

Eight enerCEE Report

Hydropower in the Western - Balkan countries



The eighth report looks at the progress of hydropower uptake in the Western Balkan countries.

In the last decade, the development of hydropower projects advanced in the Energy Community Contracting Parties, in particular in the Western Balkans. This increase was driven by support schemes for renewable energy sources.

The Energy Community Secretariat assists Albania, Bosnia and Herzegovina, Serbia, Montenegro and North Macedonia in designing competitive support schemes for renewables. As Contracting Parties,

these countries are to comply with 2020 and 2030 targets, to increase their renewable energy share, which was also facilitated by additional hydropower projects.

Hydropower is a cost-effective and reliable balancing solution, which facilitates the increase of renewables (wind and solar) in the energy system. These projects however must be compliant with the acquis communautaire on environment in designing, constructing and operating such power plants.

Albania

Albania has significant renewable potential, the hydropower capacity is estimated at 2.3 GW and since thermal power plants are not operating, the power generation is entirely dependent on hydropower. Depending on water, the output varies between 4 and 8.6 TWh since 2010, reaching 8.6 TWh in 2018 and falling by 39% to 5.2 TWh in 2019.

The electricity capacity relies on three main hydropower plants on the Drin River, Koman (600 MW), Fierzë (500 MW) and Vau i Dejes (250 MW). Since 2010 hydropower generation capacity increased by 48% (702 MW), including Statkraft's 256 MW Devoll project commissioned between 2016 (73 MW) and 2020 (184 MW Moglicë phase).

As the National Renewable Energy Action Plan states, additional efforts are envisaged for the diversification of the electricity sector by adding 490 MW of solar PV and 150 MW of wind. The country's high dependence on hydropower means that the target achievement is significantly impacted by hydrology.

Small hydropower plants (below 15 MW), solar plants up to 2 MW, and wind plants up to 3 MW benefit from 15-year PPA and feed-in tariffs (FiTs).¹

¹ Enerdata: Energy Report 2021, Albania

Bosnia and Herzegovina

The country is a net power exporter of electricity, with a share linked to hydropower generation (3.7 TWh in 2019 and 4.1 TWh in 2020). Besides lignite (63%), power generation relies on hydro (35% of the power mix in 2019).

Power generation varies between 14 and 19 TWh since 2010, mainly due to hydropower availability. In 2019, power generation declined by 8.7% to 17.5 TWh (2019), due to a 11% fall in thermal power generation and a 5.3% drop in hydropower generation. As estimated, electricity consumption will increase by 1.1%/year between 2020 and 2031. In order to meet the demand, new projects were announced including a plan to add 1.5 GW of hydropower capacity.

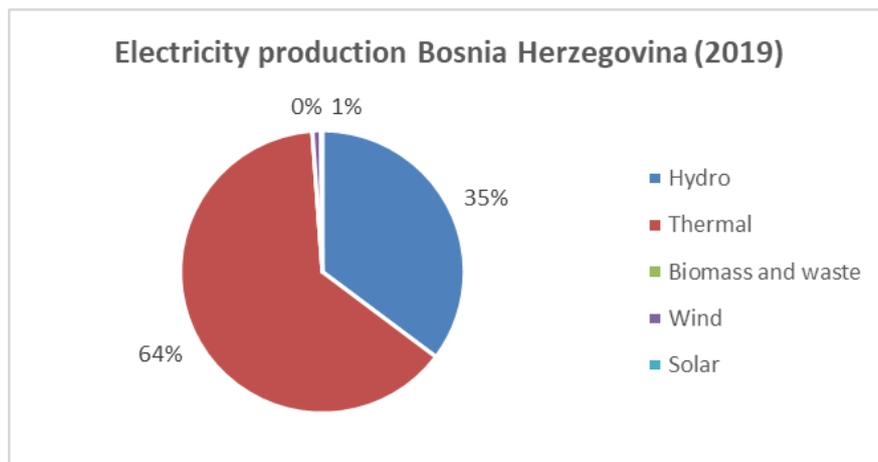


Figure 1 - AEA, Source Enerdata

Čapljina (440 MW) and Višegrad (315 MW) are the primary hydropower plants. In addition, large hydropower projects are being constructed, such as the Elektroprivreda Republike Srpske's 159 MW Dabar project, which is expected to be commissioned in 2023. In addition, Elektroprivreda Republike Srpske is developing other hydropower projects including 45 MW on the Bistrica River, 121 MW Tegare and 87 MW Dubarvica.

Elektroprivreda Republike Srpske and Elektroprivreda Srbije set up a 49/51 joint venture to invest in three hydropower projects with an added capacity of 180 MW on the upper Drina River, such as Buk Bijela (93 MW), Foča (44 MW) and Paunci (43 MW). The construction started in 2021 with scheduled commissioning between 2024 and 2025.

In the Federation of Bosnia and Herzegovina, EP BiH is developing several hydropower projects that can add 96 MW capacity by 2026, including 60 MW Ustikolina (2026) and 20 MW Vranduk (2024). Elektroprivreda HZHB Mostar has 210 MW of hydropower projects under development.²

² Enerdata: Energy Report 2021, Bosnia and Herzegovina

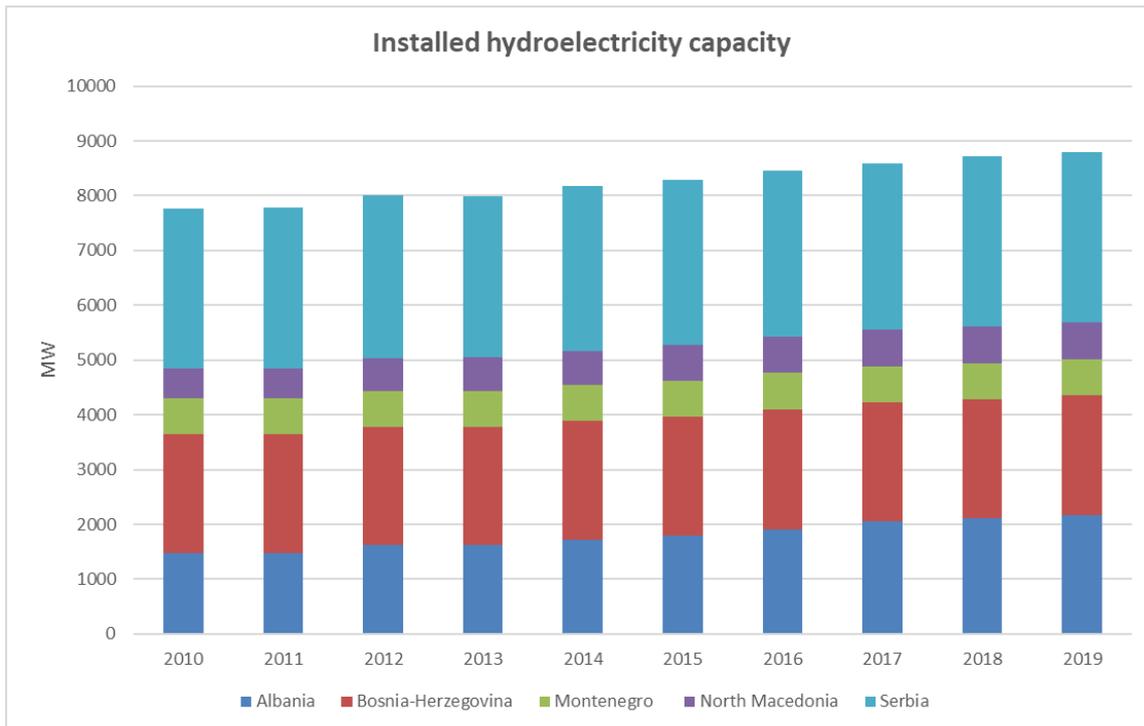


Figure 2 - AEA, Source Enerdata

Serbia

Like most countries in the Western – Balkan, Serbia’s electricity production mainly relies on coal and hydropower (27.1% in 2019). The country has the highest installed hydropower capacity in the region (3103 MW), with some 2835 MW currently operational.

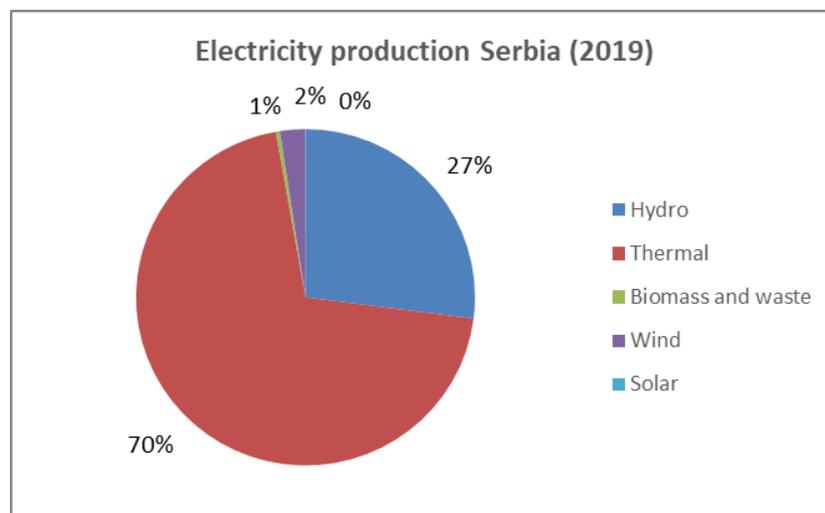


Figure 3 - AEA, Source Enerdata

Part of its capacity is concentrated close to the Romanian border, such as the Iron Gate 1 and 2 stations (2116 MW and 540 MW respectively), which are shared equally with Romania. The country boasts an undeveloped potential of 7000 GWh, focused on the Drina and Danube rivers. Hydroelectricity

production reached 10.19 TWh in 2019, which is a 3.3% decrease compared to the 2018 level (11.36 TWh).³

Elektroprivreda Srbije set out an investment plan for the modernization of its existing plants (in the value of EUR 500 million over the 2017-2025 period) and on the construction of 15 small hydropower plants. It states, that 212 MW of hydropower capacity should be added by 2023.⁴

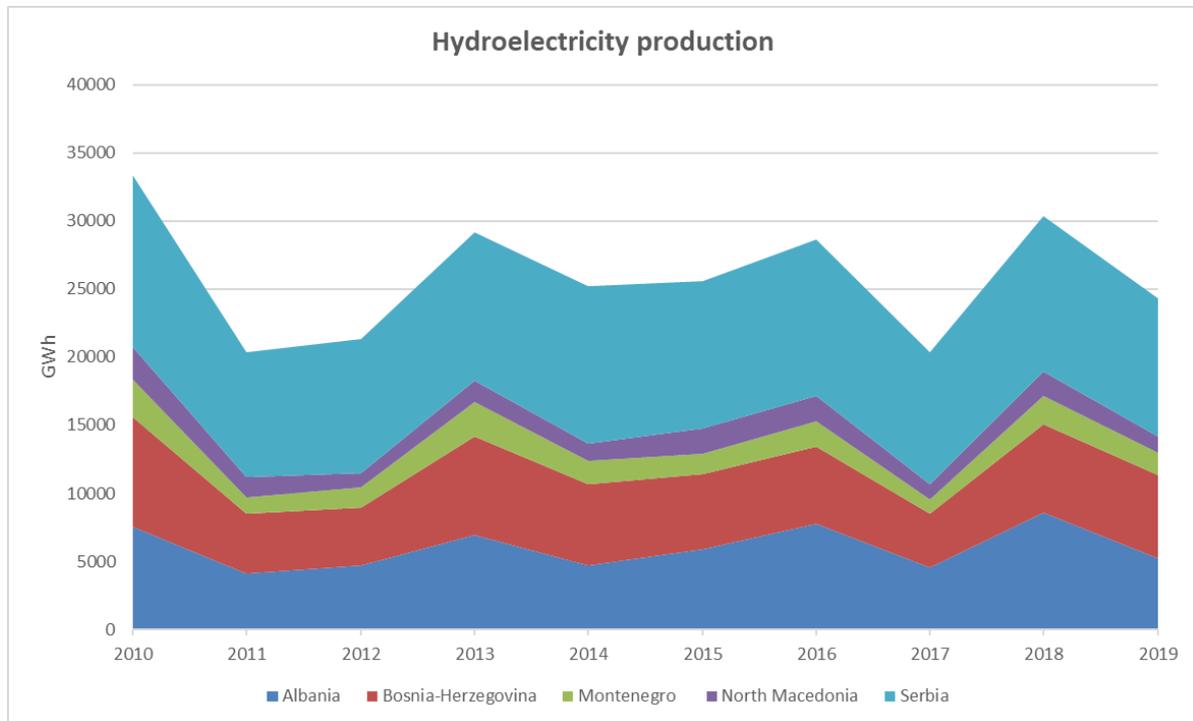


Figure 4 - AEA, Source Enerdata

Montenegro

Despite its relatively small size, the country has abundant water resources. Montenegro's power sector is mainly based on hydropower, while still relying on lignite-fired power plants. In the last decade, Montenegro's ability to meet its electricity demand domestically has varied according to its hydrological situation.

Since 2010, Montenegro's installed hydropower capacity ranged between 657 MW and 649 MW, accounting for 649 MW in 2019. Hydroelectric production fluctuated between 2750 GWh and 1024 GWh reaching 1637.373 GWh in 2019.

Two large hydropower plants, namely Perućica (307 MW) and Piva (342 MW) provide approximately three-quarters of the domestic power supply; however, account for only 18% of total the hydropower potential.⁵

³ Enerdata: Databank, Serbia 2021

⁴ International Hydropower Association 2020, <https://www.hydropower.org/country-profiles/western-balkans-serbia>, last accessed on 19.05.2021

⁵ International Hydropower Association 2020, <https://www.hydropower.org/country-profiles/western-balkans-montenegro>, last accessed on 19.05.2021

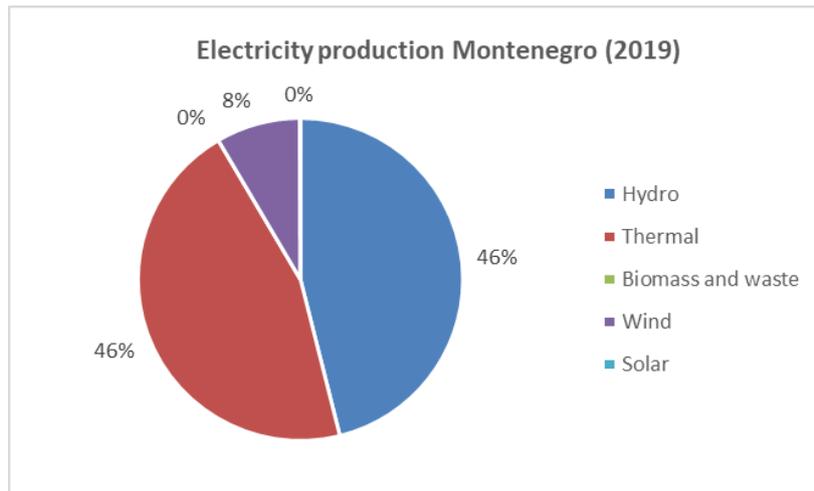


Figure 5 - AEA, Source Enerdata

North Macedonia

The country's power generation mainly relies on lignite and hydropower and is dependent on electricity imports. Besides, North Macedonia's renewable energy portfolio is largely based on hydropower, its capacity amounts to 682 MW.

Power generation was stable at around 5.6 TWh between 2015 and 2018 and grew by 4.7% in 2019 to 5.9 TWh. In 2019, hydropower accounted for 20%. The share of hydropower varies according to water availability (between 17% and 34% since 2010). In 2019, hydropower generation fell by 35%, resulting in a 25% surge of lignite-fired generation.

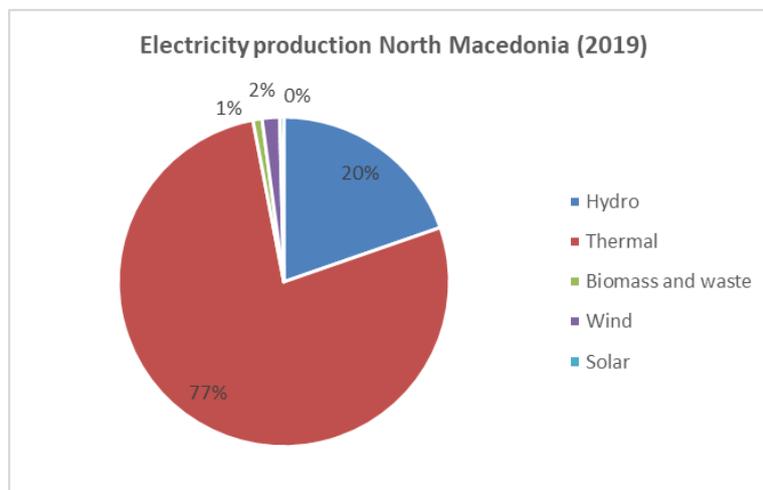


Figure 6 - AEA, Source Enerdata

The largest hydropower plants are located in Vrutok (166 MW), Tikveš (113 MW), Šplije (84 MW) and Kozjak (82 MW).

The development plans of the state-owned power utility Elektrani na Severna Makedonija's (EMS) are focused on starting the construction of the Čebren (333-458 MW) and Galište (193 MW) hydropower

projects and on reviving projects on the Vardar River. ESM also aims 12 run-of-river hydropower plants in the Vardar valley totaling 326 MW.⁶

Summary

Given the abundant natural resources and the technical potential of the countries in Western – Balkan, hydropower is one of the most cost-effective and reliable solutions that facilitate the uptake of renewables in the national energy systems.

As data demonstrates, Albania, Bosnia and Herzegovina, Serbia, Montenegro and North Macedonia strongly rely on hydropower in the power generation mix, besides coal. Therefore, to accelerate their decarbonisation efforts, countries aim to expand their generation capacities by improving their frameworks for investors in accordance with the *acquis communautaire* on the environment.

⁶ Enerdata: Energy Report 2021, North Macedonia