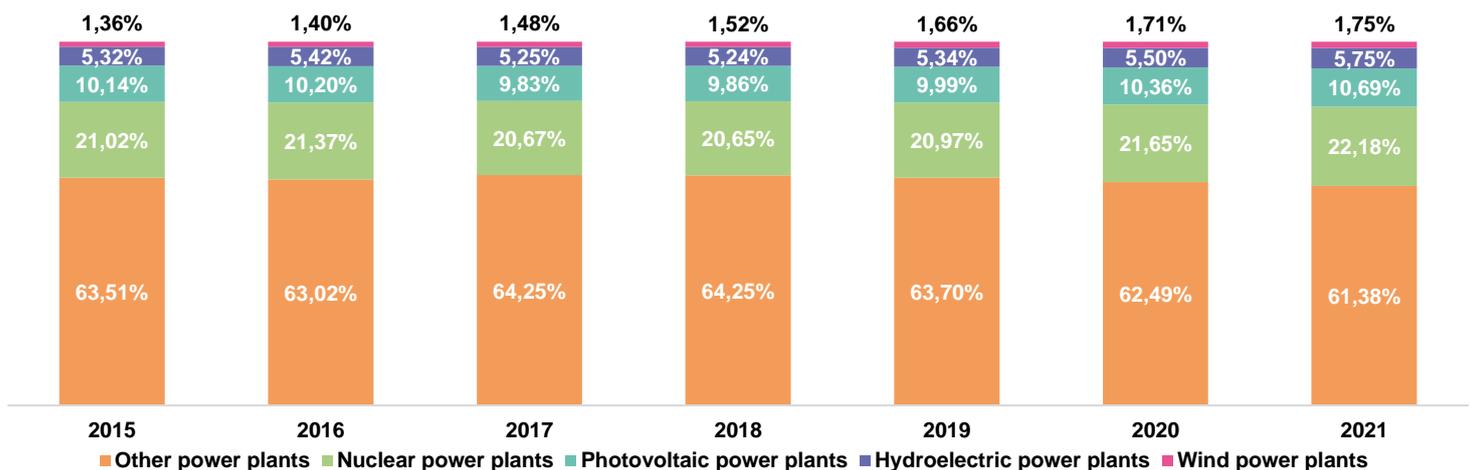


Renewable resources in the Czech Republic

ESG, Green Deal, carbon neutrality, renewable energy sources. These are the terms which have been forming the future of energy sector. From the perspective of the installed capacity in the Czech Republic, this article has presented an analysis of the current status of renewable resources with the focus on their individual types and geographical arrangement. The analysis could be carried out thanks to data provided by Energy Regulatory Office („ERO“). All of the owners of license to produce electricity with individual types of sources, issued by the ERO, have been included in the analysis and these are both legal and natural person.

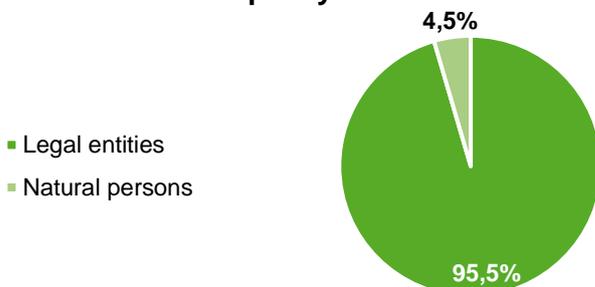
The installed capacity progress between 2015-2021 in the Czech Republic

The graph down captures the development of shares of the individual source types on the total installed capacity in the Czech Republic. Pumped-storage hydroelectricity corresponds to small and big hydroelectric power stations and as such they have not been included into the analysis. Photovoltaic, hydroelectric and wind power plants are the main renewable resources. The category of other power plants¹ includes resources that are not counted in on a long-term basis. Despite their decline, these resources are still important concerning the installed capacity. Nuclear power stations make almost a quarter of the installed capacity. Photovoltaic power stations have the biggest capacity and are followed by hydroelectric and wind power plants having 18% of the total capacity. This increasing tendency of the shares of renewable resources on the total installed capacity has been recording for the last three years. One of the reasons is the departure of the coal-fired power plants. More than 60 % of the entities in the analysis were natural persons in terms of number of licenses, but their installed capacity accounts for only 4,5 % of the total installed capacity in the Czech Republic. Most of the installed capacity of renewable energy sources in the Czech Republic is operated by legal entities.

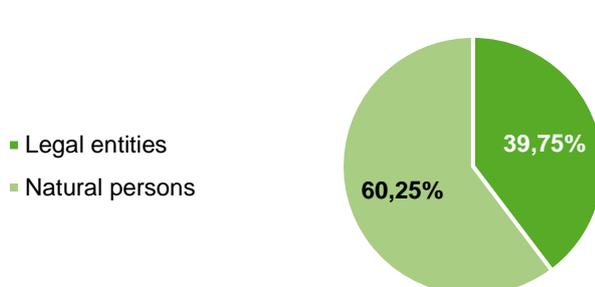


Source: TPA Valuation & Advisory s.r.o. analysis

Total installed capacity distribution



Number of entities



Photovoltaic power plants in the Czech Republic

Mainly due to generous subsidies and other government support, photovoltaic power plants in the Czech Republic experienced a huge boom in 2009 and 2010. The situation then stabilized in the following years, with a more significant increase in installed capacity in recent years, when renewables have again started to gain more attention in the EU. Maps below show the regions in the Czech Republic by installed capacity in MWe (map on the left) and by the number of entities licensed by the ERO to produce electricity from photovoltaic (map

¹ The category of other power plants includes coal, gas and steam power plants

on the right). Most of the entities are located in the Pilsen region, however, these are mostly photovoltaic of natural persons, which have a very low total installed capacity. In terms of installed capacity, the South Moravian Region is the largest, accounting for approximately 22% of the total installed capacity in the Czech Republic. Within the South Moravian Region, the largest installed capacities are directly in Brno District. From the point of view of both the number of the entities and the installed output, the presented maps let conclude that the most photovoltaic power plants in the Czech Republic are in the south part of the country. This is logic especially thanks to the climatic conditions with the average sunshine duration longer than in norther parts of the country. The data about the biggest photovoltaic power plants in the Czech Republic can be a paradox. The biggest photovoltaic power plants can be found in the former military area in the surroundings of Ralsko in Liberec Region and the second biggest lies in the area Mělnicko in the Central Bohemian Region, which are the north and central parts of the country. The other photovoltaic power plants can be found really in the south parts of the country.



The 10 largest photovoltaic power plants in the Czech Republic by installed capacity

Location	District	Region	Installed capacity (in MWe)
Ralsko	Česká Lípa	Liberec	55,763
Nová Ves	Mělník	Central Bohemia	35,103
Ševětín	České Budějovice	South Bohemia	29,902
Vranovská Ves	Znojmo	South Moravian	16,033
Stříbro	Tachov	Plzeň	13,608
Chomutov	Chomutov	Ústí nad Labem	12,900
Uherský Brod	Uherské Hradiště	Zlín	10,211
Brno	Brno	South Moravian	8,638
Přelouč	Pardubice	Pardubice	8,434
Oslavany	Brno	South Moravian	7,990

Source: TPA Valuation & Advisory s.r.o. analysis

Hydroelectric power plants in the Czech Republic

Referring to the installed output in the Czech Republic, the second biggest renewable resource is hydroelectric power plants. Small ones are those of which output doesn't go beyond 10MWh. Following the realized analysis, big hydroelectric power plants make almost 70% of the installed output of the hydroelectric power plants in the Czech Republic. The most of these power plants are in the South Bohemian Region and Hradec Králové Region, where two largest rivers Vltava and Labe rise. Concerning the size of the hydroelectric power plants, most of the biggest ones can be found in the Central Bohemian Region. Two of them - Orlick and Slapy dams – lie in this region. The third one can be found on the dam Lipno in the South Bohemian Region. The only Moravian representative among the 10 largest hydro electric plants is the Vranov dam. The output of the Vranov is approximately only one twentieth of the output of the Orlick. Concerning the installed capacity, the hydroelectric power plants are centralized in the Central Bohemian Region, where there are more than 57% total installed capacity of hydroelectric power plants in the Czech Republic.

Installed capacity [MWe]



Používá technologii Bing.
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Installed capacity [MWe]

8,13 645,09

Number of entities



Používá technologii Bing.
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Number of entities

7 214

The 10 largest hydroelectric power plants in the Czech Republic by installed capacity

Location	River	District	Region	Installed capacity (in MWe)
Orlík	Vltava	Příbram	Central Bohemia	364,00
Slapy nad Vltavou	Vltava	Prague-west	Central Bohemia	144,00
Lipno nad Vltavou	Vltava	Český Krumlov	South Bohemia	139,00
Kamýk nad Vltavou	Vltava	Příbram	Central Bohemia	40,00
Štěchovice	Vltava	Praha-západ	Central Bohemia	22,50
Ústí nad Labem	Elbe	Ústí nad Labem	Ústí nad Labem	19,50
Vranov nad Dyjí	Dyje	Znojmo	South Bohemia	18,90
Vrané nad Vltavou	Vltava	Praha-západ	Central Bohemia	13,88
Chbany	Ohře	Chomutov	Ústí nad Labem	10,00
Svídnice	Chrudimka	Chrudim	Pardubice	9,75

Source: TPA Valuation & Advisory s.r.o. analysis

Wind power plants in the Czech Republic

Wind power plants is the last renewable resource producing electricity in the Czech Republic which has been here analysed. Concerning the number of installed outputs, it is a less used renewable resource in the country in comparison with countries such as the Netherlands or Germany, where there are more favourable climatic conditions. The most of wind power plants can be found in Olomouc Region, directly in Olomouc district. However, the largest wind power plants are located in the north-western part of the Czech Republic, specifically in the Chomutov district in the Ústí nad Labem region. There is also the biggest wind power station in Měděnec in the Ore Mountains, which is known as „The Farm Kryštofovy Hamry“. This complex consists of a total of 21 stand-alone wind turbines with a total capacity of 42 MWe. The operator of „The Farm Kryštofovy Hamry“ is the German company ecoenerg Windkraft GmbH & Co. KG. Approximately 60 % of the total installed wind power capacity in the Czech Republic is located in the north-western part of the country (Karlovy Vary, Ústí nad Labem and Liberec regions). The Olomouc region also accounts for a significant share, with approximately 13.5 % of the installed capacity.

Installed capacity [MWe]



Používá technologii Bing.
© GeoNames, Microsoft, TomTom

Installed capacity [MWe]

0,00 86,80

Number of entities



Používá technologii Bing.
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Number of entities

1 19

The 10 largest wind power plants in the Czech Republic by installed capacity

Location	District	Region	Installed capacity (in MWe)
Měděnec	Chomutov	Ústí nad Labem	42,00
Hrádek nad Nisou	Liberec	Liberec	26,10
Horní Loděnice	Olomouc	Olomouc	18,00
Jindřichovice	Sokolov	Karlovy Vary	15,82
Dvorce	Bruntál	Moravian-Silesian	13,80
Višňová	Liberec	Liberec	12,30
Aš	Cheb	Karlovy Vary	10,00
Jindřichovice	Sokolov	Karlovy Vary	9,20
Nová Ves v Horách	Most	Ústí nad Labem	8,00
Krásná	Cheb	Karlovy Vary	8,00

Source: TPA Valuation & Advisory s.r.o. analysis

Future of renewable resources in the Czech Republic

Goals for renewable resources have been increased in the EU, which has been also reflected in national energy and climate plans of the EU member states. The Czech government approved a plan in 2020, which anticipates an increase of renewable resource share of 22% of the total energy consumption. The share in the year 2020 was about 15,5%. There are also expectations of an increase of the installed output of the individual renewable resources.

Till 2030 the increase of the installed output should be like this:

- Hydroelectric power plants with 1 127 MWe (the increase of 1,5 % contrary to the present)
- Wind power plants with 970 MWe (the increase of 186 % contrary to the present)
- Photovoltaic power plants with 3 975 MWe (the increase of 92 % contrary to the present)

Despite the increase of the installed capacity of wind power stations, photovoltaic power stations will have the leading position among the renewable resources. The Ministry of Industry and Trade of the Czech Republic expects that expenses connected with performing the goals in the section „renewable resources“ can be approximately CZK 900 billion, including the support of the existing sources. Naturally, the switching to the green type of energy production means grants of the EU as well.