

Ukraine renewable energy growth

Renewable energy use in Ukraine started from a relatively low base in 2016, but until the 2022 invasion its use was growing in all sectors. Overall in 2017 Ukraine 6.67% of total energy consumption in the country was provided by renewable energy sources. This broke down into 7.56% in the heating and cooling sector, 8.64% in the electricity sector and 2.44% in the transport sector. Renewable energy use grew particularly strongly in the electricity sector from 2018 to 2021 with a large rise in solar power installations as well as smaller rises in wind power and other sources.

At the end of the first half of 2014, the total electrical capacity of renewable energy facilities operating in the green tariff in Ukraine amounted to 1419 MW, of which the total capacity of wind farms is 497 MW, solar power stations - 819 MW, small hydropower plants - 77 MW, of electricity generation from biomass and biogas - 26 MW. Installed capacity of facilities producing thermal energy from renewable energy sources exceeded 1070 MW.

In 2017, the total capacity of renewable energy facilities increased by more than 10% - up to 1.5 GW. For the whole of 2017, the growth of the "green" generation was 260 MW. Climate News Network reported in 2017 that Chinese companies plan to spend \$1bn in a solar power park in the nuclear disaster area in Ukraine.

Overall, by the beginning of 2019, Ukraine had 2,240 MW of power generating "clean" electricity, which was 1.5 times more than at the end of 2017 (about 1500 MW).

In the first quarter of 2019, power plants producing electricity from renewable sources, with a total capacity of 862 MW, were commissioned in Ukraine, more than the whole of 2018. The highest number of new solar power installations ever were recorded for the first quarter - 648 MW. Wind power plants expanded by 173 MW. The rest of the "green" power plants put into operation included biogas and small hydroelectric power stations.

During Q3, 955.5 MW of new generating capacity was introduced, of which 97.8% was wind and solar. Most of the facilities were built in the Dnipro region - 388.5 MW. It is followed by Zaporizhzhia region - 166.9 MW, and Mykolaiv region - 144.2 MW.

About 3,000 households installed solar panels with a total capacity of nearly 70 MW in Q3 2019. These SPP projects are being implemented nationwide. The total number increased to 14790 stations and capacity increased to 345 MW by 69 MW. TOP-3 areas with the highest number of households SPP are:

In 2022, at the World Economic Forum in Davos DTEK CEO Maxim Timchenko presented a project to increase the capacity of renewable energy in Ukraine from 9 to 30 GW by 2030, as a

significant part of Ukraine's post-war rebuilding plan. The project involves private investments of EUR 35-40 billion.

Missile and drone attacks in the spring of 2024 led to extensive damage or destruction of up to 9 GW of coal-fired and large hydropower plants, which served as Ukraine's primary balancing facilities. Despite maximizing electricity imports through interconnectors (totaling around 1.7 GW, with expansion plans underway), these attacks led to consumer curtailments during peak hours throughout the spring and summer. Experts estimated a gap in power balance of approximately 2-4 GW, positioning renewables as Ukraine's second-largest electricity source, surpassed only by nuclear.

The government launched a "winterization" program, prioritizing rapid repair of damaged infrastructure, acquisition or leasing of gas-fired plants, and enabling loans for companies to develop gas and renewable power plants for self-supply. In addition to mobilizing financial and technical assistance from international donors, Ukraine undertook extensive efforts to rebuild and fortify its energy system.

This ambitious scaling of renewables necessitates the addition of balancing facilities, such as high-maneuverability generation (likely gas peakers) up to 906 MW and energy storage up to 656 MW.

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