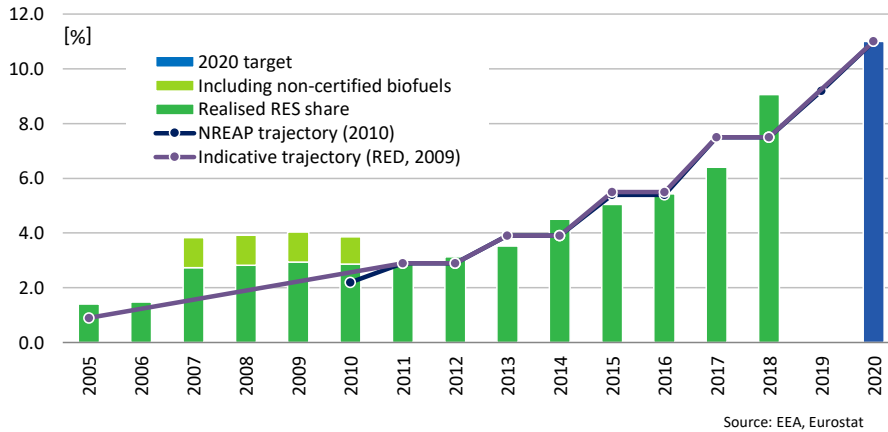


Summary

Main support instruments for incentivising electricity from renewable energy sources are feed-in tariffs and feed-in premiums. Since 2018, new PV installations having a capacity in excess of 500 kW have to submit a successful tender bid to become eligible to a feed-in premium. Subsidy instruments are in force to promote renewable electricity and renewable heat. Renewable transport fuels are promoted by way of a biofuels blending quota scheme.



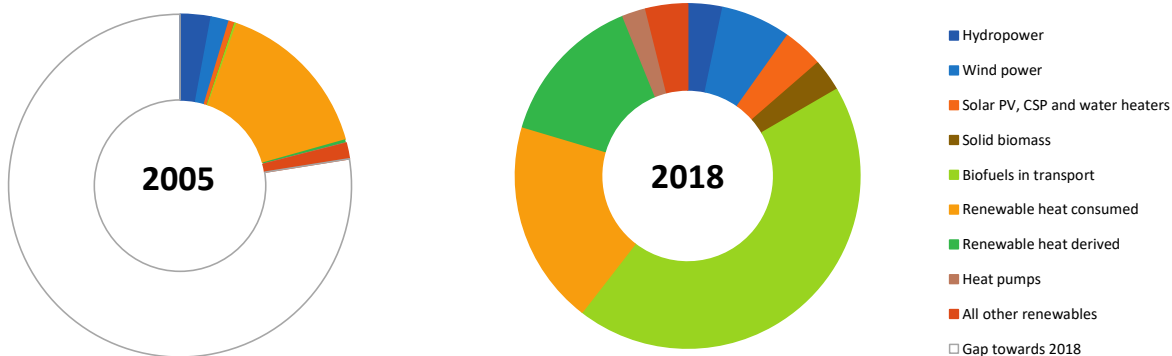
Source: EEA, Eurostat

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:	9.1%	Avoided fossil fuels:	0.4 [Mtoe]
Overall RES 2020 target:	11.0%	Avoided fuel expenses:	0.1 [billion euro]
Share RES-E in electricity:	9.1%	RES Turnover:	160 [MEUR]
Share RES-T in transport:	6.5%	RES Employment:	1400 [jobs]
Share RES-H/C in heating:	8.8%		



Source: Eurostat, 2020.

	2005		2018		
	Energy		Energy	Employment	Turnover
Hydropower	7.9 ktoe		9.0 ktoe	500 Jobs	70 MEUR
Wind power	4.6 ktoe		17.8 ktoe	100 Jobs	10 MEUR
Solar PV, CSP and water heaters	1.5 ktoe		10.3 ktoe	200 Jobs	20 MEUR
Solid biomass	0.0 ktoe		8.2 ktoe	100 Jobs	10 MEUR
Biofuels in transport	0.5 ktoe		119.4 ktoe	<100 Jobs	<10 MEUR
Renewable heat consumed	41.5 ktoe		52.0 ktoe		
Renewable heat derived	0.9 ktoe		38.8 ktoe		
Heat pumps	0.1 ktoe		6.0 ktoe	<100 Jobs	<10 MEUR
All other renewables	4.0 ktoe		10.6 ktoe	300 Jobs	30 MEUR
Gap towards 2018	211.0 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

Main schemes for promoting *electricity from renewable energy sources* except geothermal are a feed-in tariff scheme and a floating feed-in premium scheme. Both schemes apply technology-specific rates. In general, beneficiaries can benefit from either one of these schemes for a 15-year period from the first day onward the installation concerned feeds electricity into the public grid. The feed-in premiums equal a direct marketing bonus plus the difference between a (technology-specific) reference premium and the monthly average benchmark electricity price. In the case of onshore wind and PV the monthly averages are time-weighted differently to account for distinct production profiles. Since 2018, new PV installations having a capacity in excess of 500 kW have to submit a successful tender bid to become eligible to a feed-in premium. The feed-in tariffs for PV were increased in 2019 and a first national competitive procedure for PV systems on buildings or industrial or landfill sites was organised in 2018. A second invitation to tender was issued in autumn 2019 (Government of Luxembourg, 2019). Furthermore, installations generating electricity from renewables are supported through investment subsidies, whilst in the field of new residential buildings, an implicit requirement for the use of renewable energy was introduced by the Regulation on the energy efficiency of buildings. For companies investing in renewable generation, all renewable generation technologies are eligible for an investment subsidy. For other operators including households and municipalities only a PV installation is eligible for an investment subsidy.

Four subsidy instruments are applied to foster *renewable heating and cooling*:

1. Investment subsidies for aerothermal and geothermal heat pumps as well as renewable energy plants generating heat from solar thermal energy or various types of biomass.
2. Companies investing in renewable energy plants are eligible for investment grants, with the exception of aerothermal and hydrothermal energy
3. Subsidies for companies investing in renewable energies for the production of heat or for the combined production of heat and power (CHP)
4. The Law of 31 May 1999 has introduced the creation of a fund to support Luxembourg municipalities in their investments for environmental protection, including installations producing renewable heat.

Renewable transport fuels are supported by a biofuels blending quota scheme. Oil and gas companies importing or producing automotive petrol, gas and diesel for consumption by vehicle operators are obliged to fulfil a defined quota of biofuels per year, e.g. 5.85% in 2019 and 7.7% in 2020. In 2019, the minimum rate of biofuels covered by the double counting principle was set at 35% in 2019 and at 50% in 2020, whilst the use of first-generation biofuels should be limited to no more than 5% in order to promote the use of second-generation biofuels (Government of Luxembourg, 2019). In addition, subsidy and tax mechanisms are provided for the purchase of battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) by a package of measures, including:

- Reimbursement of tax of €5000 (€2500) on the purchase of a BEV or FCEV (PHEV)
- Reduction on CO₂-based annual ownership tax: for a BEV or FCEV the €30 minimum rate applies
- The deductibility from corporate income of expenses related to the use of company cars will be calculated on the basis of CO₂ emissions. This measure will encourage to buy vehicles with zero or low emissions as a company
- Since 2018 centralized public procurement of BEV and PHEV cars for the State services.

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 Luxembourg – regarding the targets for year 2030 for the share of renewable energy and gross final energy consumption only – is shown in Table 1 below.

Table 1: Overview of Luxemburg’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 (%)	9.0	11.0	23.0-25.0	Above 22% (result of RES formula)
Final energy consumption (Mtoe)	4.3	4.2	3.1-3.3	Sufficient

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

Based on the formula contained in Annex II of the Governance Regulation, Luxembourg’s renewables share would have to reach the level of 22.0% in 2030 (European Commission, 2019) against the historical rate of 9.0% in 2018 (eurostat, 2020a). The European Commission (2019) considers the proposed interval of the RES share by 2030 of **23-25 %** to be above the share of at least 22 % in 2030 that results from the formula in Annex II of the Regulation. The Commission deems the ambition level of the proposed interval of **3.1-3.3 Mtoe** as Luxembourg’s contribution to the EU 2030 target for final energy consumption to be sufficient.

Luxembourg’s final National Energy and Climate Plan (NECP) raises the target for the renewables share by year 2030 to 25% compared to 23-25 % proposed interval in its draft NECP, significantly exceeding by 3% the corresponding rate resulting from the formula in Annex II of the Governance Regulation. To achieve this target, existing and additional policies Luxembourg sets out to implement include (Government of Luxembourg, 2019):

- In order to increase investment in renewable energy, *new incentives* will be introduced, such as increasing feed-in tariffs for photovoltaic installations, regular calls for tender for large installations and the removal of current barriers...
- [As for *wind energy*, t]he existing feed-in payment/market premium will be continued and existing barriers will be removed where possible. The possibility for municipalities and citizens to make a financial contribution will also remain a key development factor...
- As regards *photovoltaics*, Luxembourg is currently in 6th place in the European Union in terms of installation capacity per inhabitant, with a total of 6990 photovoltaic installations (2018). The government’s aim is to reach the top of this ranking by 2030. The increase in feed-in tariffs in 2019 aims to maximise the use of building roofs (and other sealed/non-agricultural areas) in Luxembourg to fit photovoltaic installations. Attractive feed-in tariffs for small installations up to 10 kW should allow all households to fit their own installation, including with a view to later self-consumption. As

previously, co-operative installations will be supported separately. Every citizen will have the opportunity to take part in the energy transition. After the introduction of a new category, collective installations in the range of 30 to 500 kW can now benefit from a feed-in tariff. Municipalities will be encouraged to make their roof areas available to cooperatives. More than 100 of these large 'solar power plants for the people' are currently in the pipeline...

- The government intends to continue to promote and develop [*heat pumps*] by means of financial aid ... and an improved information policy...
- In recent years, use of *biomass* has predominantly been promoted in cogeneration plants. The new Directive 2018/2001 provides sustainability criteria for the use of biomass in large plants (> 20MW). On this basis, the Luxembourg Government intends to set stricter requirements in relation to sustainability criteria for new plants in future, and therefore plans to extend the European sustainability criteria for biomass use in cogeneration plants to smaller installations. Plants with a rated electrical output over 10 MW which use biomass or used and residual wood as an energy source must comply with these sustainability criteria in order to receive a feed-in tariff/market premium. In addition, it will also be ensured that the objectives of Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants remain achievable, through the use of suitable technology...
- *Biogas* continues to be a pioneering energy source (electricity, heat, supply). The framework conditions need to be revised in order to better promote biogas and to better take account of the not insignificant environmental and water protection issues (methane, NH₃ emissions, nitrate, phosphorus). Part of the reform will involve adjustments to state aid to better recognise the non-energy related benefits of the sector...
- Luxembourg has adopted a strategy for 'sustainable and energy-efficient public buildings' in relation to new construction and existing structures, in order to improve energy efficiency and the use of renewable energy in *government and government-related buildings*...

As for Luxembourg's contribution to the EU energy efficiency target for year 2030, in its final NECP Luxembourg sets a target for its maximum gross final energy consumption to the tune of 35,568 GWh (EFF44 scenario), corresponding to **2,9 Mtoe**. This even lower than the proposed 3.1-3.3 Mtoe level interval proposed in Luxembourg's draft NECP, the ambition level of which the European Commission qualifies as sufficient.

OVERVIEW OF MAIN SUPPORTING POLICIES

The main RES support measures applied in Luxembourg 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 Luxembourg

	NON-FISCAL SUPPORT SCHEMES						FISCAL AND OTHER STATE FUNDED INCENTIVES			
	Feed-in tariffs	Feed-in premium	Tenders	Quota obligation with Tradable Green certificates	Quota obligation without Tradable Green certificates	Net-metering/ net-billing	Investment subsidies	Tax credits mechanism I	Tax credits mechanism II	Soft loans
RES-E										
- Offshore wind										
- Onshore wind	x	x					x			
- Solar	x	x	x				x			
- Hydro	x	x					x			
- Geothermal							x			
- Solid biomass	x	x					x			
- Biogas	x	x					x			
RES-H/C										
- Solar thermal							x			
- Geothermal							x			
- Biomass							x			
- Biogas							x			
- Small scale installations, e.g. solar thermal collects, heat pumps, biomass boilers and pellet stoves							x			
- Others, i.e. aerothermal, hydrothermal							x			
RES-T										
- Bio gasoline					x					
- Biodiesel					x					

Sources: RES Legal, EurObserv'ER

Table 3: Overview of instruments used at present in Luxembourg for stimulating the uptake of renewables

Instrument	Description
Feed-in tariffs or premiums	A guaranteed sale of electricity at a pre-set technology-specific preferential price or a technology-specific floating premium on top of the market electricity price, during the support contract period of generally 15 years. New PV installations \geq 500 kW have to submit successful tender bids to become eligible for floating feed-in premiums.
Investment subsidies	Projects investing in installations for the generation of electricity from renewables (with the exception of geothermal installations) are eligible for an investment subsidy. Renewable heating and cooling projects are eligible for one or more of four different investment subsidy options.
Biofuels quota scheme	Importers/suppliers of transport fuels are subject to a renewable quota scheme for biofuels. Compliance based on sample testing rather than certificates-based.

For further information:

CEER, 2017. Status Review of Renewable Support Schemes in Europe.

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European Commission, 2019. Assessment of the draft National Energy and Climate Plan of Luxembourg. SWD(2019) 226. Brussels, 18 June

https://ec.europa.eu/energy/sites/ener/files/documents/lu_swd_en.pdf

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

Copenhagen, 19 December https://www.eea.europa.eu/data-and-maps/daviz/actual-res-progress-indicative-trajectory-9#tab-chart_3

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<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

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

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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/luxembourg/>

https://ec.europa.eu/commission/sites/beta-political/files/energy-union-factsheet-luxembourg_en.pdf
(European Commission/ DG ENER, Energy Union Factsheet Luxembourg, 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 depression", 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 depression 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.

Disclaimer

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