Tbilisi renewable electricity

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For Georgia, the Kura, the longest river in the Caucasus that flows through the capital Tbilisi, is a lifeline -- not least for the country"s energy industry.About 70% of the electricity in the country of 3.7 million people, nestled between Russia, Turkey, Armenia and Azerbaijan, comes from hydropower. Twenty percentis garnered from coal and natural gas.

The rest is covered by imports from Russia -- for now. If Germany and the EU have their way, Georgia should strive to become independent of its large neighbor to the north and become an electricity-exporting country with Europe as its destination.

The German state-owned investment and development bank, the Kreditanstalt f?r Wiederaufbau (KfW), is one of the main players pushing the scheme. It is supporting the expansion of the power grid with more than EUR200 million ($217 million) to enable Georgia to generate more renewable energy.

The potential is vast: the Georgian state electricity producer GSE expects to expand capacities from the current 4,600 megawatts (MW) to just under 10,000 MW by 2033. New hydropower plants would be able to provide around four gigawatts (GW) of new capacities. In addition, there are plans to construct newwind farms with a capacity of 900 MW and photovoltaics with 200 MW. Currently, only one wind farm with 21 MW is in operation.

The new capacities would transform Georgia from a net electricity importer to an exporter providing green electricity for Europe. Georgia aside, offshore wind farms in Azerbaijan"s Caspian Sea could also play a role in delivering green power to the West.

To make this vision a reality, the EU and Georgia are pursuing the idea of running a power line through the Black Sea. Around 1,100 kilometers (683 miles) in length, it would be one of the longest undersea power cables in the world and could carry 1,000 MW in either direction. However, the investment would be substantial at more than EUR2 billion.

The parties involved are currently preparing a feasibility study, with results expected at the end of 2023. If things go according to plan, the cable could be in place in 2029. However, the high costs and security concerns -- the submarine cable would run within relative reach of the Russian-held Crimean Peninsula -- mean that stakeholders are also eyeing alternatives.

Indeed, the Caucasian green electricity could be transported to the West via the Turkish power grid, says Thomas Arlt of the German engineering firm Fichtner; the advantage being that the Turkish power grid is synchronized with its European counterpart. However, for that to happen, the line in Georgia would first have to be decoupled from the Russian power grid, with which it is currently synchronized.

On behalf of the KfW, Fichtner has built a substation in Akhalzikhe, near the border with Turkey, for the state-owned Georgian power producer that can tap into Georgian electricity and transmit up to 700 MW of electricity into the Turkish-European grid.

Meanwhile, Turkey has also announced an expansion of its pipelines. However, whether and to what extent Turkey will cooperate to potentially transmit the green power to the EU is subject to contracts that do not yet exist.

Therefore, building new capacity is the prerequisite of all green power dreams. Georgia launched its first tender for 300 MW of new hydropower, wind and photovoltaics capacity this year. The average bidding prices were 5-6 cents per kilowatt-hour. Another 1.2 gigawatts (GW) are expected to follow.

To make market-based pricing possible, state-owned electricity provider GSE has announced plans to establish a Georgian Power Exchange this year. "Without such an open electricity market, no foreign investor will come," says GSE board member Zviad Gachechiladze.