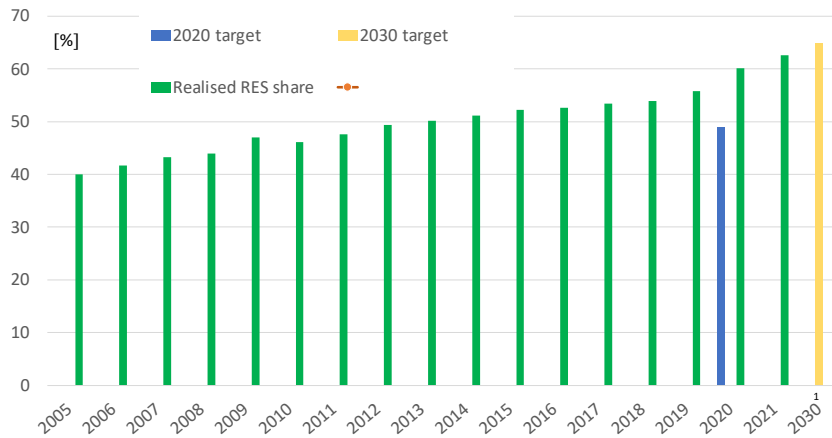


## Sweden

### Renewable energy status

Share of energy from renewable sources in total gross final energy consumption



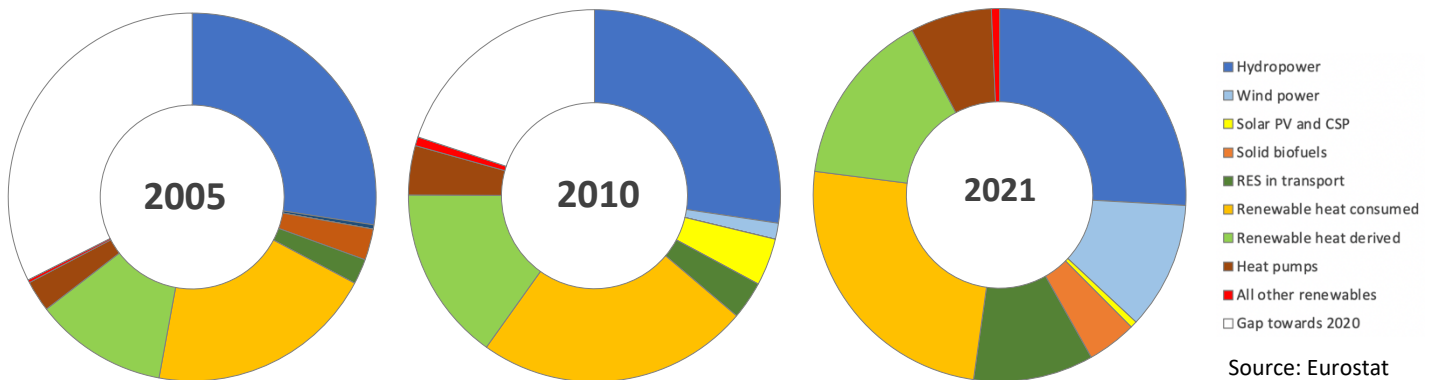
Source: Eurostat

#### Abbreviations used:

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

#### Data for 2021

Overall RES share:	62.57%	Avoided fossil fuels:	19.2 [Mtoe]
Overall RES 2020 target:	49%	Avoided fuel expenses:	10 798 [MEUR]
Overall RES 2030 target:	65%	RES Turnover:	11 730 [MEUR]
Share RES-E in electricity:	75.7%	RES Employment:	65 600 [jobs]
Share RES-T in transport:	30.43%	RES imports <sup>2</sup> :	711 [MEUR]
Share RES-H/C in heating:	68.64%	RES exports <sup>2</sup> :	211 [MEUR]



Source: Eurostat

	2005		2010		2021		
	Energy in ktoe		Energy in ktoe		Energy in ktoe	Employment in FTE	Turnover in MEUR
Hydropower	5 883,1	5 871,3	5 792,2	2 100	380		
Wind power	80	297,5	2 468,4	14 100	2 700		
Solar PV, and CSP	0,2	0,7	131,2	3 100	530		
Solid biomass	588,8	882,2	960,8	22 900	4 590		
Ren. energy in transport <sup>3</sup>	476,4	707,3	2 329,8	7 300	450		
Renew. heat consumed	4 317,8	5 082,8	5 544,2				
Renew. heat derived	2 504,8	3 261,1	3 399,2				
Heat pumps	585,9	918,1	1 580,3	15 000	2 850		
All other renewables	55,2	166,1	157,8	1 100	230		
Gap towards 2020	6 959,6	4 264,7					

Source: Eurostat, EurObserv'ER

FTE = Full time equivalent, 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 auto-producer plants. Its counterpart is the final heat consumption in the final consumption sectors (such as households).

<sup>1</sup> From Integrated National Energy Climate Plan

<sup>2</sup> Referring to the International Trade chapter from the publication: EurObserv'ER - *The State of Renewable Energy in Europe, 2022 edition*

<sup>3</sup> Employment and turnover are only referring to biofuels in transport.



## CURRENT RENEWABLE ENERGY POLICY

### RES-E

The main support measure for the promotion of electricity from renewable energy in Sweden is a renewable electricity quota system. It is a technology-neutral support scheme among the full range of renewable power generation technologies that are commercially not (yet) viable. Obligated parties, i.e. electricity suppliers and large electricity consumers, have to comply with pre-set annual renewable quota. They have to ensure that a corresponding minimum percentage share of their annual electricity deliveries (electricity suppliers) or consumption (obligated consumers) was produced from a renewable source. To that effect, they have to submit ("cancel") an adequate number of tradable green certificates ("elcerts"), where each elcert stands for 1 MWh of electricity produced from a specific renewable source. Elcerts are issued to Swedish and Norwegian operators of renewable power plants participating in the Swedish-Norwegian renewable electricity quota scheme, generally during a period of 15 years. In Sweden the competent authority is the Swedish Energy Agency. Energy produced in electricity generators with a capacity lower than 50 kW is not taxable. The capacity limit is slightly higher for certain renewable sources, e.g. wind (125 kW) and solar (255 kW).

### RES H&C

Tax exemptions are the main incentives to support renewable energy for heating purposes as well as for promoting biofuels for transport purposes. Tax exemptions include income tax deduction of installations using renewable heating sources in apartments and single-family houses when replacing conventional heating, exemptions for renewable heat producers of energy and CO<sub>2</sub> taxes and a nitrous oxide tax, all imposed on fossil heating fuel.

### RES-T

The main support scheme to foster renewable fuels for transport purposes is a biofuel quota scheme. Furthermore, also biofuels for transport purposes are exempted from energy and CO<sub>2</sub> taxes.

Table 1: Brief description of key policy instruments aimed at promoting RES in Sweden

<i>Instrument</i>	<i>Description</i>
<b>Electricity Certificate Scheme</b> <i>Elcertifikaten</i>	The electricity certificate scheme (elcerts) is a market-based support system which aims to increase the production of renewable electricity in a cost-effective manner. Since 2012, Sweden and Norway have had a common market for electricity certificates and a common target whereby the electricity certificate scheme must contribute to expansion in the order of 26.4 TWh of renewable electricity production by the end of 2020. Each country has to provide half of the financing, but it is up to the market to determine where and when new production will take place. The common electricity certificate market is the first example in the EU of a common support scheme as described in Article 11 of the 2009 EU Renewable Energy Directive. The certificate offers 15 years of support. Administrative procedures, possible for the technologies: PV, onshore wind, offshore wind, bioenergy and hydropower. Website: <a href="https://www.energimyndigheten.se/en/sustainability/the-electricity-certificate-system/">https://www.energimyndigheten.se/en/sustainability/the-electricity-certificate-system/</a>
<b>Investment subsidy for solar PV installations</b>	The investment subsidy scheme covers the installation of all kinds of solar photovoltaic cell systems and solar electricity/solar heating hybrid systems that are connected to the grid (20% of investment costs). The support is given to all types of actors, both companies and public organizations as well as private individuals. Returns from the <i>elcertifikat</i> system is not based on LCOE, and revenue is dependent on the market value of <i>elcertifikaten</i> . The certificate offers 15 years of support.
<b>Carbon tax</b>	A carbon tax amounting in 2019 to SEK 1.18 (€ct 11,75) / kg CO <sub>2</sub> with (partial) exemptions for certain sectors exposed to foreign competition and sustainable biofuels
<b>Investment grant scheme</b> <i>Klimatkliv</i>	The Klimatkliv, an investment grant scheme for which investment proposals are evaluated on the basis of cost efficiency of GHG reductions in terms of SEK / CO <sub>2</sub> eq. reduction
<b>Investment grant scheme</b> <i>Industrikliv'</i>	The 'Industrikliv', a state initiative which assists Swedish industry with the development of technologies and processes for reducing process-related greenhouse gas emissions.
<b>Environmental Code and the Planning and Building Act</b>	The Environmental Code and the Planning and Building Act, advancing a sustainable environment, energy efficiency and the uptake of renewables, notably in the built environment
<b>Wind Power Network</b>	The aim of the Wind Power Network is to promote the expansion of wind power by means of information initiatives, training events, exchanging experiences, and financial aid for projects relating to wind-power issues. The Wind Power Network is funded the Government (Swedish Energy Agency) by means of an appropriation for planning aid intended for wind power.
<b>Biofuels quota scheme</b>	The biofuels quota system obliges vendors to ensure that biofuels make up a certain percentage of their total annual sale of fuels. Funding is granted within the framework of an innovation cluster for development and use of liquid biofuels together with obligations to increase the share of biofuels in fuel-mixtures. Website: <a href="#">Renewable energy policy database and support: single (res-legal.eu)</a>

***For further information:***

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## 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.



## Disclaimer

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