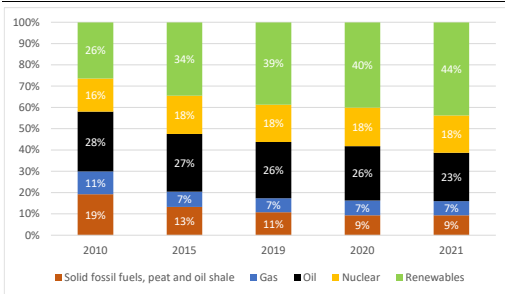


State of the Energy Union 2023 Finland

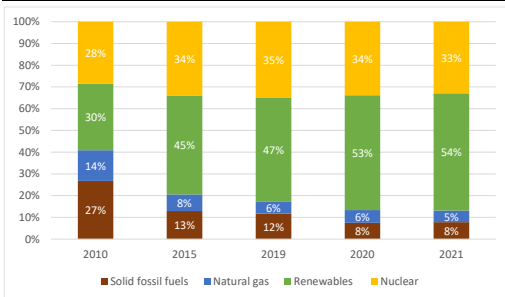
Key energy figures

Graph 1: Energy mix



Source: Eurostat

Graph 2: Electricity mix



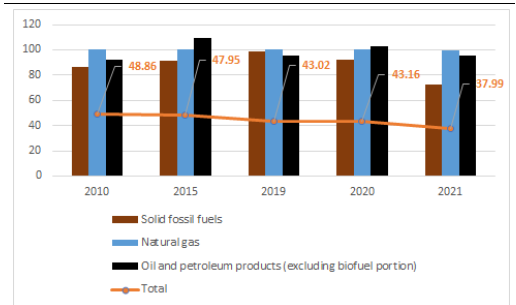
Source: Eurostat

- In 2021, **renewable energy sources made up a significant part** of Finland's energy mix, having considerably increased their share compared to 2020, reaching 44%, followed by oil at 23% and nuclear at 18%.
- In the electricity mix, **renewables are even more dominant**, providing 54% of total electricity, with the share of nuclear standing at 33%. The shares of coal and natural gas remain relatively low at 8% and 5%, respectively.
- Finland has committed to achieving carbon neutrality by 2035.

Security, solidarity and trust

1. DIVERSIFICATION OF ENERGY SOURCES AND REDUCTION OF IMPORT DEPENDENCY

Graph 3: Import dependency on fossil fuels



- In percentages
- Combustible renewables and electricity are excluded
- The total amount takes into consideration the energy mix of the country

Source: Eurostat

- Finland has been involved in various initiatives for closer regional cooperation aimed at **accelerating the roll-out** of offshore wind energy, setting generation capacity goals and looking into the potential for **decarbonising** its gas system by integrating renewable and low-carbon gases.
- Diversifying Finland's gas supply is no mean feat, but the country has **strengthened its security of supply** through the Inkoo floating storage and regasification unit (FSRU).

2. FLEXIBILITY OF THE ENERGY SYSTEM

- Energy storage:** Finland does not have a gas storage facility.

Integrated internal energy market

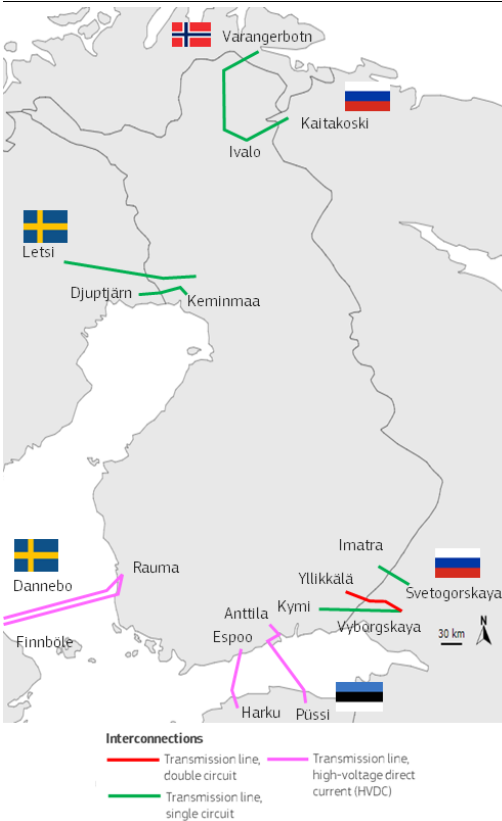
1. ELECTRICITY INTERCONNECTIVITY

2023	2030 target
20.08%	At least 15%

Source: DG ENER's own calculation based on ENTSO-E

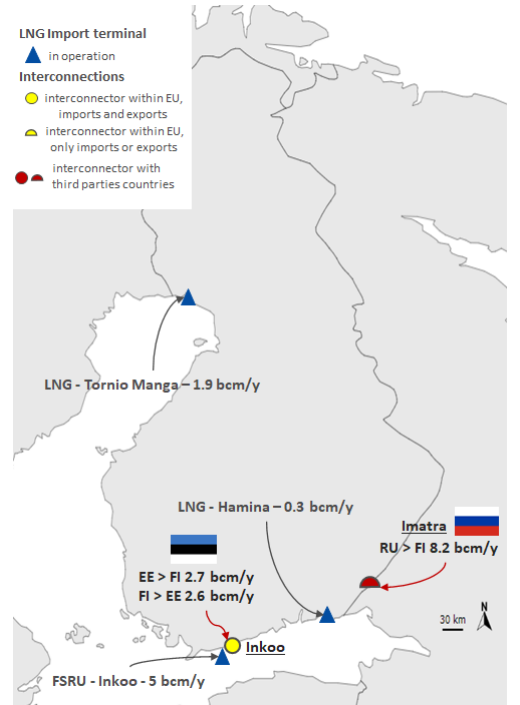
2. ENERGY TRANSMISSION INFRASTRUCTURE

Map 1: Cross-border electricity interconnections



Source: European Commission map recreation (based on ENTSO-E)

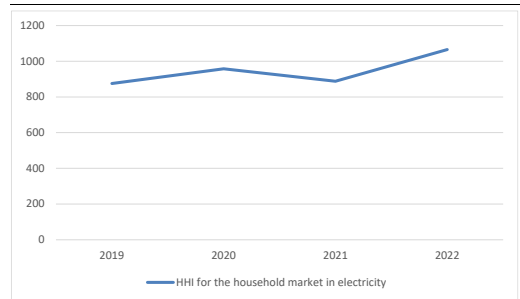
Map 2: Cross-border gas interconnections



Source: European Commission map recreation (based on ENTSO-G)

3. MARKET INTEGRATION

Graph 4: Index of concentration (HHI) for the household market in electricity



(1) No data available for HHI in natural gas markets

Source: CEER 2023 out of ACER's Energy Retail and Consumer Protection 2023 Market Monitoring Report

- In 2022, in Finland the market share of the three largest suppliers reached 44% for electricity.

Rollout of electricity smart meters

- Finland had a **high electricity smart meter rollout**, with 99.9% of household consumers being equipped with smart meters in 2022

80% of consumers are planned to be equipped with smart meters later than 2024, which is completed for Finland.⁽¹⁾

4. ENERGY POVERTY AND JUST TRANSITION

Table 1: Energy poverty

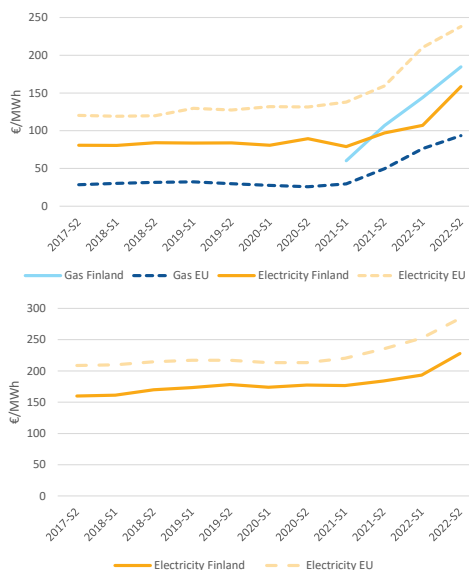
	Finland			EU		
	2020	2021	2022	2020	2021	2022
Arrears on utility bills (households %)	7.1%	5.8%	5.7%	6.5%	6.4%	6.9%
Inability to keep home adequately warm (household %)	1.8%	1.3%	1.4%	7.5%	6.9%	9.3%
Population living in dwelling with presence of lead, damp and rot (population %)	4.5%	:	:	14.8%	:	:

Source: Eurostat

- Just transition plan:** The Finnish Territorial Just Transition Plans (TJTP) outline the transition away from peat-based energy production. The plans set out how the Just Transition Fund (JTF), with a national allocation of €465 million, will support the development of green economy jobs, new green technology solutions, and related new business opportunities. The regions that will receive support from the JTF are South Karelia, South Ostrobothnia, South Savo, Kainuu, Central Ostrobothnia, Central Finland, Kymenlaakso, Lapland, Ostrobothnia, North Karelia, North Ostrobothnia, North Savo, Satakunta and Pirkanmaa. Coal phase-out commitment 2030.

5. ENERGY PRICES

Graph 5: Energy retail prices for industry (top) and households (bottom)



(1) On electricity, the band consumption is for DC households and ID for industry

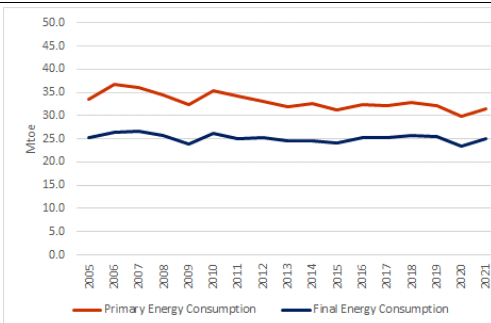
(2) On gas, the band consumption is D2 for households and I4 for industry

Source: Eurostat

Energy efficiency

1. ENERGY EFFICIENCY

Graph 6: Primary and final energy consumption

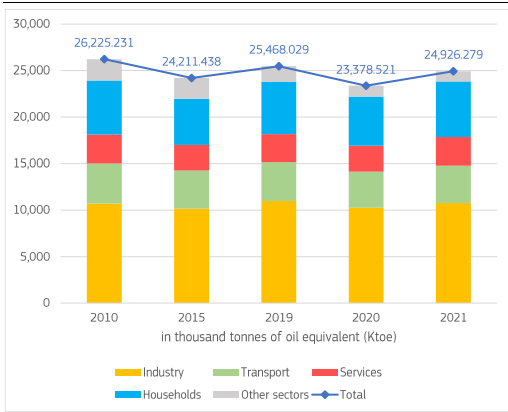


Source: Eurostat

⁽¹⁾ ACER, CEER. Energy Retail and Consumer Protection, s2023 Market Monitoring Report.

- In 2021, Finland's **Primary Energy Consumption (PEC)** amounted to 31.5 Mtoe, 1.8% lower than in 2019, while its **Final Energy Consumption (FEC)** amounted to 24.93 Mtoe, 2.1% lower than in 2019, despite the COVID-19 crisis recovery.

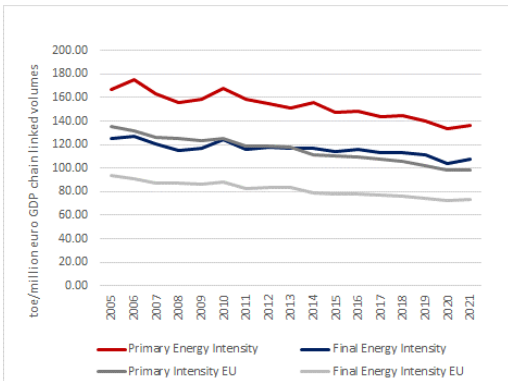
Graph 7: **Final energy consumption per sector**



(1) Final energy consumption excludes consumption of the energy sector (including transformation and distribution losses) and non-energy use of energy carriers.

Source: Eurostat

Graph 8: **Primary and final energy intensity**



Source: Eurostat

2. ENERGY SAVINGS IN BUILDINGS

- In 2020, there were **1.244 million** of **residential buildings in Finland**.
- As per its 2020 Long Term Renovation Strategy (LTRS), **Finland** targets to achieve **-22%** of

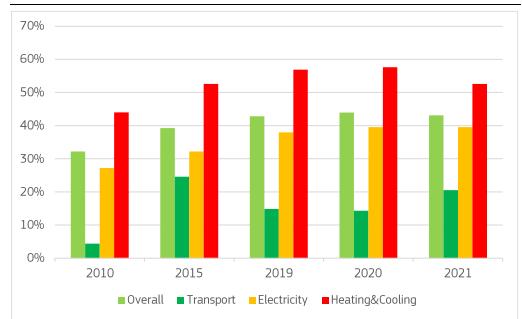
energy savings **by 2030** compared to **2020** in the building sector.

- In 2021, the final energy consumption of residential buildings **increased by 3.24%** compared to 2019.
- The sales of heat pumps amounted to **196.359 units** in 2022 representing an increase of **52%** compared to 2021, as per the European Heat Pump Association (EHPA).

Decarbonisation and climate action

1. SECTORAL SHARE OF RENEWABLE ENERGY

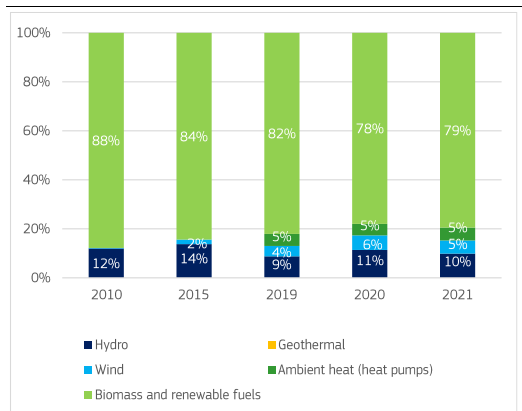
Graph 9: **Share of renewable energy sources**



(1) In % of gross final consumption of energy

Source: Eurostat

Graph 10: **Renewable energy mix**

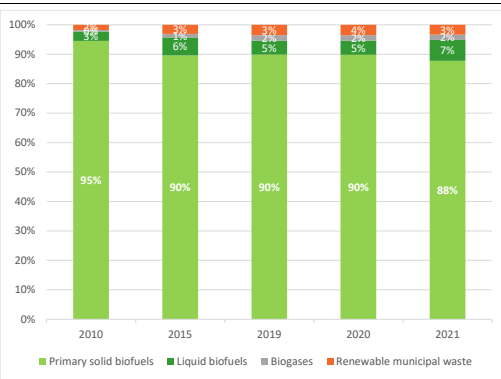


(1) In % of gross final consumption of energy

Source: Eurostat

2. BIOENERGY DEMAND

Graph 11: Bioenergy mix

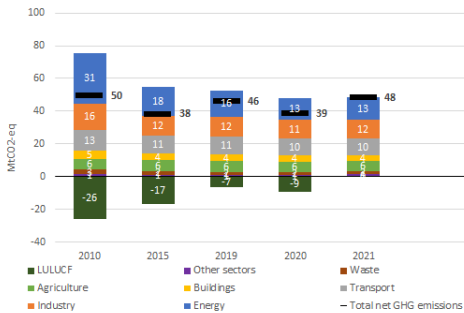


(1) Composition of bioenergy, in % of gross inland consumption of energy

Source: Eurostat

3. GREENHOUSE GAS EMISSIONS

Graph 12: Greenhouse gas emissions by sector



(1) Energy sector refers to electricity and heat production and petroleum refining.

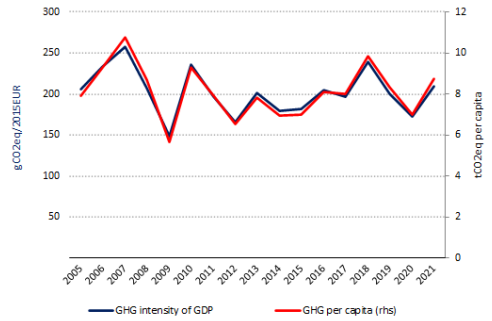
(2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use.

(3) Buildings include emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors.

(4) Total net GHG emission including LULUCF and excluding international aviation.

Source: EEA

Graph 13: GHG per capita and GHG intensity of GDP



(1) Total greenhouse gas emissions, including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990–2021 (EEA). Real GDP in 2015-prices (AMECO, European Commission). Population (Eurostat).

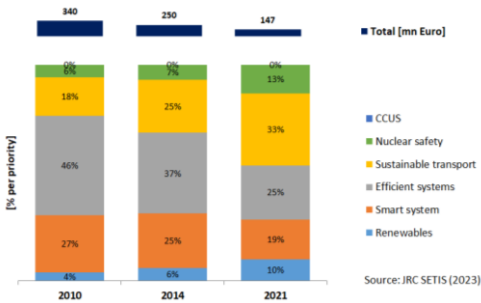
- With 209 gCO₂eq/2015EUR, Finland lies below the EU average in terms of GHG intensity of GDP.
- With 9 tonnes of CO₂ equivalent per capita, Finland is above the EU average in terms of GHG emissions per capita.
- For more detailed information on country profiles see [Progress made in cutting emissions \(europea.eu\)](https://europea.eu).

Research, innovation and competitiveness

1. INVESTMENT IN R&I

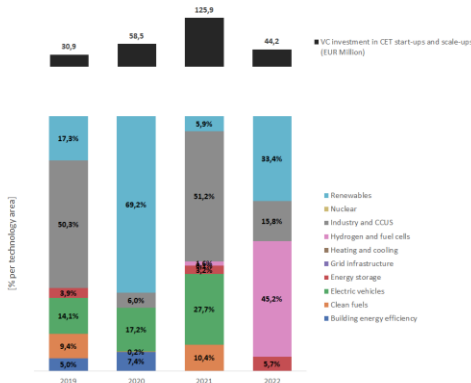
- Public investment in research and innovation (R&I) in Energy Union priorities⁽²⁾ decreased from 0.121% in 2014 to 0.059% in 2021 (share of GDP).

Graph 14: Public investment in Energy Union R&I priorities



Source: JRC SETIS 2023

Graph 15: Venture capital investment in clean energy technology (start-ups and scale-ups)



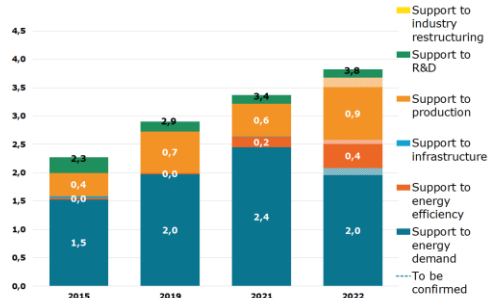
(1) Firms typically use venture capital to expand, break into new markets, and grow faster. Venture capital is essential for the growth of innovative firms and it is key to foster the EU's competitiveness and to strengthen the EU's technology sovereignty in the clean energy sector.

Source: JRC SETIS 2023

- (2) Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

2. ENERGY SUBSIDIES

Graph 16: Energy subsidies by purpose

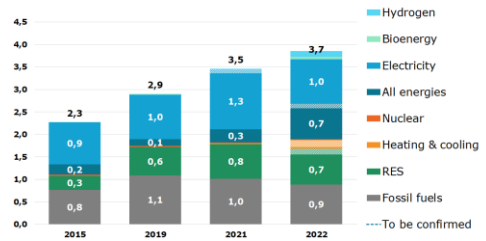


(1) Subsidies in EUR 2022 billion

(2) Some 2022 data were not fully available or validated at the time the study was completed (August 2023). For missing 2022 values, 2021 data were taken as a basis for an estimate. The estimated data are referred to as 'to be confirmed' in the graphs and indicated by hatching.

Source: Enerdata. Inventory of energy subsidies in the EU27 - 2023 edition

Graph 17: Energy subsidies by carrier



(1) Subsidies in EUR 2022 billion

(2) Some 2022 data were not fully available or validated at the time the study was completed (August 2023). For missing 2022 values, 2021 data were taken as a basis for an estimate. The estimated data are referred to as 'to be confirmed' in the graphs and indicated by hatching.

Source: Enerdata. Inventory of energy subsidies in the EU27 - 2023 edition

European Semester 2023

Country Specific Recommendation (Energy):

Reduce overall reliance on fossil fuels by accelerating the deployment of renewables, including by further speeding up permitting procedures, and boost public and private investment in the decarbonisation of industry and transport, including through electrification. Develop energy infrastructure to increase security of supply, including by strengthening the transmission of electricity. Step up policy efforts aimed at the provision and acquisition of the skills needed for the green transition.⁽³⁾

For more information see the [2023 European Semester Country Report](#).

National Energy and Climate Plan (NECP)

- **The draft updated NECP** was submitted to the European Commission in June 2023.
- For more information see the dedicated [webpage of the European Commission on the NECPs](#).

Recovery and Resilience Plan (RRP) and REPowerEU chapter

- **The Finnish RRP was approved by the Council on 29 October 2021.**
- The implementation of the measures proposed in the RRP would allow Finland to access **EUR 2.1 billion in grants**.
- **50%** of these funds are **allocated** for measures contributing to **climate objectives**.
- The Commission **disbursed so far EUR 271.09 million to Finland, as pre-financing**.

- On 26 January 2023, Finland submitted a **request to revise its RRP** which was approved the 14 March 2023.
- The amended RRP takes into account the **revised RRF grant allocation** for Finland decreased to EUR 1.8 billion.
- On 5 October 2023, Finland submitted a **request to revise its RRP**, adding a **REPowerEU chapter**.
- The amended RRP includes also the EUR 113 million **REPowerEU grant allocation** and EUR 14.2 million **voluntary transfer from the Brexit Adjustment Reserve**. The **total amount available** is therefore EUR 1.95 billion.
- For more information visit the [Recovery and Resilience Scoreboard](#).

⁽³⁾ Council of the European Union 9852/1/23