

Drought in the Danube region deals a blow to electricity generation

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Low water levels and high water temperatures in the Danube have caused serious disruption to electricity generation across Central and South-Eastern Europe. Owing to insufficient water for cooling nuclear reactors, Hungary temporarily shut down three of the four units at the Paks Nuclear Power Plant in early August, leaving only around 12% of its total installed capacity of 2,000 MW in operation. Romania also took one of the two units at the Cernavodă Nuclear Power Plant offline, leaving only half of its installed capacity of 1,300 MW available. Hydroelectric power plants on the Danube have also seen a sharp decline in electricity generation. This includes the Iron Gates hydropower complex, jointly operated by Romania and Serbia, where only approximately 25% of the 1,400 MW allocated to each country remains operational, and Slovakia's Gabčíkovo hydroelectric power plant, where output has fallen to just 90 MW of its 720 MW installed capacity.

Hungary and Romania have experienced the most serious disruption to their power systems. Nuclear power plays a significant role in both countries, accounting for up to 40% of electricity generation in Hungary and approximately 20% in Romania. In addition, hydropower provides roughly 25% of Romania's electricity output. By contrast, the reduction in generation at Serbia's Danube hydroelectric power plant, which normally accounts for approximately 20% of the country's electricity generation, has not led to major disruptions to energy supplies. In Bulgaria, the Kozloduy Nuclear Power Plant (2,000 MW), which supplies around 35% of the country's electricity, has continued to operate without restrictions, drawing cooling water from a specially deepened canal connected to the Danube. Slovenia's Krško Nuclear Power Plant, located on the Sava River, a tributary of the Danube, has reduced generation only marginally, by approximately 20% of its total 700 MW capacity. The plant supplies electricity to both Slovenia and neighbouring Croatia. The drought and low water levels on the Danube have also disrupted inland waterway transport, increasing the cost of shipping goods such as petrochemical products and fertilisers. The tourism sector has likewise been affected, including by the suspension of Danube river cruises.

The countries affected by the drought have so far avoided the most severe consequences, such as widespread blackouts, and have been able to offset the decline in domestic electricity generation through increased imports. However, this has resulted in a significant rise in electricity costs, while voluntary reductions in industrial output are likely to weigh on economic growth.

Commentary

- **In recent years, Central and South-Eastern Europe have been increasingly affected by extreme weather and other climate-related events.** Their increasing frequency and intensity are linked to climate change, as reflected in the 2022 drought, the 2024 floods and the record-breaking heatwaves of 2025. This year, for the first time, the consequences of drought have affected the region's power systems to such an extent that electricity generation at both nuclear and hydroelectric power plants has declined markedly.
- **Power system stability has been maintained through increased electricity imports and demand reduction measures.** In Hungary, imports from Austria and Slovakia played a crucial role, while Romania relied mostly on supplies from Bulgaria and Ukraine. The governments in Budapest and Bucharest called on households and industrial consumers alike to reduce electricity consumption voluntarily, particularly during the peak demand period between 5 p.m. and 10 p.m. Some companies suspended or scaled back production, while others brought forward planned maintenance and overhaul work. Romania also restored water flow to its nuclear power plant by carrying out controlled underwater blasting to remove rock formations from the Danube riverbed.
- **The immediate consequence has been higher electricity prices.** The loss of a substantial share of nuclear generating capacity, which normally provides relatively low-cost electricity, has increased the cost of electricity imports. According to estimates by Portfolio.hu, Hungary's daily electricity import bill has risen from approximately €1.7 million to €11 million. At the same time, production stoppages and cutbacks in industrial output caused by electricity shortages are likely to weigh on economic growth. As these disruptions are expected to be temporary, with water levels in the Danube forecast to rise in the coming days, they are unlikely to have severe long-term consequences. Nevertheless, they will make it more difficult for both Romania and Hungary to overcome their current economic challenges. In Romania, which is already grappling with a debt crisis, the latest disruptions could prolong economic stagnation or even push the country into recession. The European Commission forecasts GDP growth of just 0.1% this year. They may also exacerbate inflationary pressures, with Romania already recording the highest inflation rate in the EU at 9.2% in June. In Hungary, the disruptions could dampen the expected economic recovery, with GDP growth forecast at 1.8% this year, compared with 0.5% in 2025.
- **The drought and the current energy crisis are likely to prompt changes to the energy and economic policies of the affected countries.** They may encourage efforts to expand generating capacity, diversify electricity sources and strengthen cross-border electricity interconnections. The crisis is also likely to influence ongoing and planned nuclear power expansion projects, particularly with regard to reactor cooling systems. For example, Slovakia's nuclear power plants have not been significantly affected by lower river water levels because they use closed-loop cooling systems, which require considerably less water abstraction. The current crisis may also lead to greater scepticism about the development of the most energy-intensive and water-dependent industries, such as electric vehicle battery manufacturing, on which countries including Hungary have placed significant emphasis.