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RECOMMENDATIONS TO PROMOTE FUNDING OPPORTUNITIES OF THE PROJECT HYBRID ENERGY STATION IN BORJOMI MUNICIPALITY FOR ACHIEVEMENT OF GREEN STATUS BY THE CITY

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14 January 2019

This publication was produced for review by the United States Agency for International Development. It was prepared by Deloitte Consulting LLP. The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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CONTRACT NUMBER: AID-OAA-I-13-00018

DELOITTE CONSULTING LLP

USAID | GEORGIA

USAID CONTRACTING OFFICER'S

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LANGUAGE: ENGLISH

14 JANUARY 2019

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DATA

Reviewed by: Daniel Potash, Ivane Pirveli

Practice Area: Renewable Energy Development, Biomass Energy Development, Green Status

Key Words: Renewable Energy, Hybrid Renewable Energy Station, Biomass Energy project, Green Status

ACRONYMS

CENN	Caucasus Environmental NGO Network
DGGF	Dutch Good Growth Fund
DRIVE	Development Related Infrastructure Investment Vehicle
EnCT	Energy Community Treaty
EU	European Union
GoG	Government of Georgia
IFI	International Financial Institution
JSC	Joint Stock Company
km ²	Square Kilometer
LEPL	Legal Entity of Public Law
LLC	Limited Liability Company
LTD	Private Limited Company
MoESD	Ministry of Economy and Sustainable Development of Georgia
MW	Megawatt
NGO	Non-Governmental Organization
NIRAS	Consortium of Danish Company
NTC	New Technology Center
RES	Renewable Energy Sources
USAID	United States Agency for International Development
USD	United States Dollar
VRE	Variable Renewable Energy

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INTRODUCTION

In October 2016, Georgia signed the Energy Community Treaty (EnCT) signaling the country's commitment to direct future energy planning and market development towards approximation with the European Union (EU). This step commits Georgia to enhancing the security of energy supply by promoting the development of relevant infrastructure, increasing market integration and gradual regulatory approximation towards key elements of the EnCT, and promoting the use of renewable energy sources. In order for Georgia to meeting its strategic commitments in the energy sector, the United States Agency for International Development (USAID) is providing technical assistance and policy advice on legal, regulatory and institutional reform issues, including facilitating investment and deal structuring, engineering and environmental analyses, financial planning, and outreach, and other consulting. This technical assistance, ("USAID Energy Program") is being rendered by Deloitte Consulting LLP, under a USAID contract, AID-OAA-I-13-00018.

The objective of USAID Energy Program is to support Georgia's efforts to facilitate increased investment in power generation capacity as a means to increase national energy security, facilitate economic growth, and enhance national security. The project will have a significant impact on energy market reform efforts of the Government of Georgia (GoG) to comply with the country's obligations under the EnCT. The investment objective will be achieved through the provision of technical assistance to a variety of stakeholders in the energy sector.

The purpose of USAID Energy Program is to: (1) support Georgia in energy market development per Georgia's obligations under the EnCT, (2) build the capacity of the GoG and relevant institution(s) to evaluate the fiscal and long-term impacts of regulatory changes, (3) promote energy investments, primarily in variable renewable energy development, (4) to support integration of non-hydro renewable energy into the power system, and (5) provide strategic advisory services to the GoG to increase Georgia's energy security.

The ultimate goal of this Program is to enhance Georgia's energy security through improved legal and regulatory framework and increased investments in the energy sector. The ultimate expected outcome of this Program is an energy market legal and regulatory framework that complies with European requirements and encourages competitive energy trade and private sector investments.

USAID Energy Program is tasked under its contract, AID-OAA-I-13-00018, to assist developers with financing as follows:

"Financing: The contractor shall review and support the selected businesses with identification of financing sources, making proposed projects eligible for financing, and preparing project documentation to support applications for financing;"

Accordingly, USAID Energy Program is providing these recommendations.

SUMMARY

USAID Energy Program received an official letter (Annex 1) from New Technology Center (NTC) LTD, requesting assistance in reviewing the Feasibility Study of an ongoing project on Establishment of Hybrid Energy Station in Borjomi Municipality for Achievement of Green Status by the City. Developers asked to provide recommendations and expertise in preparation of the project's summary to improve the fundraising opportunities for both short-term and long-term project goals.

THE PROJECT OVERVIEW

The aim of the project is to realize the mutual idea initiated by NTC, Enerstena (Lithuania), Non-Governmental Organizations (NGOs) network CENN (Caucasus Environmental NGO Network), Georgian-Lithuanian Biomass Associations, the Ministry of Economy and Sustainable Development of Georgia (MoESD), Mtskheta and Samtskhe-Javakheti regional administrations on the "Establishment of Hybrid Energy Stations Operating on Renewable Energy Resources in Mountainous Regions of Georgia".

The Project envisages the establishment of 10 MW installed capacity, mostly thermal hybrid energy station in the town of Borjomi (a densely populated resort town in the mountainous region of Georgia). Energy station provides the supply of organized network of Borjomi's densely populated area (population 33 people / km²) with heating, hot water, cold water, technical water. The estimated investment cost of the project is USD 10 million.

The project considers the use of solid biomass as one of the sources of renewable energy and is based on the research carried out in the last decade, proving the possibility of a successful development. Utilized energy is sought from renewable sources (biomass, sun, environment energy, hydro, etc.) in the administrative territory of Borjomi municipality and beyond. The traditional fossil resource - gas is included in the system to ensure peak load and accidents.

USAID ENERGY PROGRAM RECOMMENDATIONS

In order to make the Hybrid Energy Station project eligible for financing, USAID Energy Program team provided technical assistance to the developers. The feasibility study of the project was revised, and recommendations provided in terms of developing a diagram on the project commercial structure and the project teaser / summary. USAID Energy Program gave the guidelines for the preparation of a project and shared several appropriate financial examples.

Guidelines for Preparation of project's commercial diagram:

Provide detailed and clear information on entities, e.g. entities are Ltd., LLC, LEPL, JSC, private companies or under the GoG, etc. entities already existent or to be established;

Use different colors of boxes to separate types of objects;

Show a clear relationship of entities to each other;

The idea is to make the diagram clear and comprehensible for potential investors, donor organizations or financial institution, who are not familiar with details.

Guidelines for Preparation of a Project Teaser:

The purpose of the project teaser is to gain the attention of a potential investor, with considerable information that can be revealed prior to signing a non-disclosure agreement.

The typical size of the teaser should not exceed two (2) pages. Information presented in the teaser should not be cluttered and should include graphical and pictorial information relevant to the project. Information available in the public domain may be generously used and the source must be cited, wherever this information is used.

The main contents of the teaser shall be:

Name of the Project (Code names may be used to protect the confidentiality of the project);

Location of the Project with the nearest evacuation point (shown on the map would be helpful);

A capacity of the project (if the project is being developed in Phases, then each phase to be mentioned);

Brief status (insert graphic figures);

Unique features of the project (such as developer's past experience, preferable tariffs, location benefits, policy support, positive social impact, expected financial returns, developer's ability to invest in equity etc.);

Key financial information (project size, expected returns on equity/project, equity required, debt required, and in case there is some kind of a letter of support from a lender, this may be mentioned in the subject to lender's approval);

Project schedule (Commencement of construction, Phase 2 expansion etc.).

OUTCOME

With the technical assistance of USAID Energy Program, NTC has developed teaser (Annex 2) and diagram (Annex 3) for the project on “Establishment of Hybrid Energy Station in Borjomi Municipality for Achievement of Green Status by the City”. As a result, the documents are ready for dissemination among the donors and International Financial Institution (IFI) organizations.

In parallel, USAID Energy Program held a meeting with Ms. Maia Todria, Economic Policy Officer at the Embassy of Kingdom of Netherlands to explore the funding options from the Development Related Infrastructure Investment Vehicle (DRIVE) & Dutch Good Growth Fund (DGGF). The Embassy not only expressed willingness to provide technical support to biomass projects but also promised to introduce the project to DRIVE program and several biomass producers in Georgia supported by the embassy.

Communication was also established with Mr. Niels Bahnsen from Consortium of Danish Company (NIRAS) who expressed interest in further discussions on Borjomi biomass distributed energy project from a climate financing perspective.

USAID Energy Program mediated NTC with the Dutch embassy and NIRAS in order to establish further possible cooperation.

Annex 1: Official letter to USAID Energy Program;

Annex 2: Teaser on Development Project of Distribution Heating System in Borjomi Municipality, Georgia;

Annex 3: Diagram of Processes for Project of Hybrid Energy Station in Borjomi Municipality.

ANNEX 1

NEW TECHNOLOGY CENTER ახალი ტექნოლოგიების ცენტრი



001/010
14.08.2018

To: Mr. Daniel Potash
Chief of Party
USAID Energy Program

Dear Mr. Potash,

I would like to thank you for organizing such an interesting meeting last week at the office of Deloitte and Touche LLC in Tbilisi. Your support for our company's ongoing project on Establishment of Hybrid Energy Station in Borjomi Municipality for Achievement of Green Status by the City is very important to us.

We would like to ask you for your assistance in reviewing the Feasibility Study of the aforementioned project (please see enclosed Georgian and English versions of the document), providing recommendations and your expertise in preparation of the project's summary.

Your support in the above can improve fundraising opportunities for funding of the short as well as long-term project goals.

In addition to the above project our company is contracted to prepare an energy-audit, with further practical implementation of energy-efficient and renewable energy technologies based on energy-audit findings at the Scientific Research Institute of Clinical Medicine of F. Todua, located in Tbilisi. Given project is in its initial stage and we would like ask you for your support us with your expertise and knowledge on studying, fundraising and implementation of renewable energy and energy-efficiency projects in hospital sector.

We would be glad to meet you again and provide you with more details on our projects.

Best regards,

Zaal Kheladze
Director

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ANNEX 2



- Confidential -



Development Project of Distribution Heating System in Borjomi Municipality, Georgia

PROJECT OVERVIEW

Project involves establishment of 10 MW (mostly thermal) installed capacity hybrid energy station in the town of Borjomi (densely populated resort town in the mountainous region of Georgia). Energy station provides the supply of organized network of Borjomi's densely populated area (population 33 people / km²) with heating, hot water, cold water, technical water.

Utilized energy is sought from renewable sources (biomass, sun, environment energy, hydro, etc.) in the administrative territory of Borjomi municipality and beyond. The traditional fossil resource - gas is included in the system to ensure peak load and accidents.

The project presents a **USD 10 million** renewable energy investment for 10MW combined heat and power station. Project is supported by Ministry of Economy and Sustainable Development, Ministry of Infrastructure, Ministry of Environment and Agriculture of Georgia, Municipality of Borjomi and State-Governor of Samtskhe-Javakheti region.

Given initiative is aimed to serve as basis for long-term (50 years and more) partnership between Government of Georgia and the project.

Project Economics	
Anchor Investor Commit	USD 1 million
Revenue	USD 1.3M pa
CAPEX	USD 10.2M
OPEX per annum	2% of CAPEX
Available equity from private investor	10% of CAPEX

Project Location Details

Located in Borjomi (Coordinates: 41°50'0"N 43°23'0"E), a resort town in south-central Georgia with a population of 10,546. It is one of the districts of the Samtskhe-Javakheti region and is situated in the northwestern part of the region in the picturesque Borjomi Gorge on the eastern edge of the Borjomi-Kharagauli National Park.

Technical Details

Business models involves establishment of the following operational units:

1. The residual biomass collector;
2. Hybrid (biomass cogeneration plant, heat pump system, gas condensing water heater) energy station;
3. The system of accounting and monitoring of thermal energy distribution (heat tracks).

Hybrid energy station consists of the following components:

Boiler house equipped with 2 MW Biomass boiler

- Biomass storage facility
- Heat pumps with total installed capacity of 1 MW
- Hot water intermediate trivalent reservoirs
- Natural gas boiler with 2 MW peak load capacity
- Administrative and laboratory buildings
- Technical water reservoirs
- Hot and cold water buffer tanks



Investment Snapshot

(September 2018)

Project Size: 10.0 MWp

Generation per year:

22 GWh heat

5 GWh power

Avg. Tariff per kWh:

USD 0.036 heat

USD 0.085 power

Total Project Cost: USD 10.2M

Project Lifespan: 50 Years

INVESTMENT PERFORMANCE

Payback Period: 8.369 years

Discounted Payback Period:

10.396 years

Cash Flow Return Rate:

14.64% pa

PROJECT DEVELOPMENT MILESTONES

- a) Conceptual design, identification of possible partners and stakeholders - October 2018 - May 2019
- b) Project management team development - April 2019 - June 2019
- c) Detailed designing, obtaining necessary permits and licenses, accreditation of property forms - July 2019 - January 2020
- d) Organizing construction and installation works - January 2020 - September 2020
- e) Operating of energy station in test mode and connecting the consumers to the network; Marketing activities and promotion for awareness raising - January 2020 - December 2020
- f) Reaching a full projected capacity and its transfer of operation to the operating team - October 2020 - September 2021

Environmental Impact of Project

Positive environmental impact is one of the major goals of the project. The most important outcomes of the project related to environment protection include:

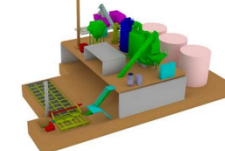
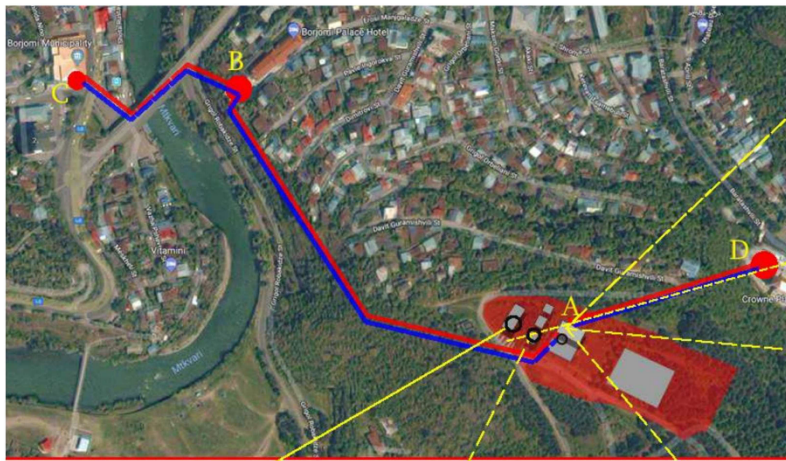
- Reduction of illegal cutting of forest for heating needs;
- Reduction of forest fires due to woody residue pile up in forest;
- Reduction of fossil fuel consumption by replacing it with renewable energy resulting in decrease of CO2 emissions by 3 833 tons per year.

Project Team

Project is developed by joint initiative of LLC New Technology Center (Renewable energy development company, Georgia), Park Hotel Ltd (Investor and Crowne Plaza Borjomi Hotel owner, Georgia), Enerstena LLC (District heater project designer, equipment manufacturer, Lithuania), Borjomi Municipality and Ministry of Economy and Sustainable Development.

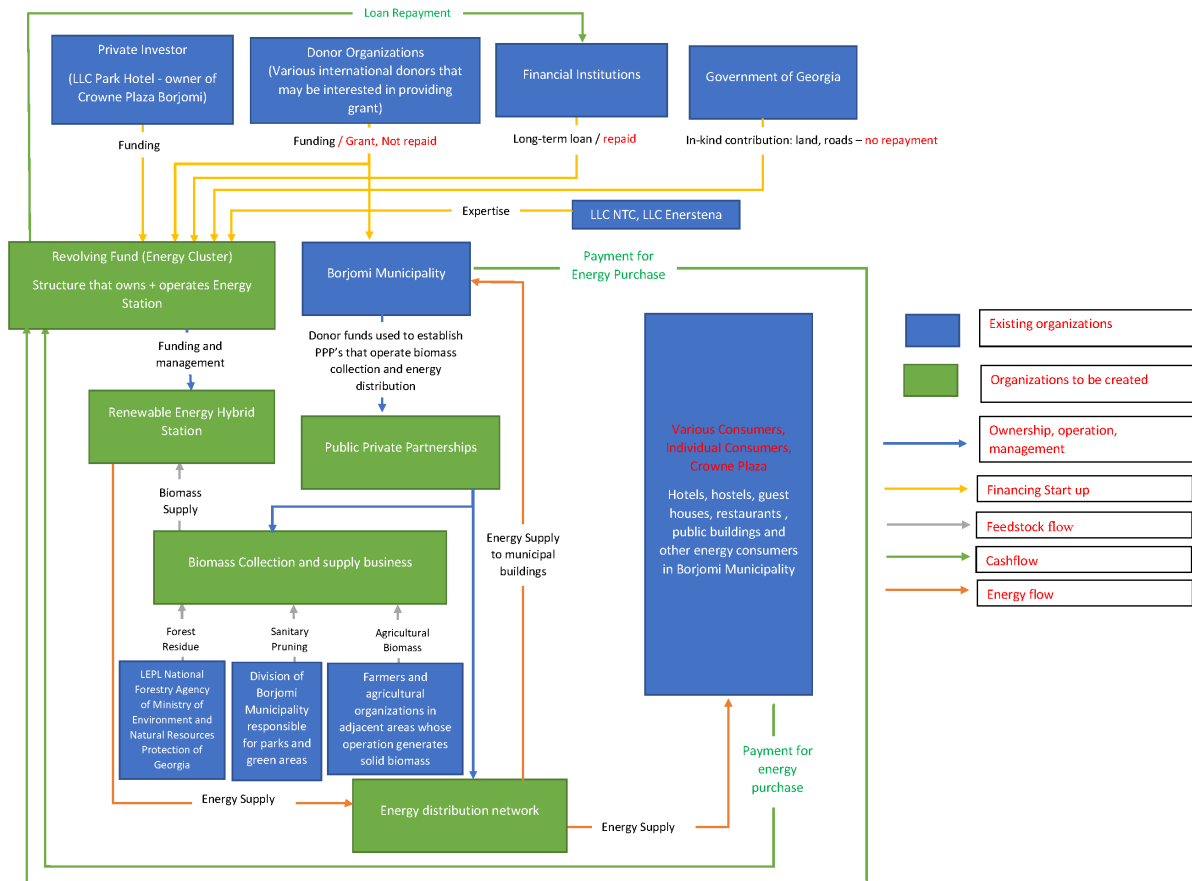
For more information please contact:

Mr. Zaal Kheladze, General Director of New Technology Center LLC; Archil Papava, Marketing Executive
 Tel. / Fax: +995 32 233 3650, 233 3560; E-mail: zkheladze@ntc.ge; apapava@ntc.ge



ANNEX 3

Diagram of Processes for Project of Hybrid Energy Station in Borjomi Municipality



USAID Energy Program

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