

## Netherlands renewable electricity

A large part of the renewable electricity sold in the Netherlands comes from Norway, a country which generates almost all its electricity from hydropower plants. In the Netherlands, household consumers can choose to buy renewable electricity. The relative amount of renewable energy used by household users has been steadily increasing, rising from 38% in 2008 to 80% in 2020;

One area in which the Netherlands is a relative leader is in the adoption of electric plug in vehicles. In 2022 plug-in electric vehicles in the Netherlands represented 10,7% of cars owned, making it the world's second highest share after Norway. Electric vehicles are able to run on renewable electricity with lower emissions and have the potential to provide grid power storage facilities;

Total renewable energy use was just 1.1% of overall energy use in 1990. This increased to 7.4% in 2018. The electricity sector first overtook the heating and cooling sector in 2005 in terms of total renewable energy use.

All EU countries along with Iceland and Norway submitted National Renewable Energy Action Plans (NREAPs) to outline the steps taken, and projected progress by each country between 2010 and 2020 to meet the Renewable Energy Directive targets for each country. Each plan contains a detailed breakdown of each country's current renewable energy usage and plans for future developments. According to projections by the Dutch submission in 2020 the gross final energy consumption in the Netherlands by sector breaks down as follows:

Using the unadjusted NREAP data approximately half of energy consumption (52.8%) is used in the heating and cooling sector. The heating and cooling sector (also known as the thermal sector) includes domestic heating and air conditioning, industrial processes such as furnaces and any use of heat generally. The next largest share is the electricity sector at 24.7%, followed by the transport sector at 22.5%. Total annual energy consumption before adjustments for aviation is projected to be 52,088 ktoe (52.million tonnes of oil equivalent) by 2020.

The Netherlands has a minimum target of 14% of renewable energy use by 2020. The sectoral targets for 2020 break down into national targets of 8.7% in the heating and cooling sector, 37% in the electricity sector and 10.3% in the transport sector although these figures may be slightly different from those implied by the minimum trajectory path; The following table shows the actual results recorded of renewable energy use by sector:

Actual overall renewable energy use grew from 4.3% in 2009 to 5.5% by 2014. The minimum trajectory planned for 2013-2014 was 5.9% and for 2015-2016 7.6% of total energy use. The Netherlands is regarded as amongst the most likely countries to miss 2020 national renewable energy targets as outlined by the Renewable Energy Directive.

Current Dutch government policy is, through the use of renewable sources and nuclear power, aiming for zero-emission electricity generation by 2035.

2016 was a record year for new wind turbine installations totalling 887 MW bringing the total installed capacity to 4,328 MW by year end. 691 MW of the new installations were offshore. The Dutch government has a target of 6,000 MW of onshore wind power by 2020 and 4,450 MW of offshore wind power by 2023.

In 2017, the Netherlands had 2294 wind turbines. The wind capacity installed at end 2017 will, in a normal wind year, produced 9% of electricity, when the equivalent value for Germany was 16.1% and Portugal 14%.

In 2022 the Netherlands announced it increased its offshore wind target to 21 GW by 2030. That would meet approximately 75% of the country's electricity needs. With this, offshore wind energy makes an important contribution to achieving the increased climate target of 55% less CO<sub>2</sub>-emissions.

By 2017 year end cumulative installed capacity of solar PV power reached a preliminary estimate of 2,749 MW with 700 MW added in that year alone. Whilst the Netherlands saw its capacity grow by the fourth highest in Europe during 2017 its installed capacity per inhabitant remained relatively low at 160.9 Watts per inhabitant compared to the European average of 208.3 Watts per inhabitant.

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