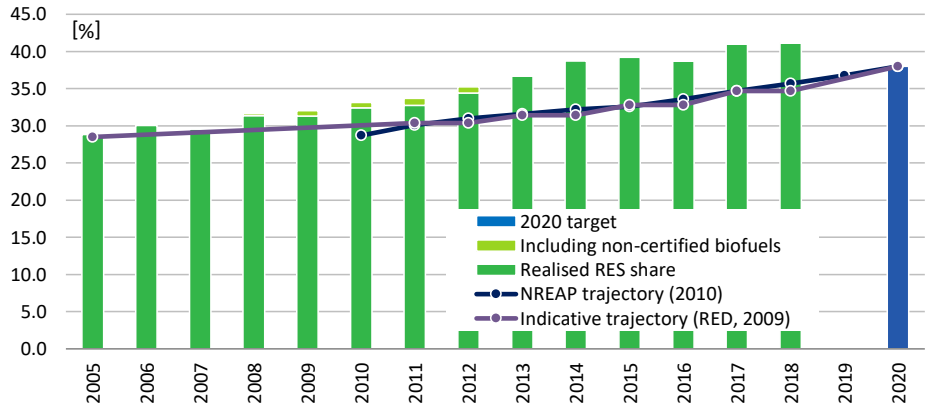
Finland

Renewable Energy Policy Factsheet

October 2020

Summary

By 2014 Finland already surpassed its 2020 target for renewable energy use under the 2009 EU Renewable Energy Directive. At present, the main support scheme is a technology-neutral premium-based tender scheme for producers of electricity from wind, solar, biogas, biomass wood fuels and wave power. The feed-in premium scheme with administratively determined premium levels for renewable electricity from wind, biomass and biogas used to be the main support scheme. As per ultimo 2018 this scheme has been closed for new applicants by developers of new biogas and wood fuel based power projects and it will be phased out altogether in due time. Renewable electricity generation projects are also supported by state subsidies. The main support mechanism for heat produced from RES is a "heat bonus" allocated to CHP plants working on biogas and wood fuel. In transport, the main incentive for renewable energy use is a biofuels quota system.



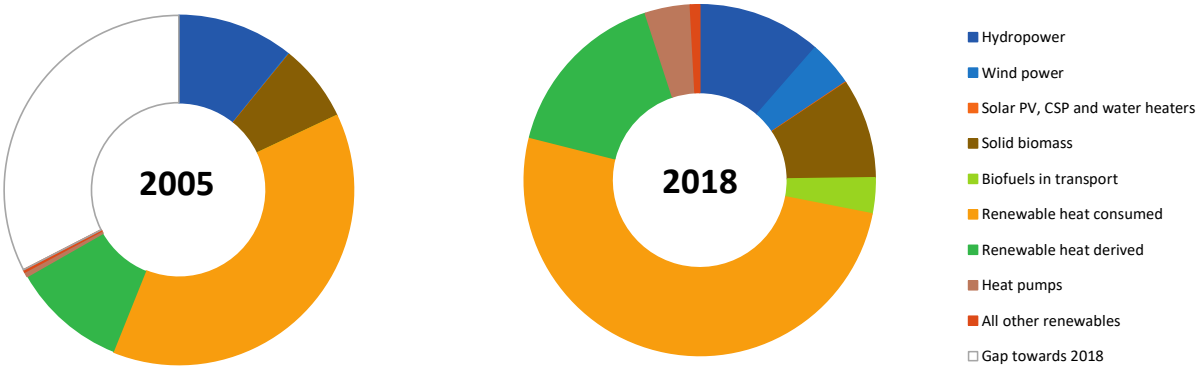
Source: EEA, Eurostat

Abbreviations used:

RES: renewable energy sources
RES-E: renewable electricity
RES-H/C: renewable heating/cooling
RES-T: renewable transport fuels

Data for 2018

Overall RES share:	41.2%	Avoided fossil fuels:	16.0 [Mtoe]
Overall RES 2020 target:	38.0%	Avoided fuel expenses:	5.6 [billion euro]
Share RES-E in electricity:	36.8%	RES Turnover:	6330 [MEUR]
Share RES-T in transport:	14.9%	RES Employment:	36900 [jobs]
Share RES-H/C in heating:	54.6%		



Source: Eurostat, 2020.

	2005	2018		
	Energy	Energy	Employment	Turnover
Hydropower	1196.1 ktoe	1269.0 ktoe	1300 Jobs	210 MEUR
Wind power	13.2 ktoe	464.1 ktoe	700 Jobs	130 MEUR
Solar PV, CSP and water heaters	0.2 ktoe	7.8 ktoe	1300 Jobs	210 MEUR
Solid biomass	792.2 ktoe	1016.5 ktoe	23700 Jobs	4390 MEUR
Biofuels in transport	0.0 ktoe	366.3 ktoe	2600 Jobs	240 MEUR
Renewable heat consumed	4234.7 ktoe	5656.7 ktoe		
Renewable heat derived	1187.2 ktoe	1784.2 ktoe		
Heat pumps	51.4 ktoe	463.3 ktoe	5500 Jobs	870 MEUR
All other renewables	25.7 ktoe	94.5 ktoe	1800 Jobs	280 MEUR
Gap towards 2018	3621.6 ktoe			

Source: Eurostat, EurObserv'ER, 2020.

Hydropower jobs & turnover only covers 'small hydropower'. PV=Photovoltaics, CSP=Concentrated Solar Power. Biofuels in transport only covers compliant fuels (employment and turnover additionally cover the non-compliant biofuels). Derived heat includes heat produced in main activity producer plants and heat sold produced in autoproducer plants. Its counterpart is the final heat consumption in the final consumption sectors (such as households).

CURRENT RENEWABLE ENERGY POLICY

In November 2016 the Finnish government published the new Energy and Climate Strategy, outlining actions geared at enabling Finland in attaining the targets specified in the Government Programme and adopted in the EU for 2030, and to contribute to the EU achieving an 80−95% reduction in greenhouse gas emissions by 2050.

According to Finland's national energy and climate strategy to 2030 published on 24 November 2016, investment subsidies for renewable energy are mainly targeted towards commercialising new technology and the effort sharing sector, i.e. sectors that are not covered under the European Union's emissions trading scheme (EU ETS), especially towards institutions producing advanced transport biofuels. In addition, the use of agricultural, societal and industrial waste and side streams in the production of heat and electricity and as transport fuel is promoted.

Electricity from renewable sources is promoted mainly through a technology-neutral tender-based premium scheme for electricity from wind, solar, biogas, biomass wood fuels and wave power. Per year, in total 1.4 TWh of renewable electricity is put up for tendered premium support. A variable premium paid over a 12 year period. The premium level is capped at €53.50 /MWh. It is based ex post on the difference between a maximum pay-as-bid target price of € 83.50 and the average benchmark electricity price over the past three months (or €/ MWh 30 if the average benchmark price is below the latter amount). The funding comes from the state budget. Until end of 2018 Finland used to support electricity from selected renewable energy sources (wind, biomass and biogas) for new applicants through a feed-in premium scheme with administratively determined rates. Only approved installations commissioned before 2019 and small new wind farms (with a capacity below 2.5 MW) remain eligible to this scheme. Furthermore, under two distinct schemes investment grants are available for *inter alia* renewable electricity projects, open to all renewable electricity generation technologies meeting certain requirements.

For *renewable heat production* in bio-based CHP plants (using biogas or wood fuel) meeting certain requirements, such as passing the applicable minimum efficiency threshold, a so-called "heat bonus" is granted. This heat price subsidy amounts to € 50 / MWh for biogas-based and € 20 / MWh for (solid) biomass-based CHP installations, paid from the state budget. Furthermore, under two distinct schemes investment grants are available for renewable heat projects, open to all renewable heat generation technologies meeting certain requirements. One of these schemes is targeted on farmers.

Renewable transport fuels are promoted via a biofuels quota scheme. This mechanism obliges companies selling petrol or diesel fuels to ensure that biofuels compose a defined percentage of the company's total annual sales of fuel on an energy content basis. In addition, each component of transport fuels are taxed distinctly, based on energy content and carbon content. For (presumptively zero carbon) biofuel components the excise duty is less, which boils down to an additional incentive for biofuels. The costs of this tax relief for biofuels is borne by the state budget.

Electric vehicles are promoted by a package of measures, including:

- €2000 subsidy on the purchase of a battery electric vehicle (BEV) costing not more than €50000; valid until November 2021
- The owner of a BEV pays the minimum rate (5%) of the standard CO_2 gr/car-km emission rate based registration tax.

So far, the assessment by the European Commission of *draft National Energy and Climate Plans* of the Member States is available. The Commission's assessment of the draft integrated National Energy and Climate Plan of Finland – regarding the targets for year 2030 for the share of renewable energy and gross final energy consumption only – is shown below.[1]

Table 1: Overview of Finland's actual performance (2018), targets (2020), proposed contributions (2030) under the Governance Regulation, Regulation (EU) 2018/1999 and contribution ambition assessment by the European Commission, regarding the share of renewables and the level of gross final energy consumption

National targets and contributions	2018	2020	2030	Assessment of 2030 ambition level
Share of energy from renewable sources in gross final consumption of energy (%)	41.2	38.0	50.0	Below 51% (result of RES formula)
Final energy consumption (Mtoe)	25.8	26.7	26.2	Very low

Source: European Commission, (2019); eurostat (2020a, 2020b)

Based on the formula contained in Annex II of the Governance Regulation, Greece's renewables share would have to reach the level of **51%** in 2030 (European Commission, 2019) against the historical rate of 41.2% in 2018 (eurostat, 2020a). The European Commission (2019) concludes that the Finnish draft plan setting out a contribution of 50 % renewable energy to the EU's 32 % target (in gross final consumption of energy) for renewable energy share in 2030 would make Finland one of the EU's frontrunners in renewables. Still this proposed contribution would fall slightly short of the one calculated by the European Commission using the formula in Annex II of the Governance Regulation. The Commission deemed the ambition level of the proposed **26.7 Mtoe** as contribution to the EU 2030 target for final energy consumption to be "very low".

Finland's final Integrated Energy and Climate Plan revised upwards the draft 50% target for the renewables share by year 2030 to **51%** , (Government of Finland, 2019) in line with the rate based on the formula in Annex II of the Governance Regulation. The recent favourable developments regarding Finnish wind power was mentioned as the main reason for the 1% upward revision. To achieve this target a spate of policies and measures are being put in place.

In May 2018, Parliament approved the Act on the Amendment of the Act on Production Aid for Electricity from Renewable Energy Sources (laki uusiutuvilla energialähteillä tuotetun sähkön tuotantotuesta annetun lain muuttamisesta 441/2018), which lays down provisions on the new premium system. The premium system is based on a competitive tendering process and investments in different renewable energy sources compete with each other so as to take into account the cost-effectiveness target. An auction was held in 2018 and decisions were made in March 2019. The aid was granted for seven projects within total of 1.36 TWh/a worth of annual electricity production. All of the projects concerned wind power. The power plants are expected to start production from 2021 onwards. Finland promotes the use of forest chips in combined heat and power generation (CPH) with operating aid for electricity from forest chips. The aid is granted to compensate for the higher production costs of electricity from forest chips compared to fossil fuels. The maximum aid for electricity produced from forest chips has been EUR 18/

[1] The core renewables policy performance metric in the EU is the ratio of annual *gross final renewable energy consumption* and annual *gross final energy consumption*. Other factors remaining the same, gross final energy consumption reduction boosts the share of renewables as defined by the aforementioned metric.

MWh. However, the aid depends on the price of the emissions allowance and has thus been in decline since the beginning of 2018. When the price of the EU ETS is above EUR 23.7/CO2 tonne, no aid is paid, which has recently been the case.

Renewable energy is also promoted through the Energy Aid Scheme (investment subsidy). Aid is primarily targeted at the commercialisation of new technologies and to the non-ETS sector, including plants producing advanced biofuels for transport, and non-ETS electricity and heat production of companies. Aid is paid up to 30 % for mature technologies and up to 40 % for new technology projects. However, aid levels are typically much lower, especially for mature technologies. The objective is that aid for different technologies will be phased out as a technology develops, the costs are reduced and competitiveness improves. Renewable energy is also promoted through taxation. While, renewable fuels are not taxed on heat production, fossil fuels are taxed according to their energy content as well as CO2 content. Energy taxation provides an incentive for the use of bioenergy in CHP production and building-specific heat production. In 2015, a legislative change reducing the taxation of small-scale electricity production entered into force. Electricity production plants with a nominal output below 100 kVA and plants larger than that but with an annual production of at most 800,000 kWh were exempted from the obligation to pay electricity tax. Measures to reduce use of oil for heating of buildings include substitution by biofuel oil, phasing out oil for this purpose altogether, clean combustion of chopped wood and pellets, and improving the energy efficiency of the existing building stock.

By 2030, the share of biofuels in road transport will be increased from a physical share of about 13.5 % of energy content by 2020, as required under current legislation on the biofuels quota obligation, to 30 %. An act for increasing the quota obligation came into force on 1 April 2019. Furthermore, the quota obligation has been extended to apply to light fuel oil used in heating and machinery so that the share of bioliquids must be at least 10 % by 2028. Other measures are the promotion of the transport infrastructure and the infrastructure for biogas use in transport and stimulating appropriate infrastructure for electric vehicles and use of biogas in transportation.

The 2030 energy efficiency target in final energy consumption in Finland's final NECP is 290 TWh (Government of Finland, 2019), corresponding to **24.9 Mtoe**. Hence, the targeted ambition level the Finnish government has been raised compared to the corresponding proposition in its draft NECP of 305 TWh, corresponding to 26.2 Mtoe. As a result of Finland's long-time efforts to improve energy efficiency in all sectors, final energy consumption is estimated to decrease slightly during the 2020s. Key measures, among many, include Energy Efficiency Agreements with actors in industry and installation of heat pumps for detached and terraced houses.

OVERVIEW OF MAIN SUPPORTING POLICIES

The main RES support measures applied in Finland are epitomized in Tables 2 and 3 below. See the previous section for more details.

Table 2: Overview of support schemes to promote renewable energy in Finland

	NON-FISCAL SUPPORT SCHEMES					FISCAL AND OTHER STATE FUNDED INCENTIVES	
	Feed-in premium	Heat bonus for CHP	Renewable quota scheme without certificates	Tendering	Net-metering/ net-billing	Investment subsidies	Tax regulation mechanism
RES-E							
- Offshore wind				x		x	
- Onshore wind	x			x		x	
- Solar				x		x	
- Hydro				x		x	
- Geothermal				x		x	
- Solid biomass	x			x		x	
- Biogas	x			x		x	
RES-H/C							
- Solar thermal						o	
- Geothermal						o	
- Biomass		x				o	
- Biogas		x				o	
- Large ambient heat application						o	
- Small scale installations, e.g. solar thermal collects, heat pumps, biomass boilers and pellet stoves						o	
- Others, i.e. aerothermal, hydrothermal						o	
RES-T							
- Bio gasoline			o				o
- Biodiesel			o				o
- Biogas							

Sources: RES Legal, EurObserv'ER

Table 3: Brief description of key policy instruments aimed at promoting RES in Finland

Instrument	*Description*
Feed-in tariff/premium	Producers of electricity from renewable energy sources (wind, wood chip, biogas) receive a feed-in premium on top the wholesale electricity price.
Energy/investment subsidies (state grants)	The Finnish government provides subsides for investment and research projects aimed at renewable energy generation. State grants are also provide for construction, expansion and renovation of heating facilities for agricultural production, where grant allocation is contingent on use of renewable energy sources.
Biofuel obligation	The main support scheme for promoting biofuels is a quota system, which obliges vendors to ensure that biofuels make up a certain percentage of their total annual sale of fuels.
Tax exemption (energy content and CO_2)	All transport fuels are taxed on their energy content and CO_2 emissions. Under the current tax regime, biofuels receive a tax rebate based on their lower energy content. The consideration of CO_2 emissions also provides a benefit for biofuels. The basis for CO_2 tax on biofuels is the carbon-dioxide emissions during their lifetime in comparison with their fossil equivalents. Unsustainable biofuels are subject to the same CO_2 tax as fossil fuels, sustainable biofuels are subject to 50 % of the CO_2 tax on the equivalent fossil fuel, and double-counted fuels under the RES Directive are not subject to any CO_2 tax.
Feed-in tariff/premium	Producers of electricity from renewable energy sources (wind, wood chip, biogas) receive a feed-in premium on top the wholesale electricity price.
Energy/investment subsidies (state grants)	The Finnish government provides subsides for investment and research projects aimed at renewable energy generation. State grants are also provide for construction, expansion and renovation of heating facilities for agricultural production, where grant allocation is contingent on use of renewable energy sources.

For further information:

EurObserv'ER 16th annual overview barometer, https://www.eurobserv-er.org/category/all-annual-overview-barometers

European Alternative Fuels Observatory, https://www.eafo.eu/countries/finland/1732/incentives

European Commission, 2019. Assessment of the draft National Energy and Climate Plan of Finland. SWD(2019) 276. Brussels, 18 June
https://ec.europa.eu/energy/sites/ener/files/documents/fi_swd_en.pdf

EEA, 2019. Progress towards renewable energy source targets at member State and EU-28 levels. Copenhagen, 19 December

European Union, 2018. Regulation (EU) 2018/1999 on the Governance of the European Union and Climate Action, OJEU L328/1, Brussels, 21 December
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN

Eurostat, 2020a. Renewable energy statistics; Share of renewable energy almost doubled between 2004 and 2018. Luxembourg, January
https://ec.europa.eu/eurostat/statistics-explained/index.php/Renewable_energy_statistics

Eurostat, 2020b. Energy consumption in 2018. Primary and final energy consumption still 5% and 3% away from 2020 targets. Luxembourg, 4 February

https://ec.europa.eu/eurostat/documents/2995521/10341545/8-04022020-BP-EN.pdf/39dcc365-bdaa-e6f6-046d-1b4d241392ad

Government of Finland, 2019. Finland's Integrated Energy and Climate Plan. Helsinki, December 20
https://ec.europa.eu/energy/sites/ener/files/documents/fi_final_necp_main_en.pdf

International Energy Agency (IEA) database on policies and measures
,https://www.iea.org/policies?topic=Renewable%20Energy

Member State Progress Report, available at the Renewable Energy pages of the European Commission, http://ec.europa.eu/energy/en/topics/renewable-energy

REN21, 2020. Global Status Report 2020. Paris, 16 June
https://www.ren21.net/wp-content/uploads/2019/05/gsr_2020_full_report_en.pdf

RES Legal database: http://www.res-legal.eu/search-by-country/finland

https://ec.europa.eu/commission/sites/beta-political/files/energy-union-factsheet-finland_en.pdf
(European Commission/ DG ENER, Energy Union Factsheet Finland, November 2017)

What is meant by …?

Auctions for granting renewable energy support	An auction is a process of granting production or investment support to renewable energy projects based on the lowest bids by eligible project developers.
Feed-in tariff (FiT)	A support scheme which provides for a technology-specific remuneration per unit of renewable energy payable to eligible renewable energy producers. A proper, periodic review of FiT rates is often undertaken with the aim to prevent both too high FiTs so as to minimise regulatory rents, i.e. supra-normal returns and too low FiTs to preclude below-target market uptake because of FiT levels that are perceived by market participants to be less attractive. In addition, feed-in tariffs often include "tariff degression", a mechanism according to which the price (or tariff) ratchets down over time.
Feed-in premium (FiP)	A scheme which provides for a support level per unit of renewable energy to eligible renewable energy producers, typically for a period of 10-20 years, at a pre-set fixed or floating rate. The premium is typically adjusted periodically to exactly offset change in the average energy wholesale market price, based on a pre-specified benchmark market price. A floating FiP may move freely or may only be allowed to move within a pre-set interval.
Grants	Grants are non-repayable funds disbursed by one party (grant makers), often a government department, corporation, foundation or trust, to a recipient, often (but not always) a non-profit entity, educational institution, business or an individual. (Source: Wikipedia.org)
Green public procurement	In Green public procurement contracting authorities take environmental issues into account when tendering for goods or services. The goal is to reduce the impact of the procurement on human health and the environment. (Source: Wikipedia.org)
Renewable quota scheme (RQS)	A RQS mandates certain market actors (typically retail suppliers or large energy end-users) to respect a pre-set minimum share or amount of their total energy procurements from renewable sources of energy. Typically a tradable green certificate (TGC) scheme is operated to enable the obligated parties to prove their compliance with the prevailing renewable quota target by means of TGCs.
Sliding feed-in-tariff	A FiT scheme which pre-sets technology-specific declining feed-in tariffs for certain prospective vintages in line with the technology-specific learning curve, as projected by the National Regulatory Agency (NRA). Often a degression rate is used indicating the %/annum decrease in the rate level.
Soft loans	Loans at concessional (below market-based) terms, for example at sub-market-conform interest rates, made available in several Member States to stimulate certain renewable energy technologies.
Tax credits	These are amounts a tax paying entity is allowed to deduct when declaring payable taxes, for example company tax or income tax, to the tax authorities , for example the producer tax credits (PTCs) used in the United States to stimulate among others wind energy deployment.

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