Navigating Power Grid Scarcity

Albania experiences with RES integration

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Topic description

The lack of power grid capacity is increasing even in Albania as in many parts of the world, evolving to be one of the key barriers in the energy transition. As grids are essential for decarbonizing the power sector and the overall economy, all options to ease grid scarcity— from quick fixes to more fundamental solutions — are worth considering.

Considering the high hydrological risk of Albania, as for the past years around 98% of the electricity generated is based on hydropower plants, Albania has a very clear plan to diversify its own generation capacities.

During the last 5 years, around 300 MW of photovoltaic power plants have been installed and now are into operation. Also, other 400 MW of PV plants and 225 MW of wind power plants are expected to be constructed, as they have resulted winners of the auctions launched by the Ministry of Infrastructure and Energy.

All these new capacities have to accommodate into the current power

Background context on RES deployment a targets

Overall Information about RES deployment

1. *RES capacity additions during last 5 years has been around 300 MW of PV plants and 400 MW of HPP.*
2. *Percentage of electricity from RES is 100% as Albania is hydro and solar based in electricity generation.*
3. *Future targets for RES deployment according to the NECP approved in 2021, will be 178.1%* for the year 2030.*

**The value above 100% means that Albania will be a net exporter in electricity in 2030*

Current/future issues caused by RES integration in your country

- *Limited Capacity: Existing grids may have insufficient capacity to handle additional renewable energy sources, especially during peak generation times.*
- *Congestion: High levels of renewable generation can create congestion in certain areas of the grid, leading to inefficiencies and potential blackouts if the infrastructure can't accommodate the flow.*
- *Lack of Flexibility: Traditional energy sources may not be flexible enough to ramp up or down quickly to balance the variability of renewables, increasing stress on the grid.*

Tools/approaches to tackling RES integration problems

- *Short term solutions*

- *Increasing transparency.*
- *Monitoring Grid operators for grid connections.*
- *Policy and Regulatory Frameworks*

- *Medium/Long term solutions*

- *Smart Grids: Implementing smart grid solutions enhances grid management through real-time monitoring, advanced analytics, and automated control systems, improving the flexibility and reliability of energy distribution.*
- *Energy Storage Systems: Investing in energy storage allows excess renewable energy to be stored and released during periods of high demand or low generation.*
- *Grid Modernization: Upgrading transmission and distribution infrastructure is essential to handle increased loads and enable the integration of decentralized energy sources.*

Grid Modernization

- *Details on implementation – Construction of the 400 kV interconnection transmission line between Albania and Kosovo.*
- *Achieved/Expected Effects and Results – It has a significant impact on increasing the capacity of electricity exchange between the two countries and with the countries of the region, creating better commercial opportunities for energy exchanges and transits in the regional network. The line affects the creation of opportunities for optimal use of common sources of electricity production, minimizing costs and increasing production efficiency. The work increases the reliability of the operation of the electricity system of the two countries and the regional one. Also, it helps in reducing the hydrological risk in Albania, power losses in the transmission network and improves the balancing of the transmission network.*
- *Lessons learned – Despite the high initial costs of construction, interconnection lines are very important, because they improve the overall reliability of the electrical grid by providing multiple pathways for electricity flow, alleviate congestion on existing transmission networks, improve load management and they are support for RES integration, which all contribute to increase of the security of supply and*

THANK YOU FOR YOUR ATTENTION!

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