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PROBLEMS HINDERING THE DEVELOPMENT OF RENEWABLE ENERGY IN GEORGIA

Abstract. *The paper provides a justification for the need to accelerate the introduction of technologies for the use of renewable energy sources. The main obstacles on this path are: the lack of a systematic approach and research in Georgia; The problem of maintaining the stability of the transmission network; and Net Accounting System Limitations.*
Keywords: *renewable energy, renewable energy policies, Georgia.*

According to the International Energy Agency, in 2019-2024. The installed capacity of renewable energy sources in the world in 2019-2024 will increase by 50%, in which the energy of solar photovoltaic converters (PV) will play the main role, and according to the International Renewable Energy Agency, solar photoconverter systems will cover electricity needs by 2050 a

quarter of the world's population and the sun will become the second largest source of energy generation after the wind. (1)

Countries' renewable energy policies (including government support for research and development, innovation, finance, and regulation) are seen as an important driver of renewable energy growth. International cooperation within the framework of the Sustainable Energy for All (SE4ALL) initiative will contribute to the elimination of shortcomings in shaping the future of renewable energy in countries (Soboleva, T. and Kharashchenko, N., 2020).(2)

Georgia is a country without carbonate energy resources. Although green energy development has begun in Georgia, the country has faced huge challenges in this area, both from a technical and financial point of view. Such a prerequisite for the current situation existed, and if Russia had not started an aggressive war against Ukraine, then in Georgia, the events related to energy security would have developed very slowly.

The war changed everything. Today, Georgia faces the most acute problem of energy security, which requires an urgent solution. Obviously, in this regard, it is necessary to change the legal legislative space, which should be maximally focused on the development of green energy (meaning only sources of renewable energy production) and energy-saving technologies.

The purpose of the work is to study the problems of renewable energy production in Georgia.

Lack of a systematic approach and research in Georgia. There is a special procedure for signing memorandums with the Georgian government on the construction of power plants. At the same time, the legal analysis of the memorandums and agreements carried out by the Green Alternative movement notes that with regard to the list of potential sources of renewable energy provided in the program, it is important to emphasize that this list has always included and now includes only hydroelectric power plants. Solar or wind farms have never been mentioned as a potential renewable energy source. We also find this information on the website of the former Ministry of Energy of Georgia. It is written about this program that it presents a list of potential hydroelectric power plants to be built in Georgia, and describes the rules and procedures for their construction. Accordingly, the mentioned document puts the construction of hydroelectric power plants in an advantageous position and creates unequal conditions for the use of wind and solar energy compared to hydropower. Lack of a systematic approach and research in Georgia. Despite the potential of solar energy discussed above, the country does not have the opportunity to fully use the potential of solar energy, in particular, to receive electrical and thermal energy with its help. Georgia does not have a strategy for using solar energy. The Energy Union assessment of the energy sector in Georgia states that ,,since there is no single legislative act on renewable energy sources in the country, therefore, there is no systematic approach to regulating this sector". (3)

Much of the research on renewable energy potential is outdated and more research is needed to determine the exact data.Only small projects related to the use of solar energy have been implemented in the country. They are less dependent on systemic political planning, so current processes are not immune to subjective interventions/decisions and strong lobbying from those who want to build hydropower plants.

The problem of maintaining the stability of the transmission network. After the collapse of the USSR, the energy system of Georgia was separated from the entire network, and therefore (according to experts) it is rather difficult to maintain stability. Even today, the main guarantor of stability for Georgia is the 500-kilowatt line "Kavksioni" connecting the country with Russia. If Georgia's power grids are synchronized with Russia or Azerbaijan, then stability is maintained. If not, then Georgia is disconnected from the large grid. According to the information posted on the website of the State Electricity System of Georgia, the Electricity Grid Improvement Program (ENIP) is being implemented. The aim of the project is to meet the growing demand for electricity, significantly increase electricity generation (mainly hydropower), expand the electricity transmission network and promote the integration of the regional network with the countries of the

South Caucasus and beyond. This information also highlights that the Georgian government is still focused on hydro resources and is not working on integrating solar energy into the power grid. Connecting to the network of unstable sources of generation, especially solar power plants, experts consider a problem for the energy system of Georgia. On the one hand, a contributing factor is that the generation of energy by solar installations takes place during the day, that is, at a time when electricity consumption in the country increases, and solar installations in this respect make it possible to compensate for the increase in consumption per hour. Solar power plants are connected to a network with converters, which reduces the inertial constant of the network and, as a result, worsens the dynamic stability of the system. In addition, the dramatic change in the scale of generation of solar power plants caused by cloudiness requires additional fast reserves in the network, which is a problem. Grid-connected systems often experience problems due to fluctuations in mains voltage and power supply. This problem is especially acute in the regions. (4)

Limitations of the net account system. The introduction of this system was perhaps the only important step taken by the state to stimulate the use of solar energy. The net metering system is administered by the National Energy and Water Regulatory Commission of Georgia and obliges the energy companies "Telasi" and "Energo Pro Georgia" to include micro power plants or renewable power plants (owned by retail consumers) in their generation. According to experts, the introduction of this regulation caused a sharp reaction from the companies themselves, since they have many small competitors in their own network. It's one thing to take care of so many small companies and it's a headache. Secondly, they are afraid that it will become a mass phenomenon. Under the agreement, both companies will allow only up to 2% of their total capacity to be connected to the grid from unstable generation sources. The mentioned regulation is a very important step that has pushed many consumers to build their own solar power plants. This was the only step taken by the state in the development of solar power plants, for which it did not make significant efforts. Many owners of solar power plants have learned about this regulation by accident, as it is not publicized enough. This regulation is a necessary but not sufficient condition for the development of solar systems. However, if you look more broadly, the presence of small solar power plants among the population should be in the interests of the energy company, since today the volume of cheap electricity is fully used and increased demand is met only by importing expensive sources of electricity. electricity. It is in the interests of the energy company not to buy energy at a high price and not build larger hydroelectric power plants, but to take care of transporting and storing energy. If the population has solar stations, the energy consumed is generated on site, which is also beneficial for companies.

Today, ensuring energy security is the most important problem for Georgia, and therefore the accelerated development of green energy is the only safest (hydropower development is by no means safe) way to achieve limiting economic, political and environmental risks.

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