

Faculty of Power Engineering

2022 წ

№	Grant Donor	Grant Name	Project Start and End dates	Supervisor	Amount (GEL)	Status (finished/ongoing)	Grant Code
1	German Society for International Cooperation (GIZ)	Development of a strategy for certification of energy-efficient stoves	2021-2022	Nodar Kevkhishvili	69 300	finished	Program number: 20.2275.4-001.00; Tender number: 83405639

Results/Recommendations

The large-scale introduction of energy-efficient household wood stoves in Georgia will significantly reduce the demand for firewood and will play a major role in the correct regulation of the multi-purpose function of the forest, rational use of timber resources, and forest preservation and strengthening, which is of great national importance. However, the large-scale introduction of wood stoves and their certification will be possible only if their energy efficiency is confirmed by real investigations (testing) in appropriate laboratories, which, in turn, must be accredited by the relevant authority. Due to the non-existence of these conditions, despite the European EN 13240 standard introduced into operation, the issuance of the European conformity certificate in Georgia and the entry of stove manufacturing companies into the European market are currently impossible. The project shows how the individual stages of the firewood burning process affect the energy efficiency of the wood-burning stove, a comparative analysis of international standards for testing wood-burning stoves is conducted, and the problems related to the creation of an accredited laboratory in Georgia are discussed.

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1	Slovakaid grant program	"Promotion of renewable energy sources and capacity building in the field of environmental protection at the Technical	2022-2024	Lena Shatakishvili	180483 EUR ~595,593 GEL	ongoing	N2665 (SAMRS/2022/G E/1/2).

		University of Georgia"					
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Results/Recommendations

Cooperation with foreign partners in the development, dissemination and awareness-raising projects of renewable energy technologies. The project (SAMRS/2022/GE/1/2) is one of the most important initiatives for raising awareness of technologies and processes of renewable energy sources and training specialists in the said field. The project envisages the establishment of a solar (photovoltaic) system and a laboratory/showroom based on the cooperation of the Technical University of Georgia and the Technical University of Slovakia. This project will strengthen relations between the two countries not only on the energy front, but also on the economic and political fronts. Within the framework of the project, a photovoltaic station will be established, which will generate 20kWp + 5.8kWh energy. A thermal solar system and connecting and measuring instruments for the two systems will be installed. Within the framework of the project, 50 specialists will also be retrained and qualified in photovoltaic systems, which will help Georgia better ensure the integration and use of new and innovative renewable technologies.

2021 წ

№	Grant Donor	Grant Name	Project Start and End dates	Supervisor	Amount (GEL)	Status (finished/ongoing)	Grant Code
1	The German Society for International Cooperation (GIZ) is Eschbornigermann	"Testing of improved energy-efficient wood stoves in the villages of Akhmet Municipality"	22.07.2020-30.06.2021	Nino Lazashvili:	95 700	finished	Project number 83359105; Contract number 18.2062.0-004.00;

Results/Recommendations							

With the support of the German government, the program "Management of natural resources and provision of ecosystem services for sustainable development in rural areas in the South Caucasus" (ECOserve) is underway in Georgia. One of the components of which includes the pilot testing of energy-efficient household wood stoves in the villages of Akhmet Municipality and the creation of a marketing product, the large-scale implementation of which will significantly reduce the rates of unsystematic and uncontrolled forest cutting, the current level of timber consumption and the demand for timber resources.

The project was implemented by the German Society for International Cooperation (GIZ) together with the Ministry of Environment and Agriculture of Georgia. Despite the fact that forest resources belong to renewable natural sources, they cannot be considered inexhaustible and their preservation depends only on the reasonable actions of people, especially against the background when the amount of firewood consumed by the population in the regions of Georgia is many times higher than allowed by sanitary standards. One of the main reasons for the large-scale consumption of firewood, along with the low energy efficiency of existing domestic wood stoves, is the thermal vulnerability of residential buildings, that is, the unfavorable technical condition of the building's enclosing structures (walls, windows, doors, roof, floor). In this regard, Akhmet region is not an exception. Therefore, in order to assess the current situation of thermal diagnosis of buildings and energy consumption, energy audits were conducted in 46 pre-selected families of Akhmet city and 15 villages of Akhmet municipality, where it was planned to replace the existing wood stoves with new highly efficient wood stoves. During visits to families, apartment owners and other family members, in order to raise awareness, were given information about how and why heat is lost through windows, exterior doors, ceilings, and walls, and were given recommendations on measures that can reduce energy consumption and, accordingly, the cost of firewood. It was determined by energy audit that most of the population of Akhmet municipality lives in one or two-story buildings. However, families living in two-story buildings, with rare exceptions, spend the heating season mostly on the first floor and therefore heat the rooms of the first floor or only a part of it. The main source of energy is a wood stove, which is used both for heating and cooking. On the basis of the energy audit, the thermal condition of their residential buildings was assessed for each district, the total heat losses were determined, and recommendations were developed for the implementation of building heat protection measures. The efficiency of the stoves during the heating season was evaluated through monitoring, which finally convinced the population of the region that by purchasing energy-efficient stoves, using well-dried firewood (dry firewood) and taking simple measures to warm the building, it is possible to live more comfortably and significantly reduce the costs of heating and cooking.

2021 წელი

№	Grant Donor	Grant Name	Project Start and End dates	Supervisor	Amount (GEL)	Status (finished/ongoing)	Grant Code
1	The German Society for International	"Inclusion of the results obtained on the basis of the research conducted in	May 17 - October 20, 2021	Nodar Kevkhishvili	82 670	finished	Project number 18.2062.0-004.00;

Cooperation (GIZ) is Eschbornigermann	Akhmet Municipality in the Master's program of the Technical University of Georgia and the creation of an energy audit stand"					
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Results/Recommendations

Using the experience gained and existing materials within the framework of the pilot project implemented in Akhmet municipality, new thematic issues (theoretical and practical parts) were developed, which will be added to the master's training course in STU regarding energy efficiency and energy audit. Appropriate manuals were printed on the proposed thematic issues (200 copies, 164-page book). Apart from GTU students, this guide will also be available to students of various universities and other interested parties. A special stand was created, which will allow us to accurately determine the coefficient of thermal conductivity (λ), thermal energy losses and, accordingly, the level of energy efficiency; In vulnerable groups of the population in the regions of Georgia, it will be possible to conduct energy audits in individual rooms that are heated during the winter, which will allow us to individually develop cost-effective energy-efficient measures (arrangement of proper thermal insulation, proper heating/cooling source of rooms, etc.); With the financial benefits received proportionally to the level of implementation of the recommended energy efficient measures during the energy audits conducted through the proposed stand, social problems will be reduced, especially for the vulnerable groups in the region; By implementing energy-efficient measures designed to eliminate precisely defined energy losses through the proposed stand, a large amount of energy and related resources (especially a large amount of firewood) will be saved. Consequently, the following will be reduced: environmental/climate impact (CO₂ emissions and deforestation rates). In the case of large-scale implementation/use of the proposed stand, in the conditions of accurate determination of the thermal characteristics of the building, it will be possible to justify/confirm the actual level of energy efficiency of the building for the corresponding energy efficiency labeling. It will be possible to use this stand for real-time measurements in the field and to store relevant data, as well as for educational purposes in the teaching laboratory.