in 2030+)- > shortage as of 2027 in case nothing done

Current state



Oil shale Gas Biomass Dispatchable capacity need

With new frequency reserv capacity



Oil shale Gas Biomass Dispatchable capacity need



Dispatchable capacity production sources

Oil shale and biomass -> gas and biomass-> biogas, hydrogen, nuclear
carbon capture

2024

2030

2035

2040

+

Storage (batteries, pump hydro) and demand response



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Increasing infrastructure resilience, security and monitoring: vulnerabilities

Balticconnector incident (Oct 2023-april 2024)
Cause: Anchor-drag



Source: [Reuters](#)

Estlink 2 failure (Jan 2024 – september 2024)
Cause: Technical failure



Source: [Elering](#)



Increasing infrastructure resilience, security and monitoring

Being ready for hybrid attacks

- Considering cyber threats
 - Discussing options to limit inverters in clouds
 - Concreate requirements for smart meters (new rolling switch by 2031)
 - Considering 3rd countries technology threats
- Equipment storage
- Better monitoring systems
 - Antidrone solutions under discussion
 - Undersea monitoring system piloting
 - MoU with Finland regrading undersea energy Infrastructure resilience increase
- **Reviewing and enhancing** the security measures of energy companies (vital service providers service continuity plans, excercises, etc.)



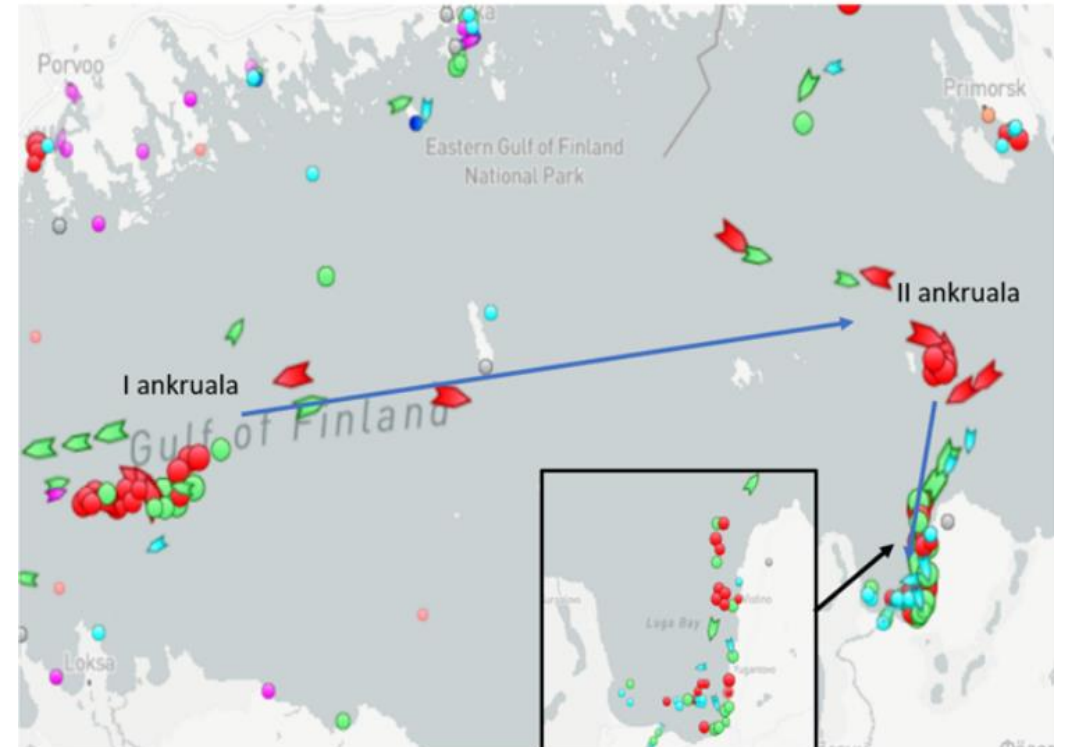


Energy infrastructure security in the sea area

- Necessary to increase Estonian underwater monitoring capability for critical infrastructure.
- Critical infra operators needs to:
 - increase fault location capability
 - pre-contracts for faster repair
 - keeping spare-parts for critical infra for faster repair
- Regional cooperation work together protecting underwater infrastructure



- MoU with Finland on september 2024
- Goal to widen the format across Baltic sea (similary to North sea co-operation format)
- SeaWolf piloting



Self-emerging anchorage areas in the Gulf of Finland
(Source: [Kliimaministeerium](#))



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Thank you!

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