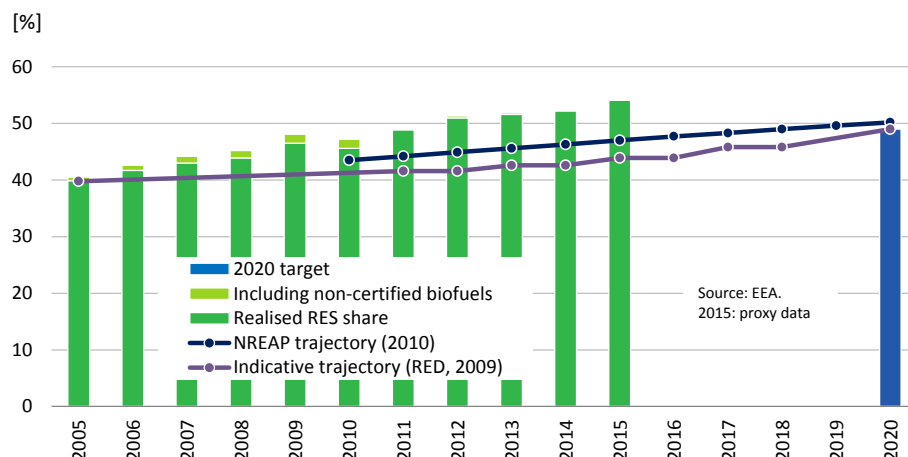


### Summary

Sweden surpassed its 2020 nationally binding renewable energy in 2013. Main support measures to promote renewable energy in Sweden consists of a quota system, various tax regulation mechanisms and subsidy schemes. Sweden has a joint support scheme with Norway, thus being the first EU Member State to implement a cooperation mechanism, as defined under the 2009 EU Renewable Energy Directive. The Swedish coalition government has agreed on a target of 100% renewable electricity production by 2040.

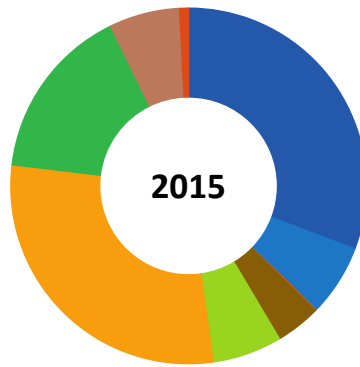
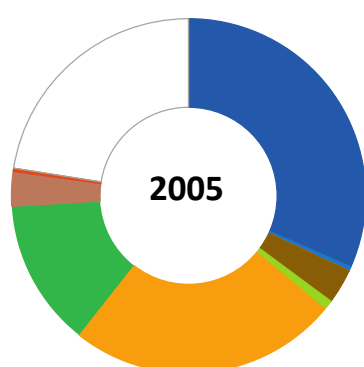


### Abbreviations used:

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

### Data for 2015

Overall RES share:	53.9%	Avoided fossil fuels:	25.1 [Mtoe]
Overall RES 2020 target:	49.0%	Avoided fuel expenses:	10.9 [billion euro]
Share RES-E in electricity:	65.8%	RES Turnover:	5855 [MEUR]
Share RES-T in transport:	24.0%	RES Employment:	52200 [jobs]
Share RES-H/C in heating:	68.6%		



- Hydropower
- Wind power
- Solar PV, CSP and water heaters
- Solid biomass
- Biofuels in transport
- Renewable heat consumed
- Renewable heat derived
- Heat pumps
- All other renewables
- Gap towards 2015

Source: Eurostat, 2017.

	2005	2015		
	Energy	Energy	Employment	Turnover
Hydropower	5883.1 ktoe	5732.4 ktoe	4000 Jobs	250 MEUR
Wind power	77.9 ktoe	1213.8 ktoe	6500 Jobs	1100 MEUR
Solar PV, CSP and water heaters	0.2 ktoe	8.3 ktoe	850 Jobs	100 MEUR
Solid biomass	588.8 ktoe	771.9 ktoe	27400 Jobs	2650 MEUR
Biofuels in transport	166.3 ktoe	1177.3 ktoe	4500 Jobs	1000 MEUR
Renewable heat consumed	4579.6 ktoe	5426.7 ktoe		
Renewable heat derived	2504.8 ktoe	2957.8 ktoe		
Heat pumps	585.9 ktoe	1196.1 ktoe	7800 Jobs	700 MEUR
All other renewables	55.2 ktoe	151.3 ktoe	1150 Jobs	55 MEUR
Gap towards 2015	4193.9 ktoe			

Source: Eurostat, EurObserv'ER, 2017.

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 accordance with the 2009 EU Renewable Energy Directive, Sweden agreed to a binding overall target for a share of renewable energy in gross final energy consumption of 49% to be achieved by 2020. This is the highest target in the EU. At national level, Sweden decided for an overall renewable target of at least 50%, and a 2020 target of 10% in the transport sector.

On the basis of the overall 50% renewable energy target, Sweden set an objective of 25 TWh of renewable energy to be delivered under the electricity certificate system by 2020 compared to 2002. This is a market-based, technology-neutral support scheme.

Sweden is the first EU country to implement a cooperation mechanism, as defined under the 2009 EU Renewable Energy Directive, with the introduction of a joint Swedish-Norwegian tradeable green certificate 'elcert' market in 2012. In April 2017, the two countries announced their agreement to extend the joint elcert scheme towards 2030. Sweden will increase its target under the elcert scheme with 18 TWh to 2030. The scheme between the two countries will be in force to 2045.

With a view to facilitating wind power, Sweden has established a planning framework of 30 TWh by 2020, with 20 TWh onshore and 10 TWh offshore. These are not production targets but rather intended to guide the municipal spatial planning.

In 2016, the Swedish coalition Government (the Moderate Party, the Centre Party and the Christian Democrats) concluded an agreement on Sweden's long-term energy policy. The agreement consists of a common road map for a controlled transition to an entirely renewable electricity system, with a target of 100% renewable electricity production by 2040.

## ***OVERVIEW OF MAIN SUPPORTING POLICIES***

Main support measures for the promotion of electricity from renewable energy in Sweden consists of a quota system, tax regulation mechanism and a subsidy scheme. 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 installation works in apartments and single-family houses when replacing conventional heating with heating based on renewable energy sources, exemption of energy and CO<sub>2</sub> taxes and nitrous oxide tax. A grant scheme covers subsidies for solar PV installations.

Table 1: Overview of support schemes to promote renewable energy in Malta

	REGULATORY POLICIES					FISCAL INCENTIVE AND PUBLIC FINANCES			
	Feed-in premium	tendering	Quota obligation with certificates system	Tendering	Net-metering/ net-billing	Subsidy (Energy Aid) and/or Investment Aid	Tax regulation mechanism (Reduced real estate tax)	Tax regulation mechanism (Energy tax reduction)	Tax regulation mechanism (Energy and CO <sub>2</sub> tax)
<b>RES-E</b>									
- Offshore wind			○						
- Onshore wind			○				○	○	
- Solar			○			○		○	
- Hydro			○					○	
- Geothermal			○					○	
- Solid biomass			○					○	
- Biogas			○					○	
<b>RES-H/C</b>									
- Solar thermal						○	○		○
- Geothermal									○
- Biomass									○
- Biogas									○
- Large ambient heat application									
- Small scale installations, e.g. solar thermal collects, heat pumps, biomass boilers and pellet stoves									
- Others, i.e. aerothermal, hydrothermal							○		
<b>RES-T</b>									
- Biofuels									○

Sources: EurObserv'ER, GSR/REN21, RES-Legal Europe (2017)

Table 2: Brief description of key policy instruments aimed at promoting RES in Denmark

<i><b>Instrument</b></i>	<i><b>Description</b></i>
Electricity Certificate Scheme	The electricity certificate scheme is the main support scheme for promoting renewable electricity in Sweden. It 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.
Investment subsidy for solar PV installations	The investment subsidy scheme covers the installation of all kinds of solar photovoltaic cell system and solar electricity/solar heating hybrid systems that are connected to the grid. The support is given to all types of actors, both companies and public organizations as well as private individuals.
Tax reduction - real estate tax	Owners of power stations or owners of land on which a power plant is located pay an annual real estate tax, contingent on the value of the power plant. With few exceptions, the real estate tax does not differ for renewable and fossil energy sources. One such exception is for wind energy, which is subject to a reduced tax payment.
Energy tax reduction	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).
Tax reduction for micro-scale renewable electricity production	In order to facilitate investments by private individuals and enterprises in the production of electricity from renewable sources for their own consumption, micro-producers receive financial compensation for the surplus electricity that they feed into the grid.
Exemption of energy and CO <sub>2</sub> tax for renewable fuels	Energy tax is an overall concept for excise duties on fuels and electricity, regulated under the Act on Energy Tax. Energy tax is payable on most fuels and is based inter alia on energy content. CO <sub>2</sub> tax is payable on every kilogram of carbon dioxide for all fuels other than biofuels and peat. Renewable fuels for heating and transport purposes.
Wind Power Network	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.

### ***For further information:***

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

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

EEA charts on progress of renewable energy sources for EU and per Member State, <https://www.eea.europa.eu/data-and-maps/indicators/renewable-gross-final-energy-consumption-4/assessment-1>

International Energy Agency (IEA) database on policies and measures , <https://www.iea.org/policiesandmeasures/renewableenergy/?country=Sweden>

RES Legal database: <http://www.res-legal.eu/search-by-country/sweden>

Global Status Report by REN21, <http://www.ren21.net/gsr-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.



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### **Disclaimer**

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