EurObserv'ER

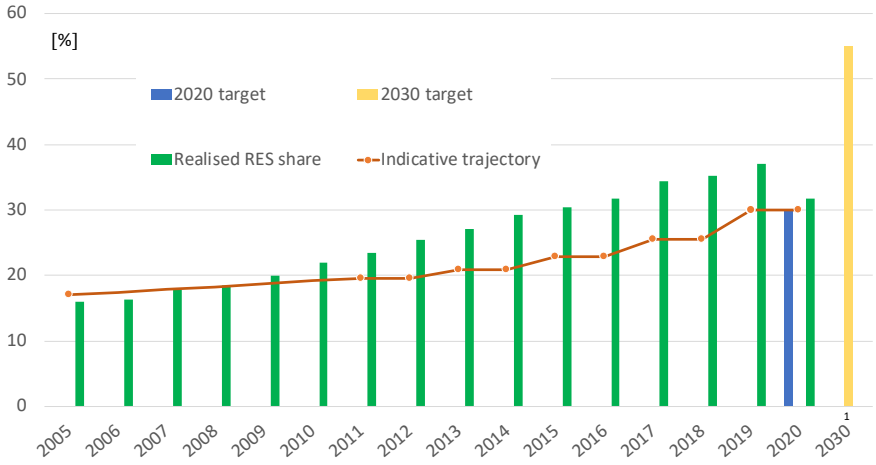
Renewable Energy Policy Factsheet

June 2022

Denmark

Renewable energy status

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



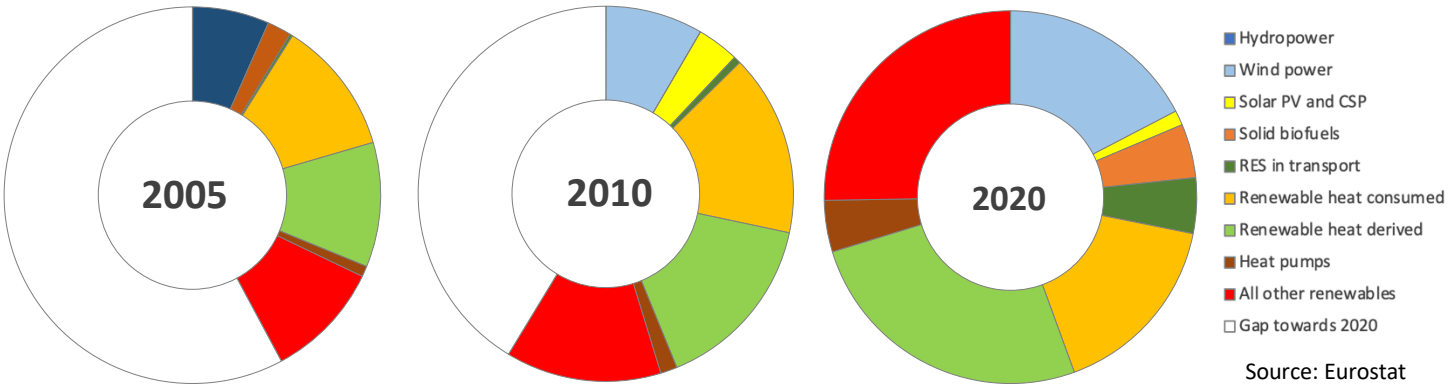
Source: Eurostat

Abbreviations used:

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

Data for 2020

Overall RES share:	31.7%	Avoided fossil fuels:	6.3 [Mtoe]
Overall RES 2020 target:	30.0%	Avoided fuel expenses:	3 380 [MEUR]
Overall RES 2030 target:	55.0%	RES Turnover:	1 820 [MEUR]
Share RES-E in electricity:	65.3%	RES Employment:	34 500 [jobs]
Share RES-T in transport:	9.7%	RES imports[2]:	423 [MEUR]
Share RES-H/C in heating:	51.1%	RES exports[2]:	1 891 [MEUR]



Source: Eurostat

	2005	2010	2020		
	Energy in ktoe	Energy in ktoe	Energy in ktoe	Employment in FTE	Turnover in MEUR
Hydropower	2.5	1.9	1.4	<100	50
Wind power	521.7	664.5	1 373.2	22 800	100
Solar PV, and CSP	0.2	0.5	101.5	2 500	220
Solid biomass	162.9	285.8	369.9	3 500	710
Ren. energy in transport[3]	19.1	49.3	382.1	<100	280
Renew. heat consumed	914.9	1 240.8	1 289.2		
Renew. heat derived	846.9	1 226.1	2 044.4		
Heat pumps	72.5	114.3	353.4	3 500	170
All other renewables	797.2	1 061.9	2 000.5	2 000	290
Gap towards 2020	4 577.6	3 270.3			

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).

[1] From Integrated National Energy Climate Plan

[2] Referring to the International Trade chapter from the publication: EurObserv'ER - *The State of Renewable Energy in Europe, 2021 edition*

[3] Employment and turnover are only referring to biofuels in transport.

CURRENT RENEWABLE ENERGY POLICY

RES-E

Electricity from renewable sources is mainly promoted through a two-sided sliding premium (often called contract for difference (CfD). Contracts are awarded based on auctions. There are two different types of auctions - single item auctions for offshore wind parks and multiple item auctions for all other technologies. In addition, there is an open door scheme for offshore wind parks and wave power plants. Plants applying under the open door scheme can also participate in the multi-technology auctions to receive support.

In 2021, two auction rounds took place in Denmark - the Thor tender for one offshore wind park and one multi-technology auction round. No projects applied for the latter one: apparently, the market-based development of onshore wind and solar plants is currently more attractive for plant operators than the participation in the auction scheme, possibly due a rather low ceiling price in combination with the pay-back mechanism intrinsic to the CfD scheme. In addition, developers face an uncertainty with regards to the future development of grid fees which might also have impacted the non-participation in the auction.

In the Thor tender, a pay-as-bid CfD with a symmetric two-sided payment was determined. The reference price is set annually as the simple average of the benchmark hourly electricity spot price in the previous calendar year with ex post monthly settlement, where production in hours with negative market prices is excluded. In years where the concession owner has to pay the state, hours are excluded during which the spot price is lower than the negative premium. The state's cap for payments to the concession owner is capped at 6.5 billion DKK (ca. 845 million euro) and the concession owner's cap for payments to the state is set at 2.8 billion DKK (ca. 364 million euro) in total. In the Thor tender, the winning consortium bid at zero into the auction. Thus, there will be no support payments and the wind park will pay all its revenues to the state until the limit for payments to the state is reached. After that, the plant operator will be able to keep all market revenues. Prosumers are eligible for net-metering. Associations of wind and solar energy plant owners and other local initiatives may apply for guarantees for loans for feasibility studies that are conducted in the run-up to the construction of a wind or PV energy plant.

RES H&C

In 2021, a green restructuring of taxes took place - while the tax for space heating was increase, the electric heating tax was substantially reduced. In addition subsidies are available for phasing out oil and gas boilers including the disconnection from the gas grid and the expansion of district heating. District heating is facilitated by third party access rules, the non-profit nature of this business, obligatory communal heat planning and the possibility to obligatory connections of new and existing buildings. The phasing out of fossil fuels by 2030 is discussed.

RES-T

Denmark applies tax reductions for low emission vehicles. This includes a reduced registration tax as well as reduced taxes on the electricity used for charging electric cars. The country aims at forbidding diesel and petrol cars by 2030. In 2021, Denmark has published a new infrastructure plan. This includes funding for additional public transport, cycling infrastructure, charging infrastructure but also road improvements using climate-friendly asphalt. Denmark also applies a target for advanced biofuels and a reduced tax for biofuels blends.

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

Instrument	*Description*
Contracts for difference for offshore wind	Single-item auctions for determining support levels for specific offshore wind parks
Contracts for difference for other renewable electricity generation	Multi-item auctions for determining support levels for other renewable technologies for electricity generation, focusing on PV and wind onshore
Subsidies for replacing oil and gas boilers	Support payments for scrapping old boilers and investing in renewable or electricity-based alternatives
Infrastructure plan	Funds for charging, cycling and public transport infrastructure

For further information:

National Energy and Climate Plans (NECPs), https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans

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.

Funded by the European Commission