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NEWSLETTER
GEORGIA

German Economic Team

Sebastian Staske and Rouven Stubbe

Prospects for the Black Sea Submarine Cable

The planned Black Sea Submarine Cable, which is to connect Georgia with Romania, is an ambitious international energy project. In order to amortise the investment costs, an extensive expansion of renewable energy would be necessary both in Georgia and in Azerbaijan, which is also involved in the project. Price forecasts also see Turkey, currently Georgia's most important export market, as financially more attractive than Southeastern Europe in the medium term. While the economic prospects are thus currently unclear, the cable could offer strategic benefits such as a diversification of electricity exports and increased security of supply. Other issues, including the challenges related to construction and project financing, also need to be clarified before implementation. A positive signal are the recent renewable energy auctions, which attracted a high level of investor interest.

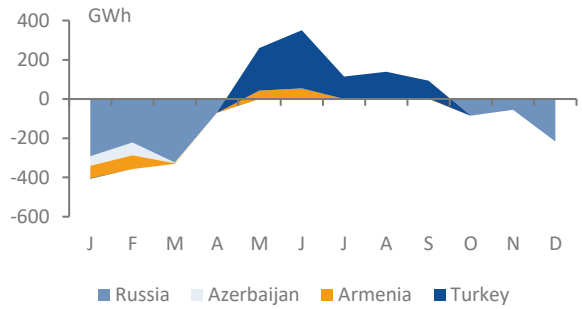
International project in the Black Sea

The Georgian government is currently considering a project for a 1,200 km submarine high voltage direct current (HVDC) cable linking Georgia with Romania. In early 2023, the two countries signed a joint agreement with Hungary and Azerbaijan, with Bulgaria and Armenia later also expressing interest. According to informal estimates by observers, planned transmission capacity is expected to be around 1.3 GW, with potential completion in the early 2030s and costs of around EUR 3 to 4 bn. (Earlier proposals envisioned a capacity of 1 GW and estimated costs of around EUR 2.3 bn.) For Georgia, the cable could bring diversification of electricity exports and offset the seasonality of power supply. In a recent study, the German Economic Team assesses the project's economic viability, as well as possible alternative export routes and strategic aspects.

Georgia's power system: seasonal and inter-connected

Thanks to the numerous river basins, hydropower is the most important source of electricity generation in Georgia. With around 3,400 MW, it makes up almost three quarters of total installed capacity. This creates seasonality in generation, which is higher in summer. As a result, Georgia is a net exporter during late spring and summer and a net importer otherwise. Except for 2016, Georgia has been an annual net importer of electricity in the period from 2012 to 2022.

Monthly electricity flows with neighbouring countries



Source: GSE, data for 2022

With a total nominal transmission capacity of about 2,720 MW, Georgia is well interconnected with its neighbours and is an important transit country. Of particular relevance for exports are the 700 MW of transmission capacity with Turkey, which is the main export market. The Ten-Year Network Development Plan of the transmission system operator GSE outlines an ambitious expansion plan for its land-based interconnection capacity, including an additional 350 MW with Turkey by the early 2030s.

Significant investments needed for economic viability

In order to assess the economics of the subsea cable, we look at two factors: 1) export potential in Georgia and Azerbaijan and 2) exporting to Turkey (as an alternative for exports towards the EU). For the former, we use GSE's Adequacy Assessment and its Ten-Year Network Development Plan, adopting the so-called G0 and G1 scenarios (hereafter referred to as LOW and HIGH, respectively). The scenarios differ primarily in terms of the expansion of renewable energies (380 MW in the LOW scenario, 6,530 MW in the HIGH scenario). In both scenarios, the demand for electricity increases by 4.5% per year, which is slightly below the forecasts for long-term GDP growth.

The subsea cable is a joint project with Azerbaijan so total export volumes must be considered. Lacking reliable public information on expansion plans in Azerbaijan, we assume the following export-oriented renewable energy development: 2,000 MW wind power and 500 MW solar power. This would result in a high utilisation rate for the cable (92% in LOW, 98% in HIGH scenario). However, Georgian export shares differ significantly (between 5% of total exports in LOW and 33% in HIGH scenario). The cable can only be economical if Georgia and Azerbaijan build sufficient export-oriented renewable capacities.

Assuming offtake prices of 65 EUR/MWh in Romania and Hungary and levelised costs of electricity (LCOE) of 50 EUR/MWh in Georgia and Azerbaijan would yield net

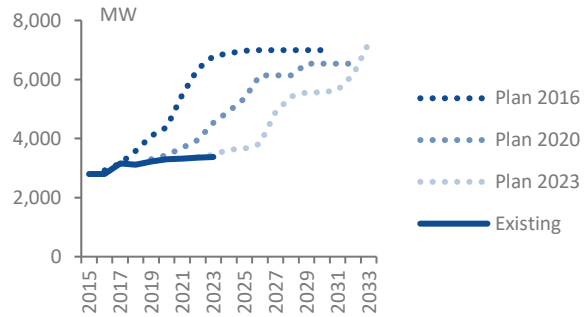
revenues of approx. EUR 160 m per year. With estimated investment costs of EUR 3.5 bn, the simple payback period would be slightly longer than 20 years in both scenarios. This shows that the subsea cable could, in principle, be profitable in the long term. However, if Azerbaijan does not build the above-mentioned capacities, simple payback would take over 40 years (HIGH) or simply not be infeasible (LOW).

Current ENTSO-E forecasts outline higher electricity prices for Turkey in 2030 (84 EUR/MWh) compared to Romania (64 EUR/MWh). With sufficient interconnection capacity with Turkey already in place (and planned to be increased), exports would only flow to Romania in case of congestion on the line to Turkey (unless long-term PPAs with European offtakers are concluded). If these price forecasts materialise, there is a risk that the cable will be underutilised. Even if expansion of renewables materialises as outlined, there is thus no clear business case for the cable at the moment.

Additional aspects: diversification and implementation

Aside from the business case, additional considerations should be taken into account. From a Georgian viewpoint, the cable could help reduce dependency on Turkey as the main export market and increase energy security by creating a way for emergency imports in case of interrupted electricity imports.

Existing and projected installed hydropower capacities



Source: GSE

However, there are also domestic challenges to overcome. A key issue is increasing domestic production. For various reasons, the prospects for hydropower expansion remain uncertain and the network development plans have been overly optimistic in this regard. Additionally, the Georgian grid needs substantial investments in order to strengthen the East-West corridor.

Questions also remain regarding the implementation and operation. If the cable is to bypass Russian and Ukrainian territory, it would need to pass through the exclusive economic zone of Turkey. The construction will pose challenges as well, since the cable would be the longest of its kind in the world, with 700 out of 1,200 km being >2,000m below sea level. Currently, supply chain issues regarding the availability of HVDC cables could also cause delays. A key aspect for the project is the security risk, as the cable would be physically vulnerable to sabotage and easily accessible by the Russian navy. This issue could also create problems related to insurability. Project financing is also influenced by the uncertain business case, the high risk of cost overruns given the technical difficulties and the so far undetermined distribution of costs.

Outlook

The overall picture is therefore mixed. Although the cable could be economically viable in principle under certain assumptions and offer strategic advantages, steps will need to be taken in Georgia (and Azerbaijan) to achieve this. Observers will be closely following the results of a feasibility study, which should be completed by summer 2024. Among other aspects, the expansion of renewable energy in Georgia is a necessary condition for the cable. The most recent auctions to expand capacity (Mar-23: 300 MW, Feb-24: 800 MW) were an important step in this regard. In addition to hydropower, these also included capacities in wind and solar energy, which are currently still at an early stage of development in Georgia. Both auctions were significantly oversubscribed, which shows the high level of investor interest in the Georgian electricity sector.

This newsletter is based on the Policy Study "The Black Sea Submarine Cable project: Economic prospects and challenges". A previous newsletter on the same topic reflecting discussions with observers from May/June 2023 can be found here.

Financed by the Federal Ministry for Economic Affairs and Climate Action, the German Economic Team (GET) advises the governments of Ukraine, Belarus*, Moldova, Kosovo, Armenia, Georgia and Uzbekistan on economic policy matters. Berlin Economics has been commissioned with the implementation of the consultancy.
**Advisory activities in Belarus are currently suspended.*

Editor
Sebastian Staske
German Economic Team
www.german-economic-team.com

Implemented by
BE Berlin Economics GmbH
Schillerstraße 59 | 10627 Berlin
+49 30 / 20 61 34 64–0
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