

GEORGIA'S ENERGY INDEPENDENCE

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ABSTRACT. Every country wants to be energy independent. It is quite difficult to achieve or sometimes practically impossible. Georgia has declared its desire to have energy independence so that external political or economic factors will have less influence on the country's domestic markets. Georgia was able to open up the energy trains of Russia as much as possible. Therefore, the ongoing war between Russia and Ukraine had less impact on Georgia compared to other European states. Achieving energy independence requires developing a well-thought-out plan and successfully achieving the milestones outlined in that plan. Georgia does not import electricity more than 8-10% each year, but thermal power plants that use natural gas as the main resource generate about 20-25% of electricity. Therefore, there is necessary to import natural gas from neighbouring countries for electricity generation. Today, there is a need to use renewable and abundant hydro resources, for which state support and appropriate measures are required.

KEYWORDS: ENERGY SECURITY, ELECTRICITY, ELECTRICITY IMPORTS, GENERATION, CONSUMPTION.

INTRODUCTION

In general, energy security is one of the basis of the country's political independence and security, which cannot be achieved without energy independence. Energy security may play a core role in international relations. The energy security of Georgia is represented by the dependence on imported resources, as well as the socio-economic situation in the country.

The war between Russia and Ukraine has made even more clear the need for energy independence, not only for Georgia but also for many European countries. In this case, the above-mentioned war did not have a big influence on energy resources for Georgia because Russian energy (in terms of natural gas imports) is limited in Georgia as much as possible.

Ensuring the country's energy security is impossible without implementing regulatory instruments. In terms of energy security, we must consider a continuous supply of high-quality energy at an affordable price, which is painfully acceptable, considering the social condition of the country's population.

ELECTRICITY MARKET ANALYSIS

Short-term energy security means that the energy system can promptly balance any disruption in the supply-demand equilibrium.

The demand for electricity in Georgia is increasing every year. From 2012 (9,379 mln.kWh) to 2022 (14,550 mln.kWh), consumption has increased by 55%. In the same period, generation capacity has increased by 48%, clearly showing the need for imported electricity to cover increased demand and investments in generation sources.

Diagram №1 shows the relationship between electricity production and consumption from 2012 to 2022. In addition, in 2021, the imbalance between production and consumption was 12%, and in 2022 – 4% (Commission, GNERC, 2022).

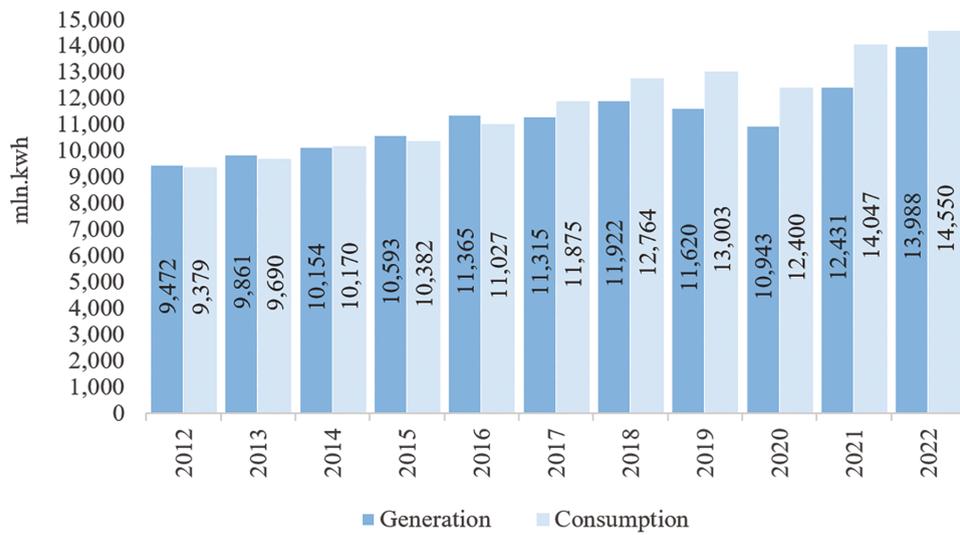


DIAGRAM №1. Electricity generation (delivery to the bus bar) and consumption.

SOURCE: (Commission, GNERC, 2022)

According to 2022 data, the share of local generation in the total amount of electricity delivered (18,681 GWh) was 76.26%, including electricity generated by thermal power plants – 23.8%, and imports – 8.21% (transit – 16.92%, losses – 1.38%) (Commission, GNERC, 2022). Similar data for 2021: the share of local generation in the total amount of supplied electricity (15,621 GWh) is 80.84%, including electricity generated by thermal power plants – 18.8%, and imports – 12.84% (transit – 7.58%, losses – 1.26%). The same data for 2020 were following (12,655 GWh) the share of local generation is

88.18%, including electricity generated by thermal power plants – 23.9%, and imports – 12.72% (transit – 0.8%, losses – 1.71%) (Commission, GNERC, 2022).

Diagram №2 shows the structure of electricity generated by thermal, hydro and wind power plants in 2012-2022.

In Georgia, generated and consumed electricity’s average of 20% is from electricity generated by thermal power plants, the main resource of which is imported natural gas (nearly 99% of total consumption). This part further increases the degree of energy dependence.

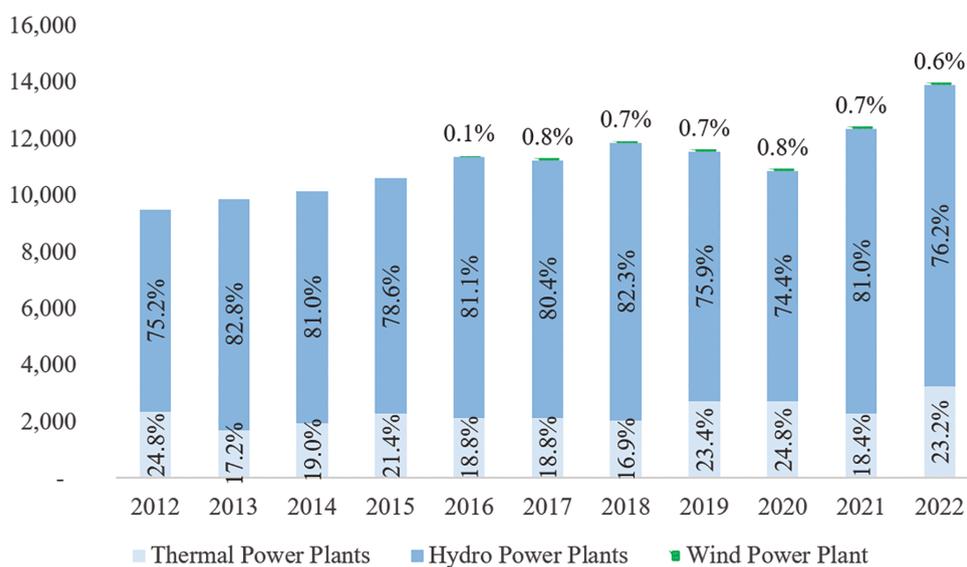


DIAGRAM №2. Structure of electricity delivered to the bus bar by power plants.

SOURCE: (Commission, GNERC, 2022).



DIAGRAM №3. Electricity Imports by Countries (%).
SOURCE: (Commission, GNERC, 2023).

Natural gas is a rather expensive energy since the country has to pay a gas price equivalent to the US dollar in GEL. The exchange rate of the US dollar against GEL was quite unstable, especially during the Covid-2019 period. Nevertheless, in the face of increasing demand for electricity, both in the short and long-term, the development of new generation sources and energy infrastructure, the availability of imports and the provision of optimal prices are impossible to ensure security.

Due to the transformation and modernization of the energy sector, Georgia uses foreign sources of energy resources. That is why it is required to do a detailed anal-

ysis of the import of different energy sources and assess their potential impact on the country's energy security. Although energy independence is a big challenge in the short or medium-term, the country needs to diversify its trading partners to achieve energy security.

Diagram №3 and Diagram №4 reflect the share and amounts of electricity imports in Georgia in 2015-2022 by country.

At the same time, our country exports electricity mainly during summer period, when production exceeds demand. According to the data of 2022, exports are distributed among the following neighbouring coun-

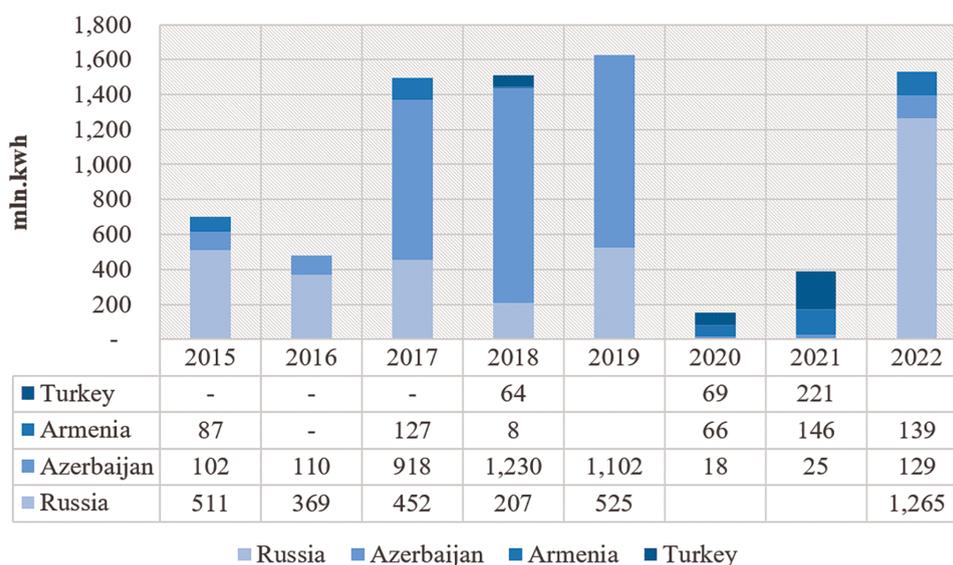


DIAGRAM №4. Electricity Imports by Countries (%). SOURCE: (Commission, GNERC, 2023).

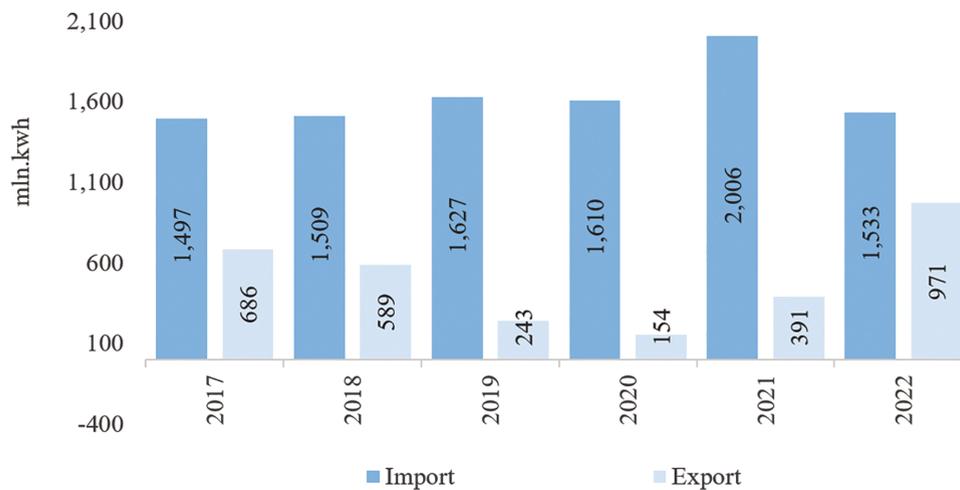


DIAGRAM №5. Electricity Import and Export.

SOURCE: (Commission, GNERC, 2023).

tries: Turkey (89%), Armenia (10%) and Azerbaijan (1%) (Commission, GNERC, 2023).

The annual electricity demand growth is ahead of local generation. Therefore it is necessary to ensure that Georgian society is well-informed about the energy sector dynamics. Importing energy from abroad in the short term can cover the difference between demand and generation. Increasing the generation of renewable energy in the country is necessary not only to reduce the gap between electricity consumption and generation but also to eliminate this gap in general and to ensure the country's energy security.

CONCLUSION

In accordance with the current legislation in Georgia, the government of Georgia supervises the safety of electricity supply in cooperation with GNERC and other competent state bodies and takes measures to ensure the safe and reliable supply of electricity to the end user:

- Creating a transparent and stable regulatory framework – with clearly defined functions and responsibilities of electricity market participants;
- Electricity transmission and/or distribution networks maintenance and updating, if it is necessary;
- Promotion of renewable energy sources;
- Existence of sufficient reserve power of transmission and production for stable operation of the electric power system;

- The balance between the demand for electricity and the availability of production capacities;
- Encouraging the introduction of energy efficiency and new technologies, including demand-side management, renewable energy and smart metering technologies, and distributed generation of electricity;
- Encouraging energy-saving arrangements;
- Elimination of administrative barriers hindering investments in the electricity energy sector and minimization of administrative procedures.

The main mechanisms of regulatory support for energy security are the following:

- Authorization of energy activities and activity monitoring, which primarily means licensing of entities;
- Implementation of modern trade mechanisms and imbalance responsibility mechanisms on the energy markets, which will contribute to positive investment signals;
- Monitoring of energy markets – formation of a competitive environment, increase the market liquidity, prevention of abuse of market power;
- Processing of supply continuity indicators, setting their limits, implementing appropriate monitoring and ensuring improvement of indicators;
- Incentive tariff regulation based on reasonable-appropriate costs, which involves encouraging investments in the network and, at the same time, strict control of their implementation using regulatory audit methods;

- Annual agreement of network infrastructure development plans, taking into account energy security, integration of renewable energy into the network, and satisfaction of increased consumption;
- Regulatory support for energy efficiency and renewable energy development.

In conclusion, it should be mentioned that to achieve a country's energy security, it is necessary to implement regulatory instruments that require all parties' active involvement. Without additional investments, achieving energy security in the long term is practically impossible. In accordance with the tariff methodology (approved by the resolution №68 dated

December 15, 2020, of the Georgian National Energy and Water Supply Regulatory Commission), the pre-agreed investments by the Commission are reflected in the tariff in advance so that the company has the opportunity to gradually withdraw the spent funds in the form of the electricity tariff set by the Regulatory Commission. Consumers should have a proper understanding of what is ultimately best for them and the country. If we want an uninterrupted electricity supply in the long term at an affordable price and ultimate en-

ergy independence, it is impossible to make additional investments without reflecting it in the tariff.

Utilization of renewable energy resources remains one of the priorities for the future development of the electricity sector to use existing energy resources in Georgia efficiently, increase electricity security and sustainability, and fully meet the country's electricity demand.

Georgia is a rich country in various sources of renewable energy. While water resources have historically played a leading role in Georgia, alternative renewable sources are becoming increasingly popular (such as wind, solar, etc.).

The Commission has an important role in implementing RES and energy efficiency legislation. Furthermore, following the law, the Commission approved the Rules for Issuing Certificates of Origin of Electricity in 2021. (Commission, GNERC, 2022) The Commission plays a leading role in regulating and promoting micro power plants, for which the so-called net metering regulation has been adopted.

Georgia has a real chance to be an energy-independent country.

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