
Title: Enabling the Implementation of Georgia's Forest Sector Reform (ECO.Georgia)

Project/Activity Number: 20.2275.4-001.00 / 0201

Title of the assignment: Feasibility study for reducing heat demand among fuelwood stove consumers through energy efficient solutions

1. Brief information on the project

Climate change impacts and the demand for fuelwood from the rural population put significant pressure on Georgia's forests: up to 90% of rural households (1.43 million people) rely on fuelwood for their energy needs. The problem is exacerbated by households using obsolete technologies, such as traditional stoves, with a lifetime of two years and an efficiency of 35% or less. Fuelwood demand exceeds sustainable harvesting levels, considering the country's reduced productivity of many forests because of extensive forest degradation. This forest degradation leads to a loss of carbon absorption capacity, which is projected to decrease by five times between 1990 and 2030.

To address this negative development, the project "Enabling the Implementation of Georgia's Forest Sector Reform - ECO.Georgia" supports the Government of Georgia's transformational forest sector reform agenda to put the entire nation's forests under the framework for sustainable forest management (SFM). It will do so by supporting the establishment of a nationwide SFM system (Component 1) and, in parallel, promoting market development for energy-efficient appliances and alternative fuels (Component 2) to address the primary driver of forest degradation. In addition, the project will safeguard the reform implementation by diversifying livelihood opportunities and strengthening local self-governance in forest adjoining rural communities (Component 3).

The project is funded by the Green Climate Fund (GCF), the German Federal Ministry for Economic Cooperation and Development (BMZ), and the Swiss Development Cooperation (SDC), with GIZ being the project's accredited entity. The German contribution is part of the more comprehensive German support in the priority area "Environmental policy, conservation and sustainable use of natural resources in the South Caucasus", which aims at the sustainable use of natural resources, biodiversity conservation and climate protection, particularly for the benefit of the rural population. Similarly, both the share of renewables in the energy composition and the energy efficiency levels will increase.

Especially rural households using firewood as their source of heating energy will benefit from improved air quality and reduced fuelwood demand through eased access to energy efficient stoves. Forest-related small and medium-sized enterprises and their employees will receive support to improve their business activities' economic efficiency and environmental sustainability. Additionally, staff members of relevant public institutions (National Forestry Agency (NFA), Department of Environmental Supervision (DES), Environmental Information and Education Centre (EIEC), Rural Development Agency (RDA), municipalities) will receive direct support through human capacity development measures and grant finance.

ECO.Georgia primarily contributes to achieving the sustainable development goal (SDG) 15 (Protect, restore and promote sustainable use of terrestrial ecosystems) of the 2030 Agenda of the UN, but also to achieving SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all), SDG 13 (Take urgent action to combat climate

change and its impacts), SDG 1 (End poverty in all its forms everywhere), and SDG 5 (Achieve gender equality and empower all women and girls).

The duration of ECO.Georgia is from April 2021 until March 2029.

2. Description of the Assignment

2.1. Context

The current fuelwood consumption exceeds the sustainable supply level several times. Over 80% of rural households currently use wood for energy purposes. It is, therefore, not only necessary to reduce fuelwood demand by consuming less, by heating less, using more efficient woodburning stoves and exploring alternatives, but also to provide using more energy efficient materials in households to maintain long lasting preservation of heat.

Using Alternative Fuel (AF) product, mainly briquettes, alongside with installing energy efficient materials in households will keep houses warm all day with minimum efforts which would ease the pressure on forestry resources and support the rural economy. Nevertheless, due to different challenges, AF and energy efficient materials production are not widely developed in the country. To maintain long-lasting heat preservation, the demand for fuelwood must be reduced. This can be achieved by consuming less, heating efficiently, using more efficient wood-burning stoves, exploring alternatives, and utilizing more energy-efficient materials in residential houses

The latest available data and information are from the GCF Feasibility Study based on the National Biomass Potential Assessment by World Experience for Georgia (WEG) 2014, which was updated for ECO.Georgia project pilot municipalities in 2019 by Energy Efficiency Center Georgia (EECG) and “Alternative fuel market assessment and supply chain development opportunities” prepared under ECO.Georgia project.

In this context, ECO.Georgia project aims to promote the use of Energy Efficient and Alternative Fuel materials in rural households that will reach a critical share and self-sustaining level of growth. To ensure that forest degradation is eliminated and prevented in the future the project is committed to conducting a comprehensive technical and economic feasibility assessment (hereinafter feasibility assessment) of the sustainable use of energy efficient materials sustainable use.

The aim of this study is to identify and assess energy-efficient measures (in addition to EE stove utilization) to rationalize fuelwood/heat consumption and reduce the need for fuelwood and other heat sources, such as briquettes. Each measure should be customized to fit the needs of different groups of fuelwood consumers.

The study, therefore, plays a crucial role in identifying and promoting new solutions for rural energy supply through market assessment including accessibility of products. Before conducting feasibility assessment, existing studies regarding energy efficiency should be explored which would form the basis of identifying necessary steps.

One of the example products is insulation. The residential sector has significant potential for building insulation projects, but information is limited regarding the costs, skills availability, technical solutions, and financial benefits for households.

The study will be based on market analysis of the residential sector potential for retrofits,

training and knowledge transfer for banks on appraising investments (including risk assessment) and developing a pipeline of projects in the residential sector. Loan products for households to install the renewable energy system by, such as solar water heaters (SWH) or heat pumps, will also be explored.

2.2. Objective(s) of the assignment and work packages/tasks

The main objective of the assignment is to identify energy efficient solutions that can increase overall energy efficiency level of rural houses and reduce heat demand among fuelwood stove consumers. Above-mentioned list of products should be taken into account but the study should not be limited to them only. The assignment should aim at the study of the market of these materials including their impact on energy efficiency of houses, their prices(purchasing and installation) in both cases of local production/import and calculating financial benefits for households. Materials can be both modern and traditional “do-it-yourself” low-cost solutions for keeping the heat inside the houses. Solutions should be the measures for preventing heat loss in the houses. Traditional low-cost energy efficient solutions should be studied based on the research of rural houses in 3 target regions: Kakheti, Mtskheta-Mtianeti and Guria. Materials can differ from region to region.

The 2nd objective of the assignment is to assess challenges and possibilities of the use of energy efficient materials by rural households in Georgia; As a result, study will provide a comprehensive analysis of products coming from living standards of Georgian rural dwellings. Loan products offered by financial institutions for the identified energy efficient materials should also be explored. In order to achieve these objectives, consultant should use both quantitative and qualitative methodology. Based on the analysis, the study should propose precise measures to support the market development of energy efficient materials in Georgia. Each measure shall be accompanied by the implementation cost based on CBA.

The consultant shall fulfil the following tasks:

Work package (WP) 1: Comprehensive analysis of existing studies and research regarding energy efficiency of buildings

Since energy efficiency is a widespread topic on which many researchers are working and have provided thorough studies, consultant should explore all the studies that are in line with the overall content of this ToR. First of all, the aim of such analysis is to avoid duplication for the studies and also, to use the information provided as the basis for this feasibility study.

As a 1st step, consultant will have to conduct research of studies in the past 5 years which are in any connection with energy efficiency of buildings, especially rural houses. Consequently, consultant will analyze the data provided through studies, will combine all the findings and propose an updated measures for achieving study objectives. Should be noted that various energy efficient products mentioned in these studies should be analyzed in order to conduct comprehensive market assessment of such materials.

Work package (WP) 2: Identification of types of EE-AF materials and interviewing stakeholders (list of producers/importers)

After studies are analyzed, all possible products that can enhance energy efficiency of rural houses should be identified which will be presented to GIZ. The study shall provide a

comprehensive picture of the energy efficient materials existing market and an overview of the status quo that shall include identifying the market players – in particular, producers and importers, also the capacities of EE materials production from supply/demand side and types/amount of EE materials being realized on the local market. Study should also identify other EE-AF alternatives for which the supply chain does not exist yet in Georgia.

After identification of products, the consultant shall create a database of all relevant present producers/importers and other stakeholders in the EE materials supply chain (as much as possible). In cooperation with the ECO.Georgia team, the consultant shall prepare the questionnaire to conduct interviews to indicate the obstacles/challenges and needs for sustainable market development according to the producers' experience. There may be the need for several questionnaires to adapt to different interviewees. Questionnaires should be submitted to GIZ for review. The potential target group shall include but not be limited to the following:

- Currently operating producers/importers of EE materials.
- Financial institutions offering loan products for EE solutions
- Organizations, precisely energy efficiency experts who conducted programs, projects, and studies for EE materials and EE of buildings

EE experts and organizations should be asked if there is any ongoing study/research that is in pipeline and somehow its content has any linkage to the objectives of this ToR.

The consultant, based on the EE materials market analysis, shall assess residential sector potential for retrofits, training and knowledge transfer for banks on appraising investments including risk assessment. Loan products for the identified energy efficient materials should also be explored.

The assessment shall also identify the consumers of EE materials, the scale of demand and the cost-effective capacity of resources for EE materials production/import and realization.

The study shall identify the baseline for EE materials which should be updated, i.e., the capacity of the current production/import of EE materials and an estimation of the amount of realized EE materials each year during the last five years. Current producers/importers should be included in a database giving an overview of types of EE materials, produced capacities, and main consumer groups with attention given to rural households.

WP 3: Feasibility study – assessment of how EE materials improve the energy efficiency quality in households.

The consultant, based on the EE materials market analysis, shall assess whether it is possible to improve rural house's energy efficiency on large scale in targeted regions; and, if not, develop scenarios what are the feasible amounts to be reached, taking into account prices of EE materials, purchase capability of rural households, market barriers, and the potential support mechanisms. Analysis should be based on each product separately and overall result of energy efficiency level in houses by several EE solutions provided together. As an example standard houses should be studied through energy audits in the target regions of Kakheti, Mtskheta-Mtianeti and Guria including minimum 1 house in each region. Energy efficiency of a house should be evaluated using professional equipment with the aim to suggest the best ways to improve energy efficiency in heating and cooling the house.

The project aims to assess the potential costs for rural households through energy efficiency improvement with EE materials. Also, to assess whether achieved energy efficiency really corresponds to the costs expended for this reason (cost-benefit analysis).

Based on analysis, consultant shall count costs needed for installing EE materials and financial benefits gained from improving energy efficiency of houses. GAP analysis should imply current energy efficiency performance of the house against expected performance after installing energy efficient materials. As a result of implementing measures, study should provide how much fuelwood approximately can be saved in a rural house. The study shall assess and analyze the barriers to the EE materials market's sustainable operation and development and based on the analysis should propose a mechanism, or approach, that could be applied to support market development by the ECO.Georgia project, the Government of Georgia or other relevant actors.

The market analysis shall also include the creation of the most feasible scenario(s) for market development and how the ECO.Georgia project, the Government of Georgia or other relevant actors could support this development to achieve sustainable market development. Based on the most beneficial cost-benefit scenario(s) from the identified feasible ones, push-and-pull recommendations for market development shall be developed through support by the ECO.Georgia project, the Government of Georgia or other relevant actors, including an estimation of the needed investment and timeframe for implementing each recommended mechanism/approach, as well as the benefits resulting from a cost-benefit analysis of each scenario.

WP4: Presentation of final results

Final study and presentation are provided by the consultant.

Upon completion of interviews and a comprehensive analysis of EE materials market, the consultant will produce a final report detailing findings and providing recommendations for enhancing the energy efficiency of the rural houses. The report will include:

- Methodology for conducting feasibility study
- Detailed study of each identified EE material and their costs
- Analysis of interview results
- A detailed study of impact on energy efficiency of houses, preservation of heat, saving fuelwood and financial benefit for households
- Overview of relevant studies supporting the analysis.
- Strategies for overcoming identified challenges and clear and actionable recommendations on how to improve energy efficiency of rural houses through various EE products.

The consultant shall present the market assessment findings to introduce the recommendations for market development. In consultation with Eco.Georgia team, participants on the presentation will be identified.

2.3. Outputs/Deliverables

Work package 1 – Output 1

- Analysis of existing studies in the past 5 years which are in any connection with energy efficiency of buildings, especially rural houses is carried out.
- Based on the analysis, report on the findings from existing studies is provided which should exclude duplication of already studied topics.

Work package 2 – Output 2.1

- All energy efficient solutions relevant to the objectives of this ToR are identified.

Work package 2 – Output 2.2

- All relevant stakeholders are identified including EE experts and database provided.
- Questionnaires for conducting interviews with stakeholders are provided.

Work package 2 – Output 2.3

- Interviews with all stakeholders are conducted.
- Results of the interviews are provided and analyzed.

Work package 3 – Output 3.1

- Energy audits in the target regions of Kakheti, Mtskheta-Mtianeti and Guria including minimum 1 house in each region.

Work package 3 – Output 3.2

- Cost-benefit analysis to assess whether achieved energy efficiency through EE solutions really corresponds to the costs expended for this reason is provided which should include potential costs for rural households through energy efficiency improvement with EE materials.

Work package 3 – Output 3.3

- GAP analysis is conducted comparing current energy efficiency performance of the house against expected performance after installing energy efficient materials.

Work package 3 – Output 3.4

- The most feasible scenario for market development of EE solutions is provided.
- Interim report on the EE solutions market findings is provided

Work package 4 – Output 4.1

- Final report of the feasibility study is provided.

Work package 4 – Output 4.2

- Findings of the feasibility study is presented through prepared PPT slides.

2.4. Schedule and timeframe

Expected outputs are described in the table below:

Deliverables and deadlines	Deadline for WPs	Number of days per expert in total
Deliverable 1/ Output 1 Comprehensive analysis of studies in past 5 years provided <i>deadline: 4 weeks after the contract is signed.</i>	Within 6 months after the contract is signed	Up to 100 expert days
Deliverable 2 / Output 2.1 List of potential energy efficient solutions provided together with stakeholder list <i>deadline: 6 weeks after the contract is signed.</i>		
Deliverable 3 / Output 2.2 The questionnaire(s) for the interviews agreed <i>deadline: 7 weeks after the contract is signed</i>		
Deliverable 4 / Output 2.3 Identified producers/importers and all stakeholders including experts interviewed <i>deadline: 9 weeks after the contract is signed.</i>		
Deliverable 5 / Output 3.1 At least 3 energy audits in 3 target regions in rural houses are conducted <i>deadline: 12 weeks after the contract is signed</i>		
Deliverable 6 / Output 3.2 Cost-benefit analysis for EE solutions is provided <i>deadline: 15 weeks after the contract is signed.</i>		
Deliverable 7 / Output 3.3 GAP analysis for comparison of EE performance is conducted <i>deadline: 18 weeks after the contract is signed.</i>		
Deliverables 8 / Output 3.4 Most feasible scenario(s) for sustainable market operation identified and interim report on the EE solutions market findings is provided <i>deadline: 20 weeks after the contract is signed</i>		
Deliverable 9 / Output 4.1 The final report on the feasibility study identifying constraints and supporting mechanism(s), and incentive(s) for overcoming the barriers to ensure market sustainability. <i>deadline: 22 weeks after the contract is signed.</i>		
Deliverable 10 / Output 4.2 The feasibility study is presented through PPT slides <i>deadline: 24 weeks after the contract is signed.</i>		
Travel expenses		Number
Overnight allowance including meal in country of assignment		Up to 6 nights
Travel costs (train, private vehicle)		Up to 6 days

Calculate your financial bid in line with the quantitative requirements of the specification of inputs above. There is no contractual right to use up the full days/travel or workshops or budgets. The number of days/travel/workshops and the budgets will be contractually agreed as maximum amounts. The regulations on pricing are contained in the price schedule.

3. Experts' profile

Experts:

Team leader:

Tasks of the team leader

- Overall responsibility for the advisory packages of the contractor (quality and deadlines): timely delivery of each deliverable and the feasibility study development process according to the described work packages, e.g., especially for the study analysis, identification of the stakeholder networks and the quality of the interviews, identification of the alternatives, CBA, monitoring and evaluating etc.
- Coordinating and ensuring communication with GIZ, partners and others involved in the project.
- Personnel management, identifying the need for short-term assignments within the available budget, as well as planning and steering assignments
- Regular reporting in accordance with deadlines.

Team leader:

Title of the team leader: Renewable energy/energy efficiency expert and/or Environmental specialist experienced in EE of buildings.

Education: University Degree; Master's or higher degree in engineering science or environmental issues (5.1.1)

General Professional experience: 7 years of experience in advisory services in renewable energy or energy efficiency.(5.1.1)

Specific professional experience: 5 years of experience focusing on developing projects in energy efficiency, including studies and pilot projects ensuring EE of buildings, as well as market research. (5.1.2)

Experience in the region/knowledge of the country: knowledge in energy efficiency of products/rural buildings in Georgia and the best international cases that could be applicable to Georgia. (5.1.3)

Language skills: fluency in Georgian and English(5.1.4)

Expert 1: Energy efficiency Specialist

Title of an expert: Energy efficiency Specialist experienced in conducting the cost-benefit analysis.

Education: University Degree; Master's or higher degree in economics or engineering science. (5.2.1)

Professional experience: 5 years of experience in advisory services in renewable energy and energy efficiency. (5.2.1)

Specific professional experience: 5 years of experience conducting a cost-benefit analysis focusing on developing projects in energy efficiency, including studies and pilot projects ensuring energy efficiency of buildings/financial benefits for households (5.2.2)

Experience in the region/knowledge of the country: knowledge in energy efficiency of

products/rural buildings in Georgia and the best international cases that could be applicable to Georgia (5.2.3)

Language skills: fluency in Georgian and English(5.2.4)

Expert 2: Researcher

Education: Master's degree in social sciences, sociology, business administration, economics and related fields(5.3.1)

Professional experience: Professional working experience 3 years(5.3.1)

Specific professional experience: 2 completed projects in the past 3 years in researching, interviewing, preparing and conducting qualitative / quantitative surveys.(5.3.2)

Language and computer skills:

- Excellent English and Georgian language skills (i.e. full proficiency in understanding, speaking and writing) (5.3.4)

4. Timing and duration

Between September 2024 and May 2025

5. Place of assignment

Georgia

6. Reporting

- Reports are to be prepared according to the GIZ template to be provided by the project.
- All documents shall be delivered electronically in Georgian and English
- The consultant shall report to ECO.Georgia.
- The consultant is expected to coordinate very closely with ECO.Georgia

7. Other provisions

7.1 Budgeting and payment

Travel expenses will be included in the contract.

Participation expenses in the workshops, meetings, study tours requested by GIZ is not included in the contract and will be covered by GIZ.

7.2 Tender Procedure

Concept

In the tender, the tenderer is required to submit a technical proposal showing how the objectives defined in Chapter 2 are to be achieved and if applicable under consideration of further method-related requirements (technical-methodological concept).

The technical proposal will be evaluated in accordance with the assessment grid which consists of followings:

(2.1) Concept

- a. interpretation of the objective /assignment (2.1)
- b. strategy for the implementation reflecting other alternatives (2.1)
- c. cooperation during the implementation and its method (stakeholders in the implementation, reference projects etc.) (2.1)
- d. an action plan with a timeline proposal (2.1)

Personnel concept

The tenderer is required to provide personnel who are suited to filling the positions described, on

the basis of their CVs, the range of tasks involved and the required qualifications.

The CVs of the personnel proposed meeting the requirements below must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages each. They must clearly show the position and job the proposed person held in the reference project and for how long.