

North macedonia community microgrids

North Macedonia relies predominantly on fossil fuels (low-grade lignite and gas) and hydropower, and is dependent on electricity imports. The total generation of electricity in 2022 was 5,634 GWh, and another 1,471 GWh was imported to satisfy the total domestic electricity demand.

The electric power generation capacity in North Macedonia in 2022 mainly consisted of two coal thermal power plants with a total of 824 MW installed capacity, nine large hydropower plants with 571 MW installed capacity, 123 small hydropower plants with 148 MW installed capacity and three gas CHP plants with 287 MW installed capacity. In 2021 and 2022, the long-dormant Negotino heavy fuel oil plant was also fired up in response to the energy crisis that hit the country but made only a small contribution to overall production.

In January 2020 the government adopted the Energy Development Strategy 2020-2040 which elaborates three different scenarios: reference (business as usual), moderate transition and green (strong decarbonisation) scenarios. The moderate transition and green scenarios both foresee coal phase-out in 2025 which makes it the first country in the Western Balkans to layout concrete options for a pre-2030 coal phase-out.

The smaller thermal power plant REK Oslomej had been operating occasionally during winter months. Discussions about "urgent need for modernization of the obsolete equipment" have been going on for years now, but according to the Energy Strategy it is phased out in all three scenarios. It will be replaced by a 120 MW PV plant on top of the now depleted lignite mine.

In the moderate transition and green scenarios in the Strategy, phase out of the REK Bitola lignite-fired power plant in 2025 is also recommended. In the reference scenario investments for modernization and pollution control are given instead of phase out.

North Macedonia adopted its first National Energy and Climate Plan (NECP) in June 2022. It follows the more progressive scenarios from the Energy Strategy in its coal phase-out timeline, with Oslomej being decommissioned in 2021 and Bitola in 2027. However, in the introduction it also says that the timeline may slip to 2029.

These ambitious phase-out dates are mainly due to a lack of economically viable coal supply. There are two operational open cast lignite mines – Suvodol and Brod-Gneotino. According to North Macedonia's 2023 Just Transition Roadmap, Suvodol has enough coal for two years and Brod-Gneotino for ten years the way they currently operate.

However, reality is not following the NECP. According to the state owned electricity company ESM's 5-year investment plan 2018-2022, the commissioning of a new Zivojno mine could extend the coal supply to TPP Bitola for another ~10.6 years. This would obviously prevent North Macedonia from achieving a timely

coal phase-out.

In addition, the NECP foresees the construction of the controversial Cebren pumped storage plant or a 250 MW fossil gas power plant at the site of the existing Bitola coal plant. However, ESM is planning both of these — although as of January 2024, the Cebren plant appears to be on the rocks. In addition, plans for additional gas plants at Negotino and Skopje have also been announced, which do not appear in the Energy Strategy or NECP.

Fossil gas is imported through a single entry point at the Bulgarian border. Gas is mainly consumed by industrial customers and the three CHP plants, while households have an almost negligible share of total consumption due to the very limited spread of distribution networks and the relatively high cost of gas.

In recent years, an additional gas pipeline to bring gas from Greece to North Macedonia has been heavily promoted by the North Macedonian government, and in December 2021 the European Investment Bank and Western Balkans Investment Framework approved financing for the project. In autumn 2022 the European Bank for Reconstruction and Development also announced that it was considering financing. Despite the obvious weaknesses of increasing dependence on imported fossil fuels, as of January 2024, North Macedonia's government has shown no signs of reconsidering the pipeline project.

North Macedonia has a 36.8 MW wind farm at Bogdanci and has received EU and KfW financing to expand it. It was the first country in the Western Balkan region to put into operation a sizeable wind facility. Its second wind farm, the 36-MW Bogoslovec, only started operating in mid-2023.

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