Renewables Finland

Renewable energy and the future of Nordic energy security

Public support in the energy transition
4.12.2025 Lahti

Anni Mikkonen, Renewables Finland
renewablesfinland.fi

Onshore wind

Offshore wind

Utility-scale solar PV

BESS

= Renewables Finland

240 companies

13 employees

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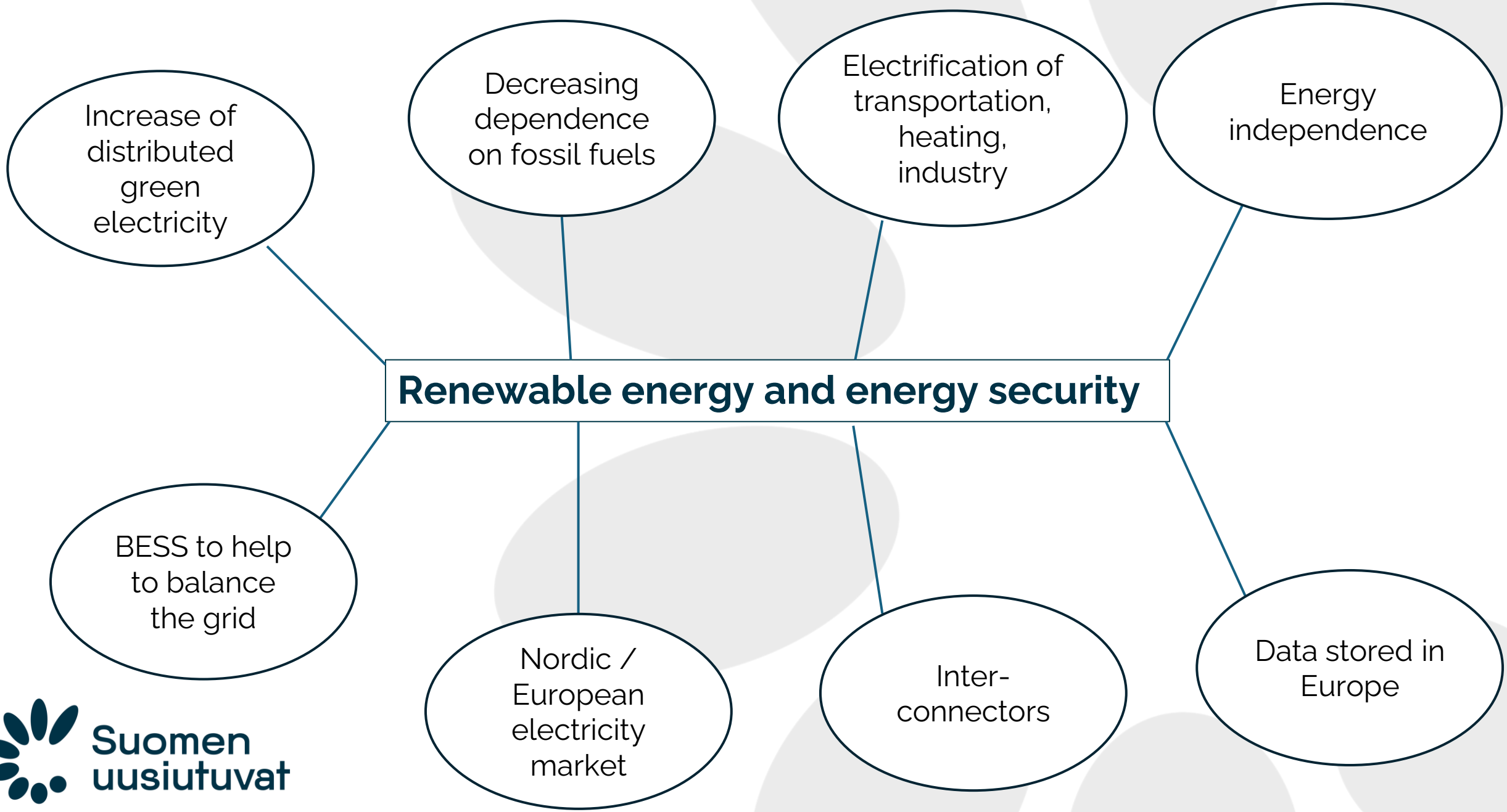
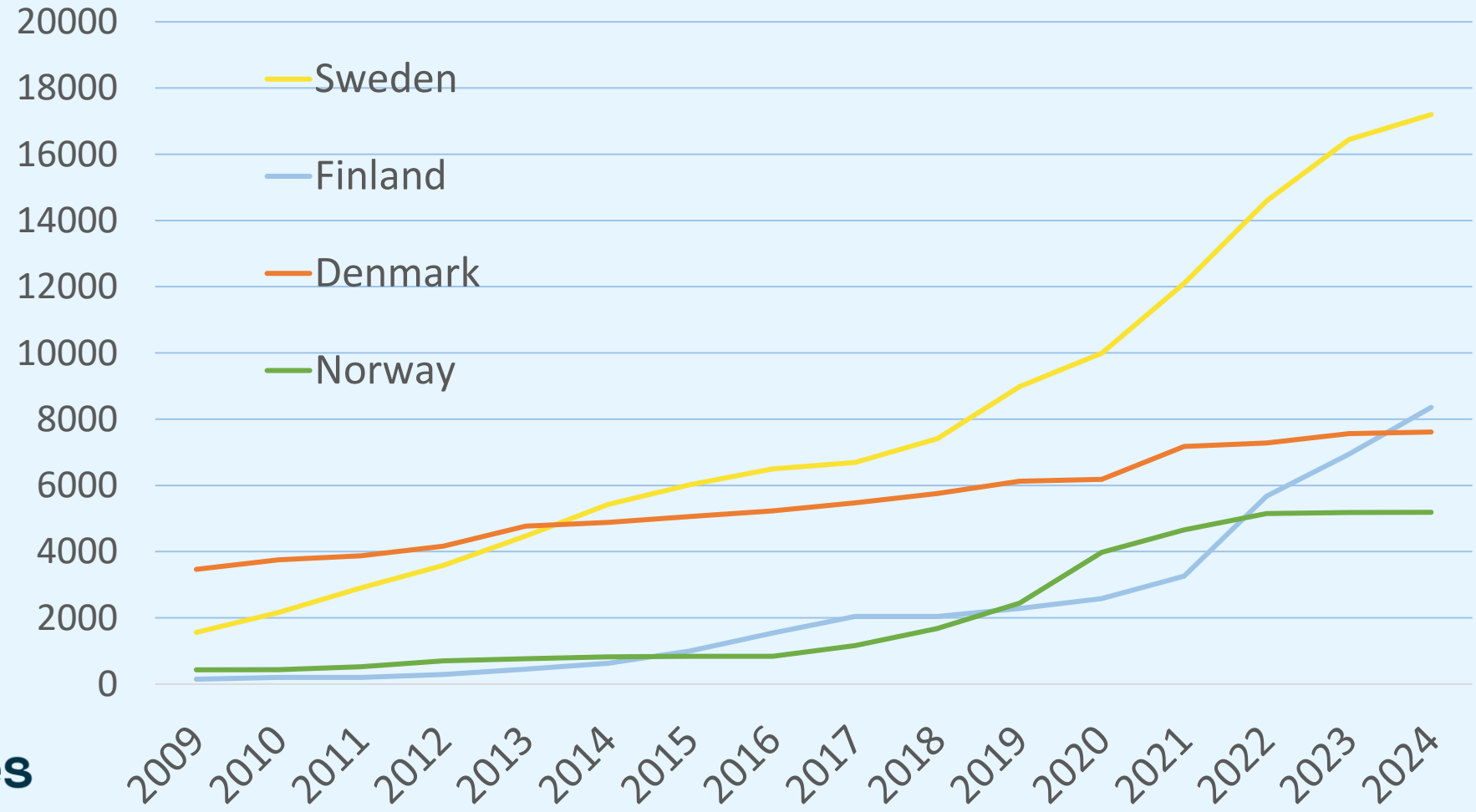


Suomen uusiutuvat

The increase of wind power has been dramatic between 2009 and 2024 in the Nordics (MW)



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Share of Wind Power in European Countries 2024

- Denmark 56 %
- Sweden 31 %
- Finland 24 %
- Norway 11 %

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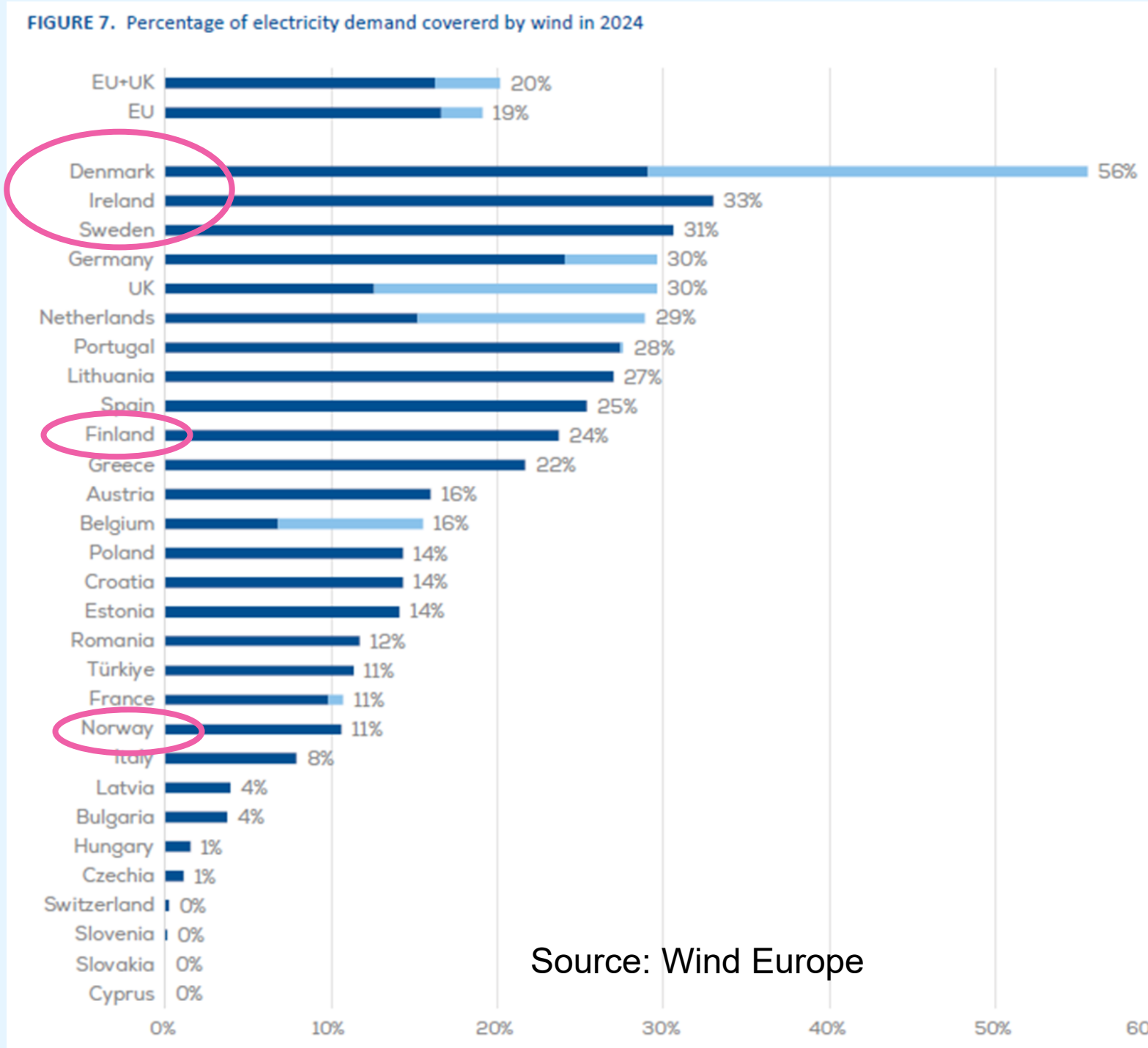
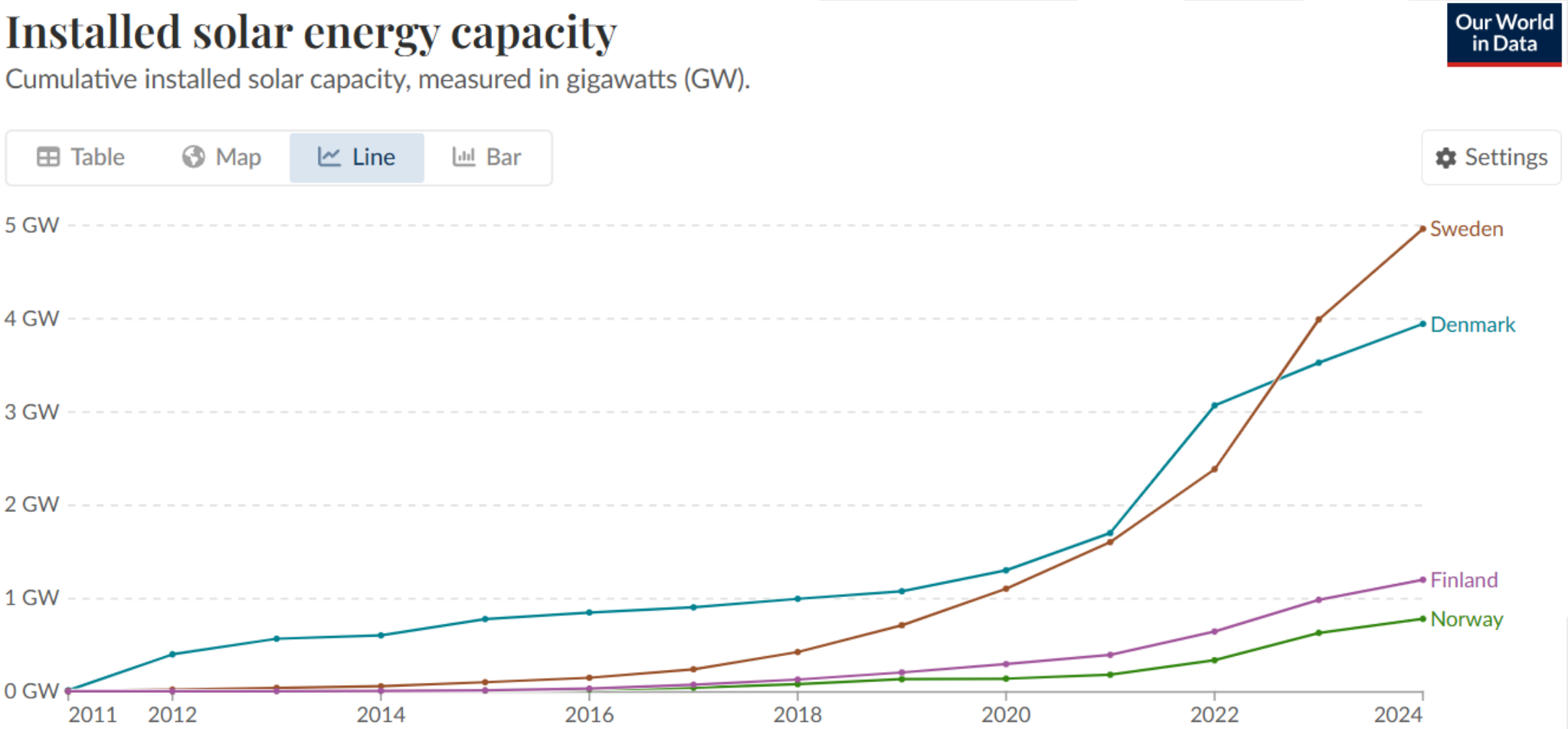


Solar-PV is also coming to the Nordics!



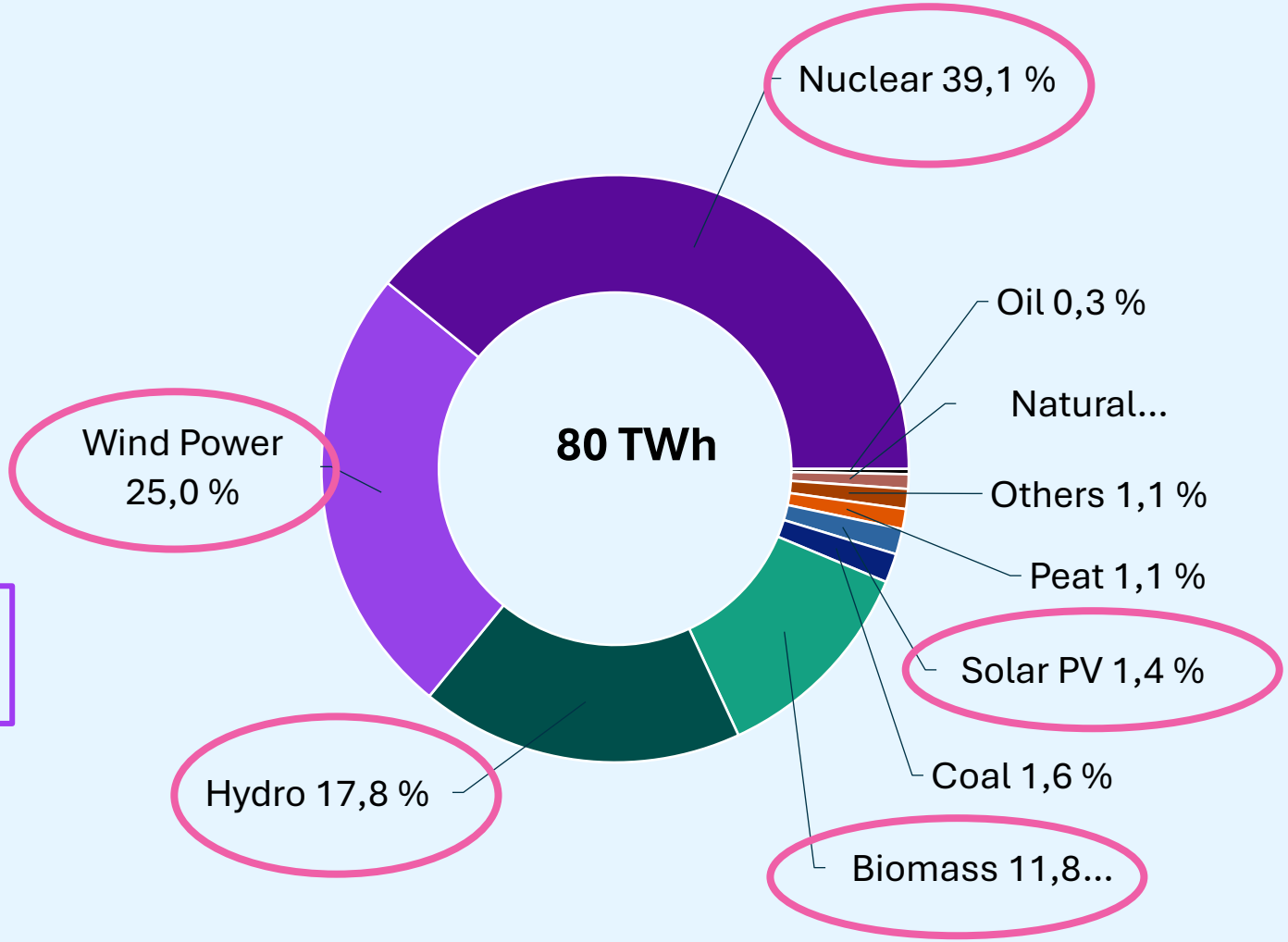
Suomen uusiutuvat

Source: Our Wolrd in Data (Data from Irena)

Finnish electricity mix is clean

- Renewables: 56 % (52 % in 2023)
- CO2-free*: 95 % (94 % in 2023)
- Domestic: 57 % (54 % in 2023)

Electricity consumption 83 TWh in 2024, 3,9 % was covered with imports.



Source: Finnish Energy

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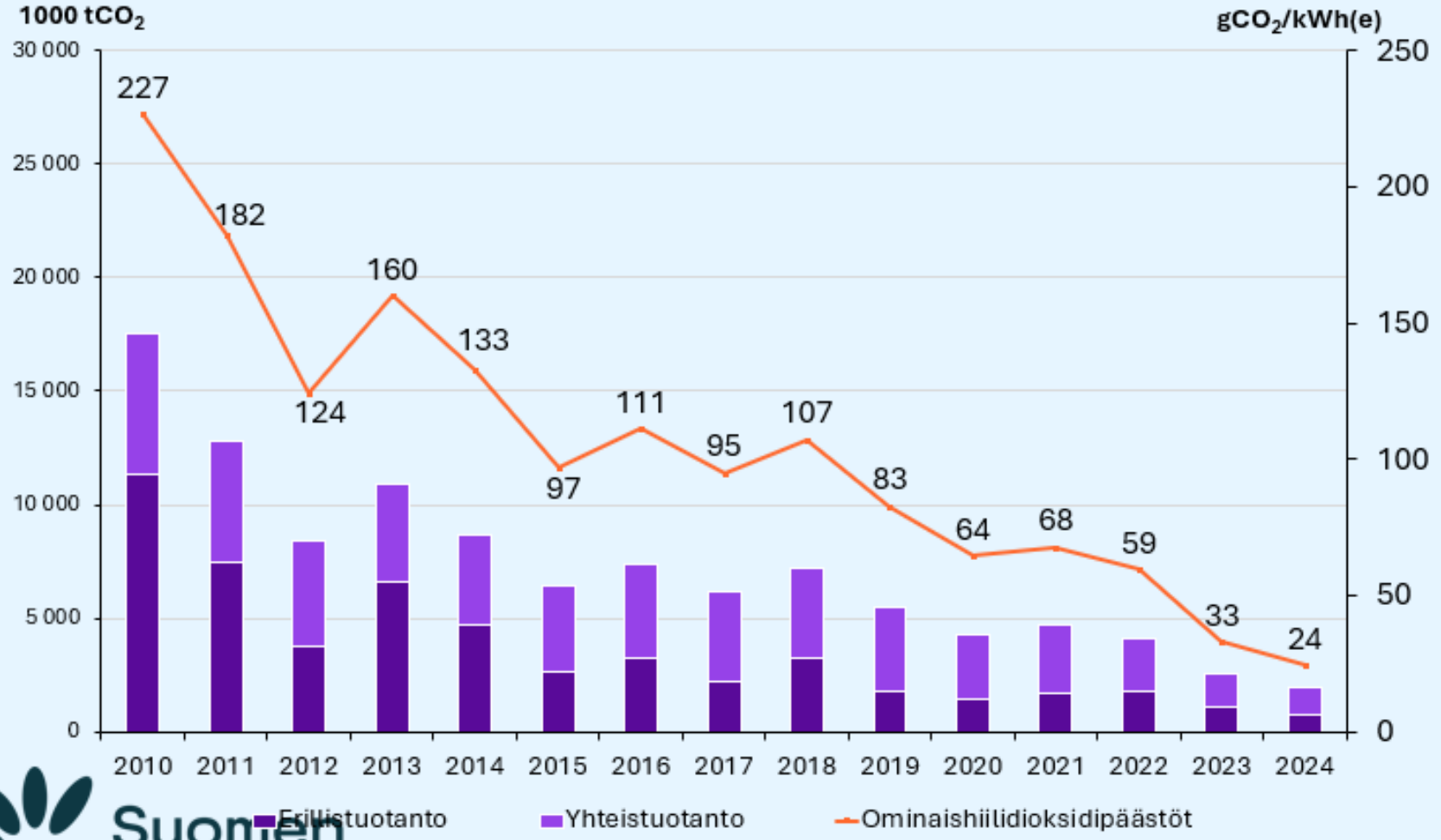
CO2 Emissions of Finnish Electricity Production

EU-27, v. 2023: 210 gCO_2/kWh
Source: EEA



CO2 emissions:

- 1,9 Mt in 2024
- 2,6 Mt in 2023
- 4,1 Mt in 2022
- 6,4 Mt in 2015
- 18 Mt in 2010

- 55 % reduction since 2019
- 89% reduction since 2010

Suomen uusiutuvat

Source: Finnish Energy

But the total energy mix?

2024 the total energy consumption of Finland was 359 TWh

2024 Electricity consumption was 83 TWh

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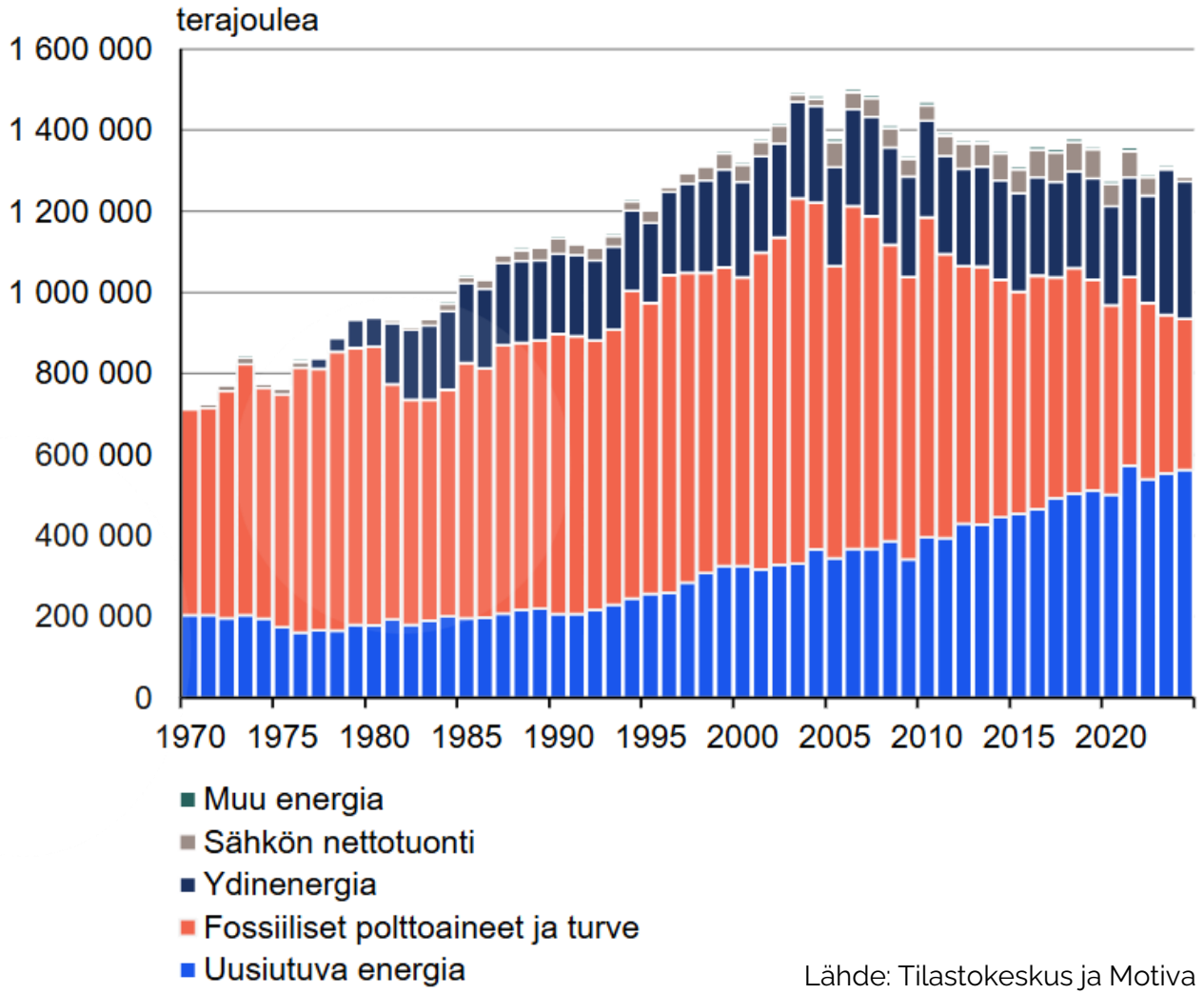
Energian kokonaiskulutus energialähteittäin 1970-2024*



Lähde: Tilastokeskus ja Motiva

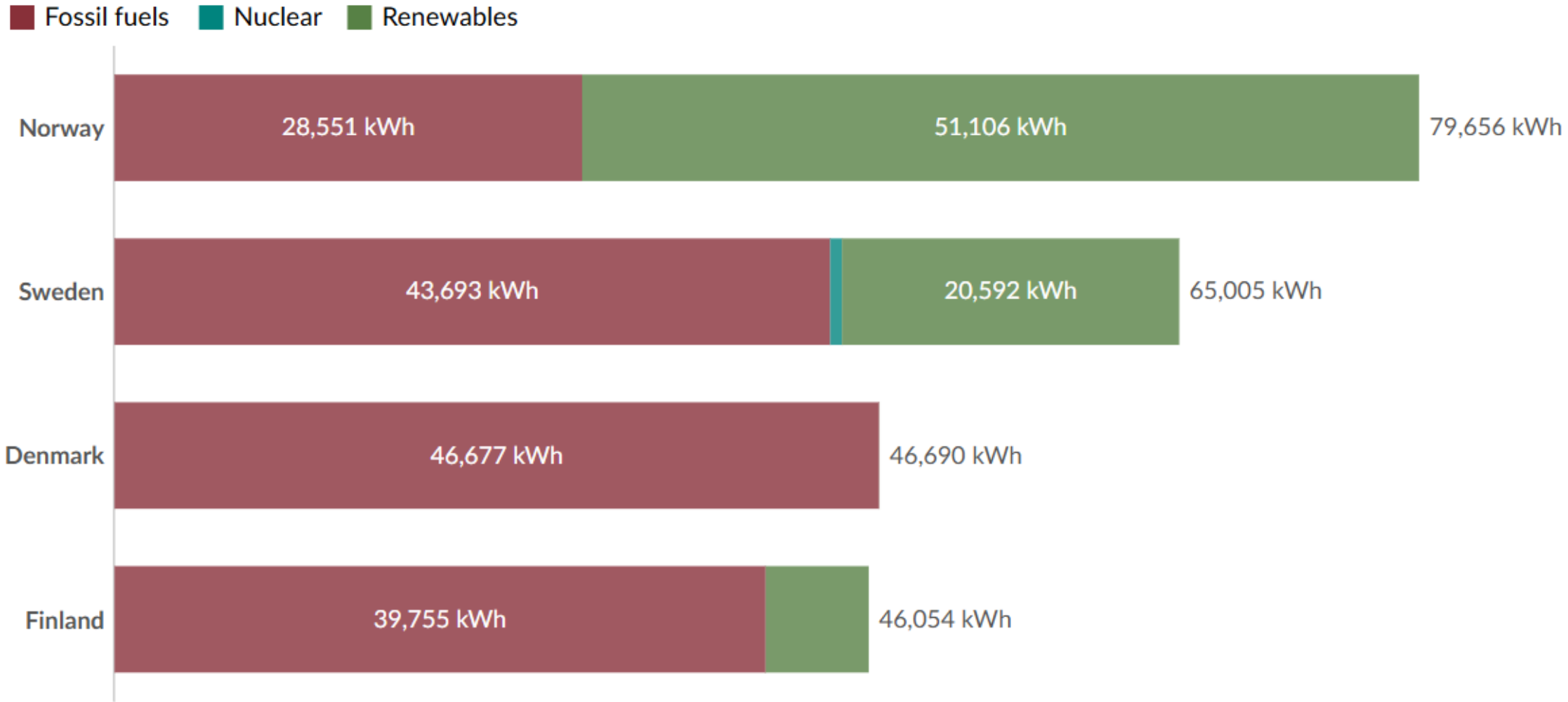
Per capita energy from fossil fuels, nuclear and renewables, 1973

Measured in kilowatt-hours of primary energy consumption per person, using the substitution method.

Our World in Data

Table | Chart

Edit countries and regions | Settings



1965 — 2024

Source: Our Wold in Data

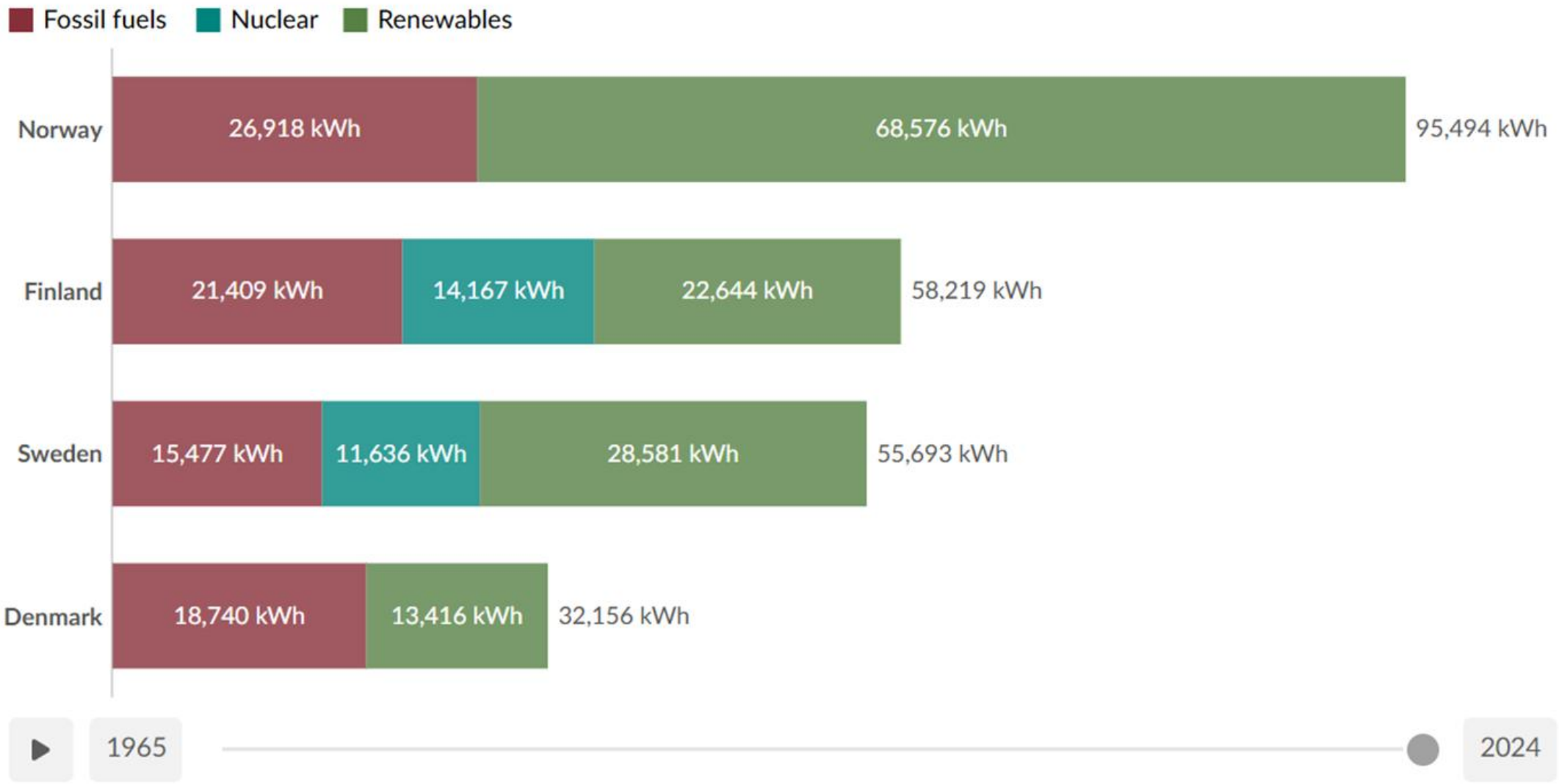
Per capita energy from fossil fuels, nuclear and renewables, 2024

Measured in kilowatt-hours of primary energy consumption per person, using the substitution method.

Our World in Data

Table | Chart

Edit countries and regions | Settings



Source: Our Wold in Data

Energy Security I

Electricity independence

Electrification is the Nordic way to energy independence

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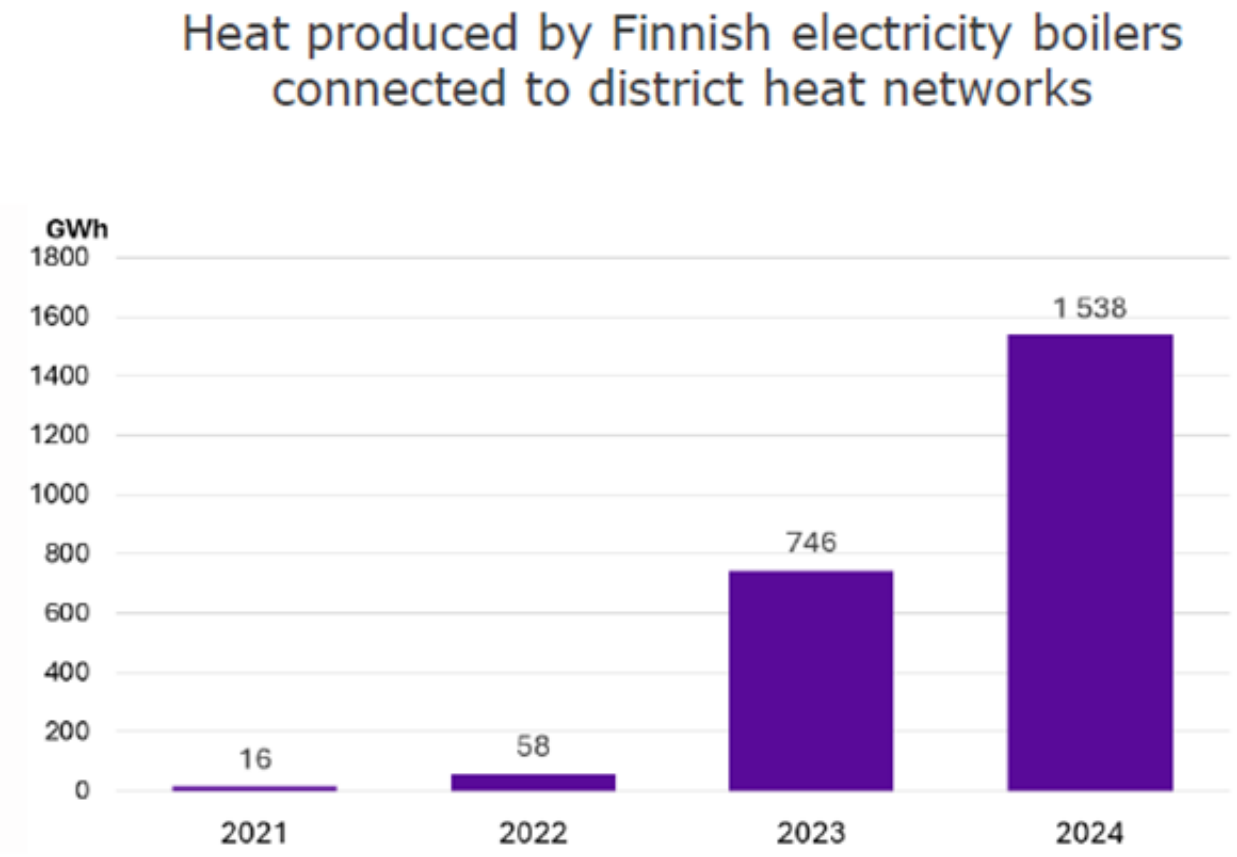
Electrification of the district heating



Kuva: Riku Merikoski, 2025

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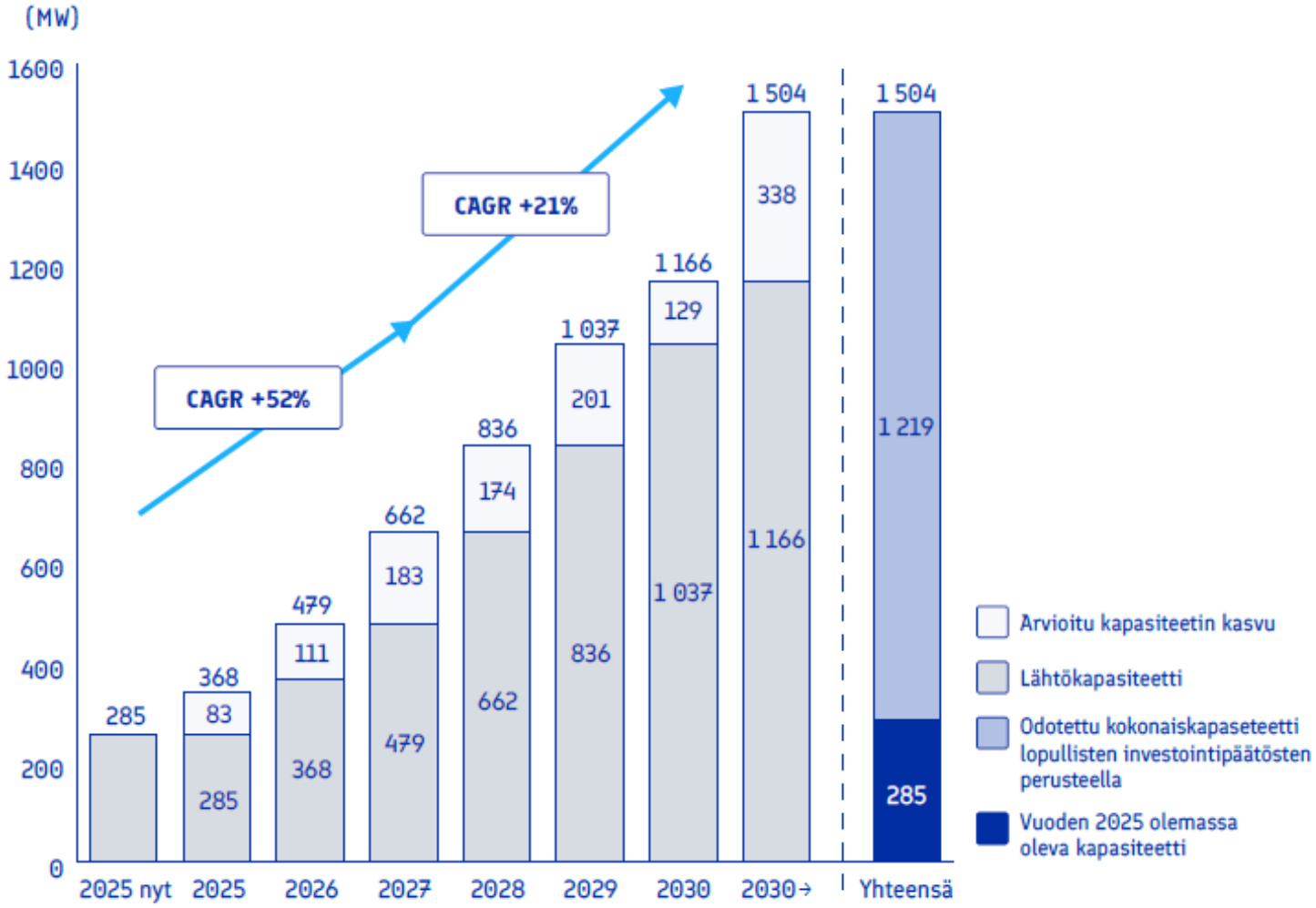
Data Centres



HUOM: Kuva sisältää vain tunnetut, yli 1 MW:n kapasiteetin datakeskukset. CAGR nykytilanteesta vuoteen 2027 on laskettu kahden vuoden jaksolle.

Datakeskusten kapasiteetti kasvaa nopeasti – ja todellinen potentiaali on vielä paljon suurempi

Jo tehtyjen investointipäätösten perusteella Suomen datakeskuskapasiteetti kasvaa 52 % vuosittain vuoteen 2027 asti ja jatkaa sen jälkeen noin 21 % vuosikasvua. Tämä tarkoittaa kapasiteetin kaksinkertaistumista vuoteen 2027 mennessä ja yli 1,5 GW kokonaiskapasiteettia vuoteen 2030 mennessä.

Nämä luvut kertovat kuitenkin vain varmistetusta kasvusta. Kaikkien tiedossa olevien investointisuunnitelmien yhteenlaskettu kapasiteetti on yli 3,4 GW. Toteuma riippuu hankekohtaisista edellytyksistä ja investointiympäristön olosuhteista.

Suomella on siis poikkeuksellinen mahdollisuus nousta Euroopan datainfrastruktuurin kärkimaiden joukkoon – mutta se, kuinka paljon potentiaalista toteutuu, riippuu investointiympäristön vakaudesta, sääntelystä ja energiapolitiikasta.

Hydrogen projects in Finland*

First projects to be commissioned during year 2025. Most of the produced hydrogen will be refined into E-fuels or other products and utilised in industry.

~60

hydrogen projects planned or already under construction in Finland

>13 000 MW

power

~30 B€

investments

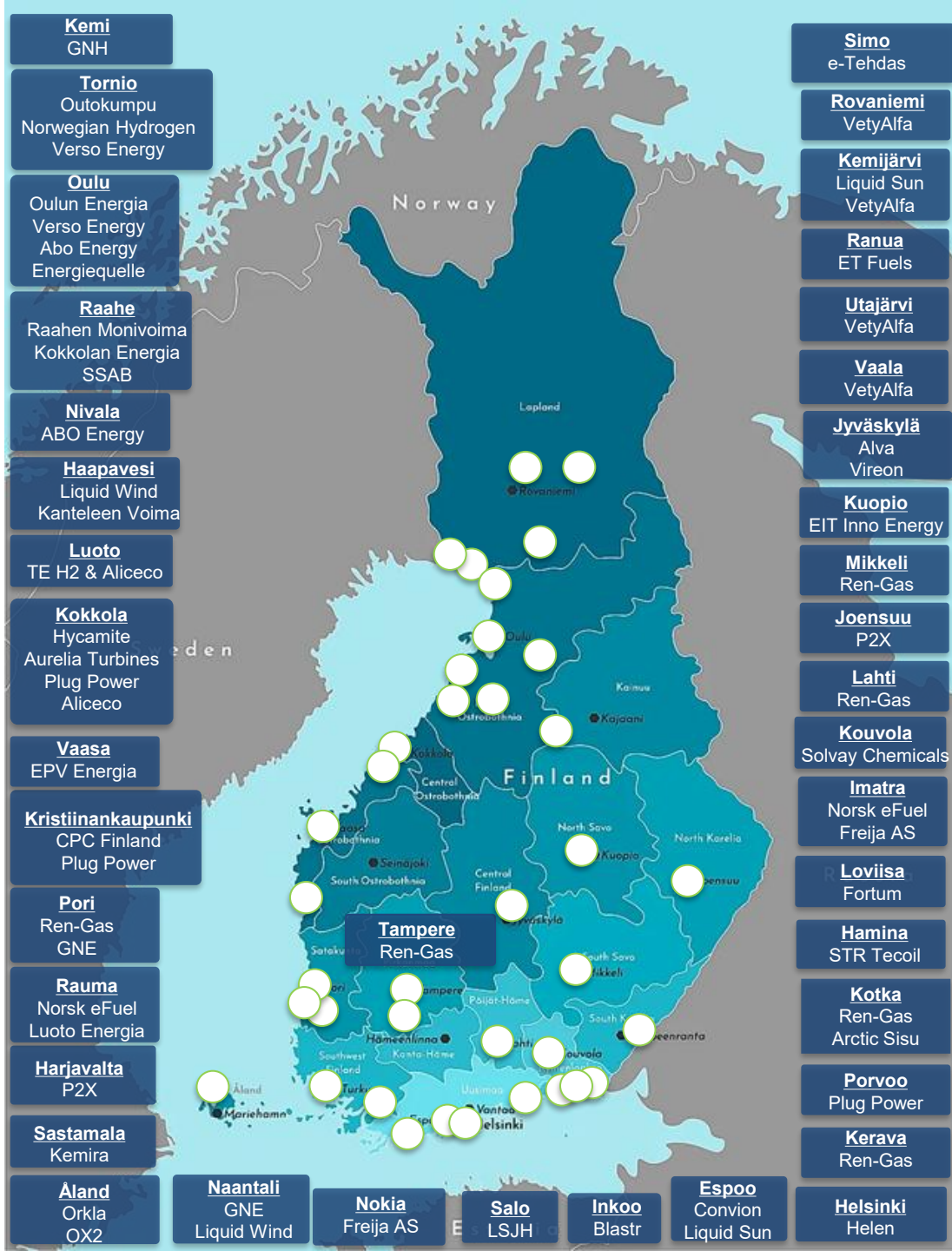
>1 500 000 t/a

annual H2 production of planned projects

The Nordic Hydrogen Route is an initiative to build a cross-border hydrogen infrastructure in the Bothnian Bay region and an open hydrogen market by 2030. The project has been approved by the European Parliament and the Council for PCI status. Construction will begin 2026.

H2 cluster FINLAND

*Updated: 22.9.2025



Development of electricity consumption (TWh)

Fingrid estimate, September 2024

FINGRID

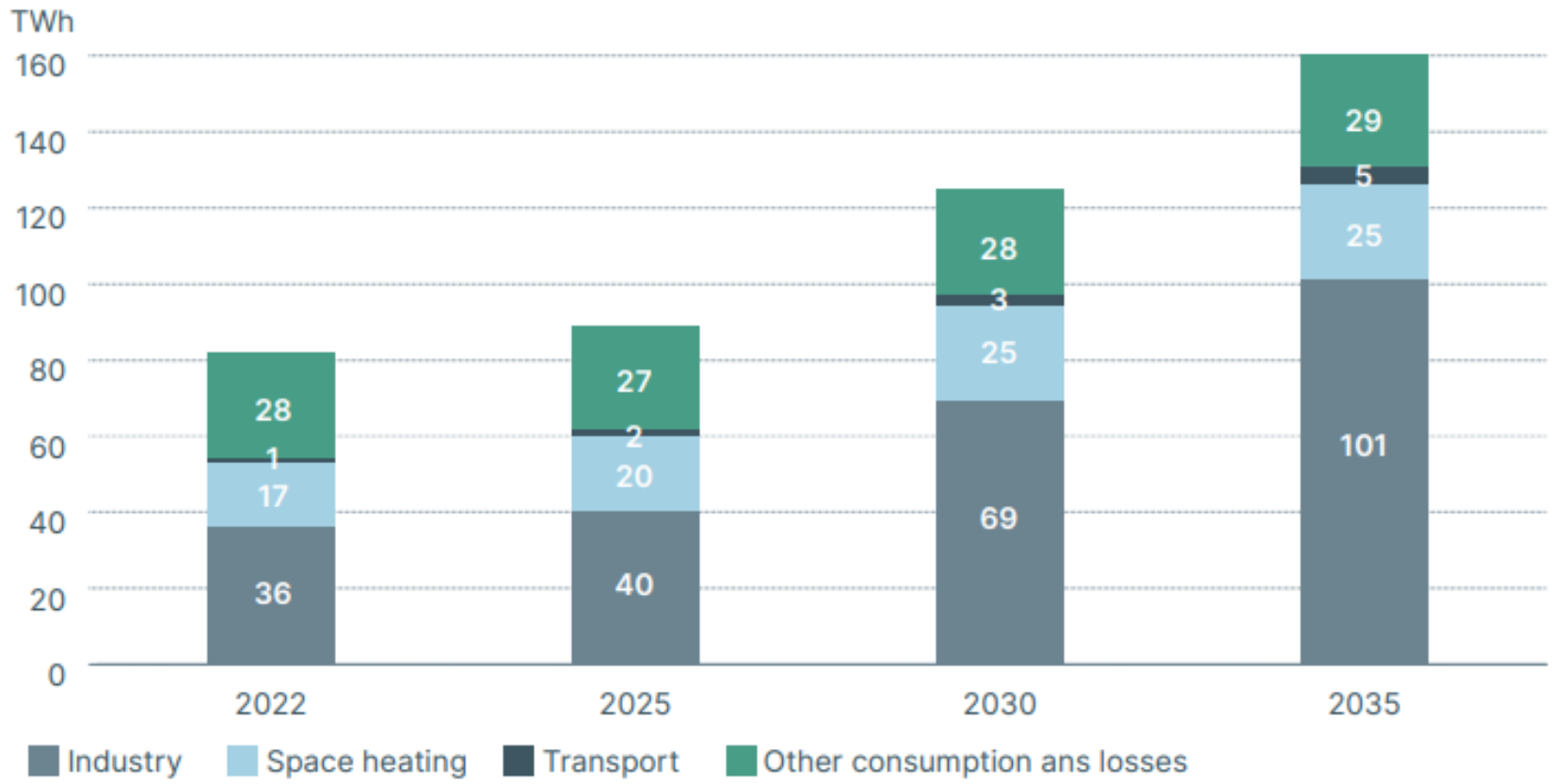
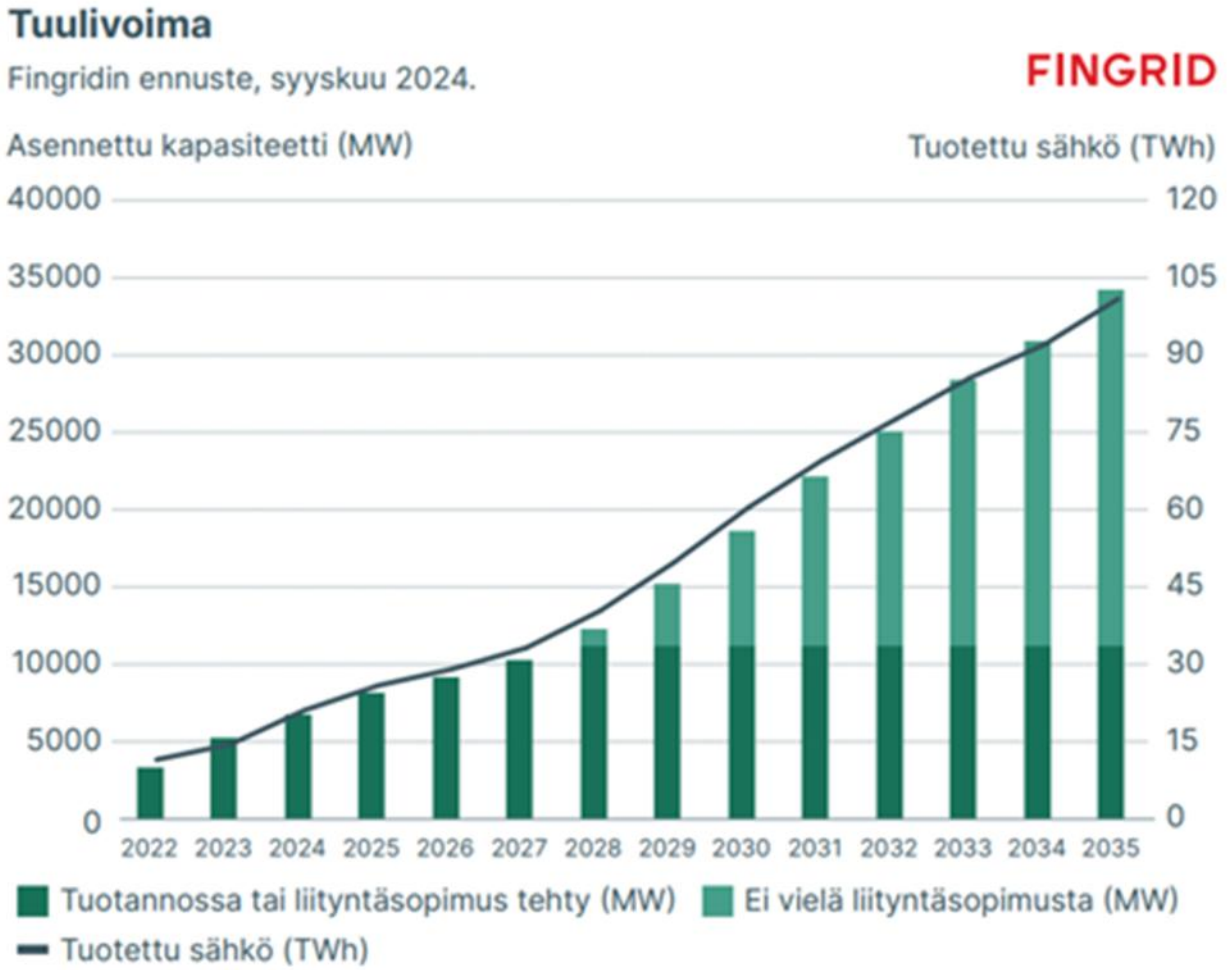


FIGURE 2 Electricity consumption trends in different sectors from 2022 to 2035.

Renewa
Finland

The increase of the electricity consumption in Finland will be covered with wind power



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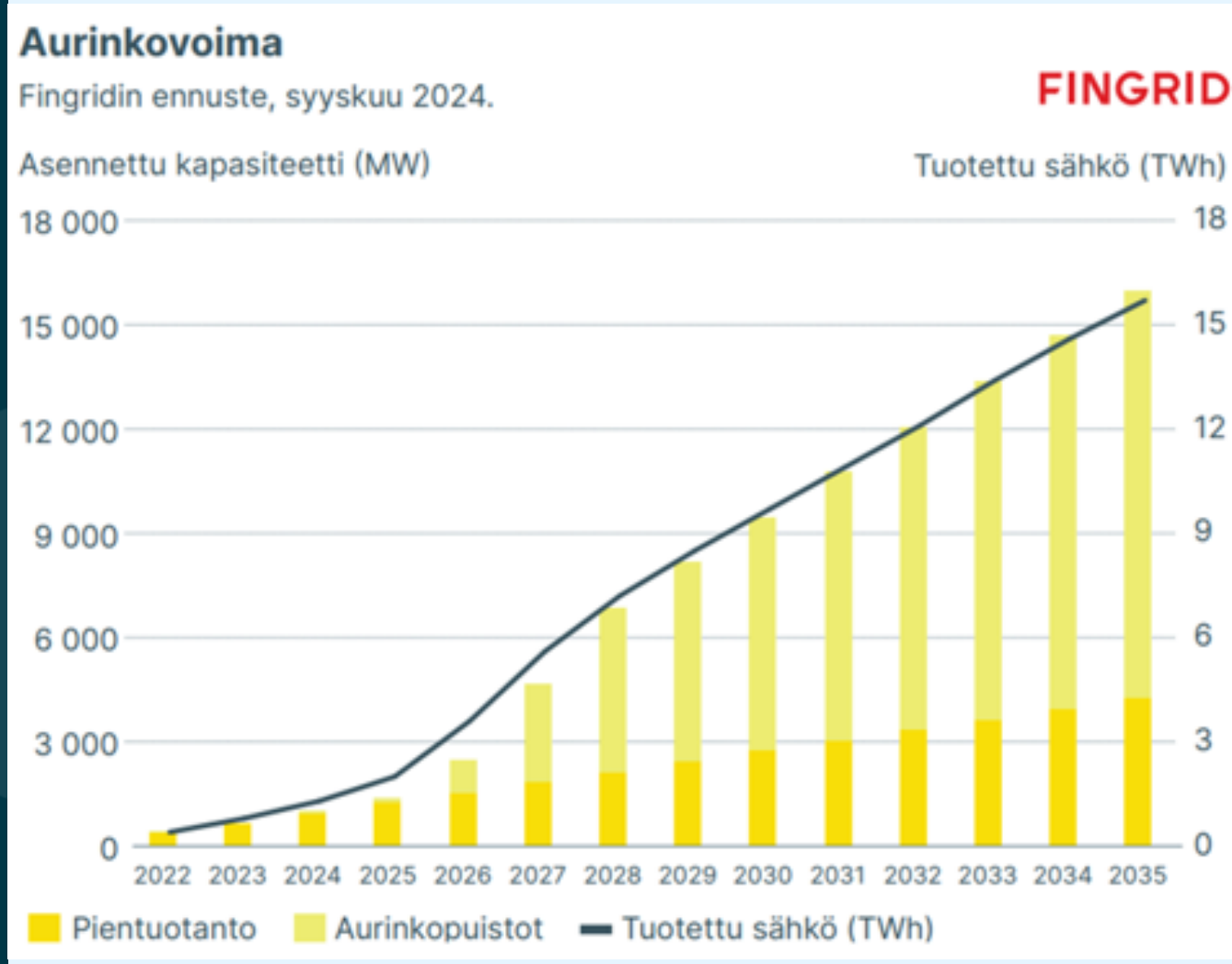
And Solar Power



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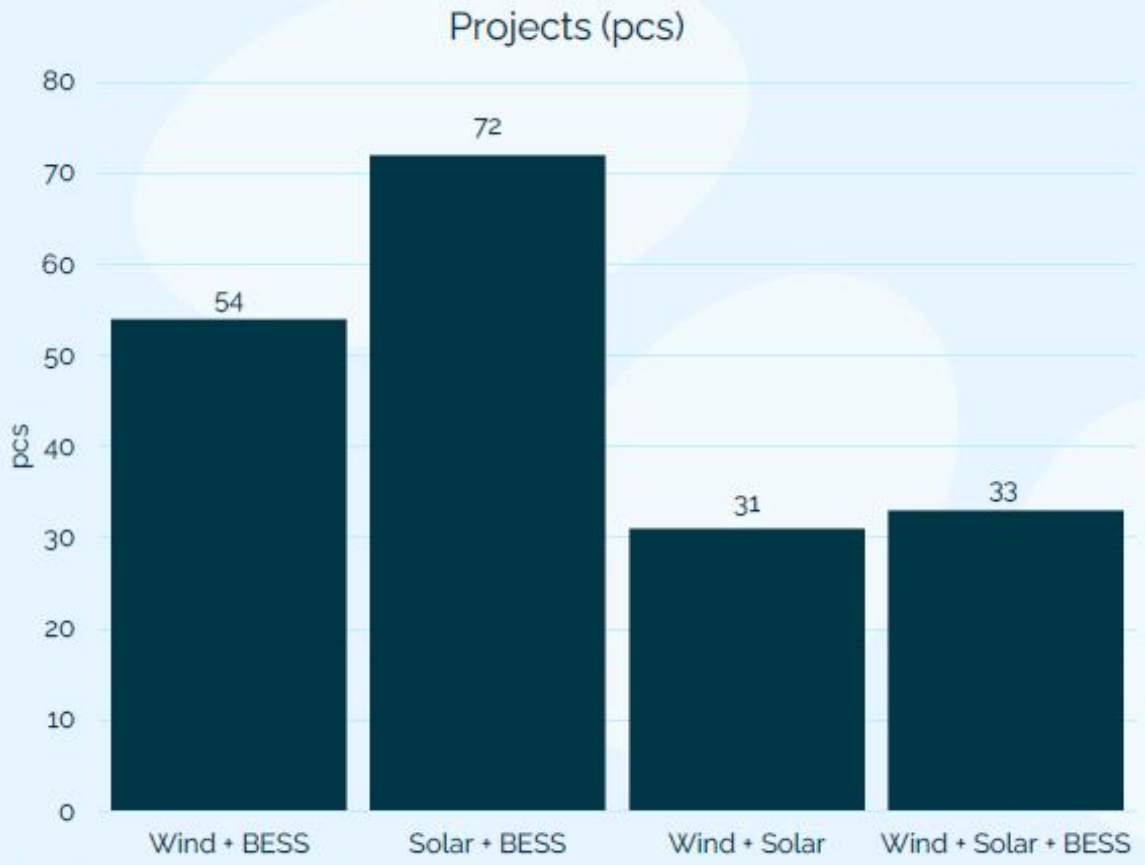
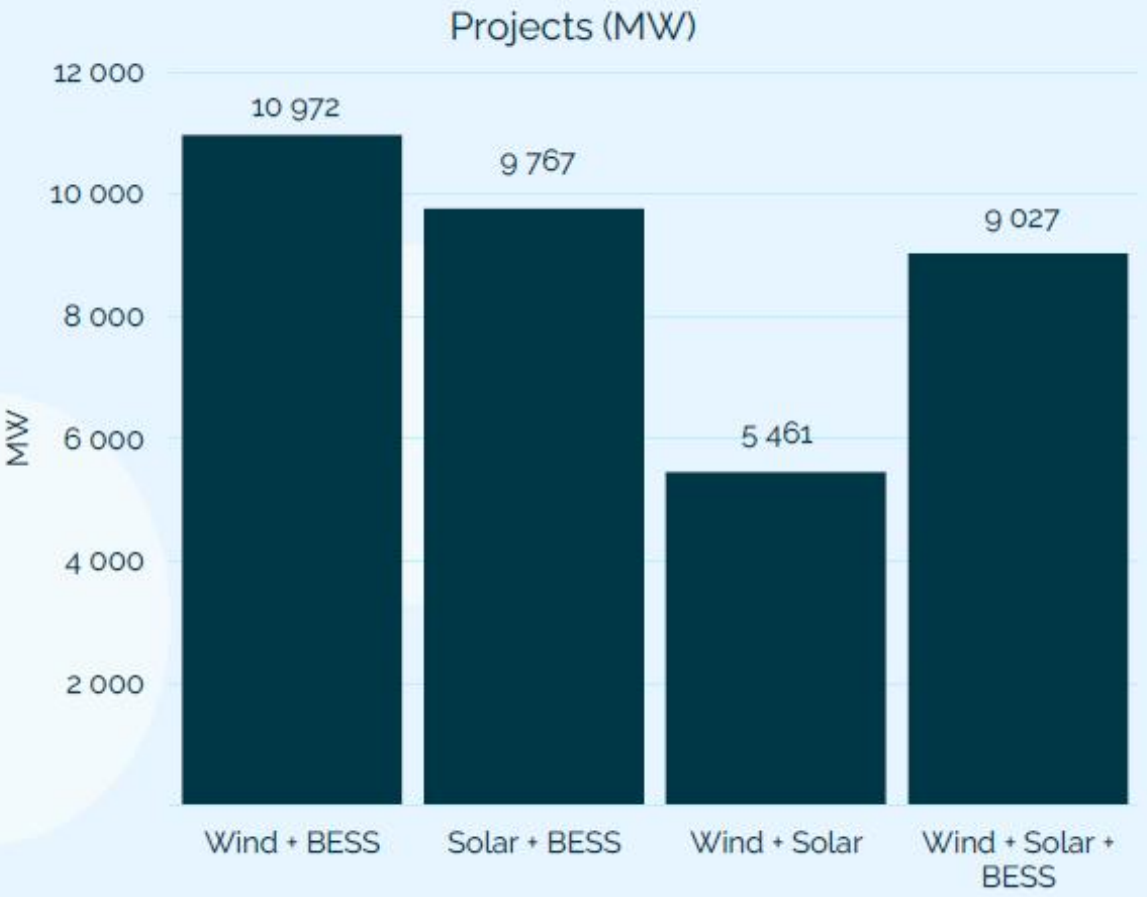
Hybrid projects





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All different hybrid projects in project development and reported to Renewables Finland
MW is the total capacity of different technologies
BESS - Battery energy storage system

Energy Security II

Nordic Electricity Market

More interconnectors

- EU CEF-programme, funding for grids renewable energy and transportation: €30bn budget for grid investments shows the urgent need for electricity projects

Demand Response

- Especially the new industry

Data stored in Europe

Nordic platform for exceptional activity / anomalities

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WIND SOLAR

Wind Oulu

Rakentaminen ja tuotanto

5.2.2026 | Tullisali, Oulu

Wind Offshore

26.3.2026 | Helsinki

Solar

19.5.2026 | Restaurant Töölö, Helsinki

Wind

29.9.2026 | Kaapelitehdas, Helsinki

renewablesevents.fi