



**USAID**  
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USAID ENERGY PROGRAM

# USAID ENERGY PROGRAM ANNUAL REPORT

NOVEMBER 2018 – SEPTEMBER 2018

USAID ENERGY PROGRAM

26 October 2018

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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## ACRONYMS

<b>AA</b>	Association Agreement
<b>ADB</b>	Asian Development Bank
<b>AFD</b>	French Development Agency
<b>AGRI</b>	Azerbaijan-Georgia-Romania Interconnector
<b>BP</b>	British Petroleum
<b>BPP</b>	Biomass Power Plant
<b>CBM</b>	Coal-Bed Methane
<b>CCPP</b>	Combined Cycle Power Plant
<b>CMM</b>	Coal Mine Methane
<b>CoP</b>	Chief of Party
<b>COR</b>	Contracting Officer's Representative
<b>DANIDA</b>	Danish International Development Agency
<b>DCoP</b>	Deputy Chief of Party
<b>DEG</b>	German Investment Corporation
<b>DGGF</b>	Dutch Good Growth Fund
<b>DISCO</b>	Distribution Companies
<b>DM</b>	Deputy Minister
<b>DRIVE</b>	Development Related Infrastructure Investment Vehicle
<b>DSO</b>	Distribution System Operator
<b>EBA</b>	European Business Association
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>EC</b>	Energy Community
<b>ECS</b>	Energy Community Secretariat
<b>EDF</b>	French Electric Utility Company
<b>EE</b>	Energy Efficiency
<b>EEC Georgia</b>	Energy Efficiency Center Georgia
<b>EMDAP</b>	Electricity Market Development Action Plan
<b>EnCT</b>	Energy Community Treaty
<b>ESCO</b>	Electricity Market Operator
<b>ETM</b>	Electricity Trading Mechanism
<b>EU</b>	European Union
<b>FTP</b>	File Transfer Protocol
<b>G4G</b>	Governing for Growth for Georgia
<b>GDI</b>	Gender Diversity Index
<b>GEDF</b>	Georgian Energy Development Fund
<b>GGI</b>	Good Governance Initiative
<b>GGTC</b>	Georgian Gas Transportation Company
<b>GGU</b>	Georgian Global Utilities
<b>GHG</b>	Greenhouse Gas
<b>GIG</b>	Georgian Industrial Group
<b>GiZ</b>	German Development Agency
<b>GNERC</b>	Georgian National Energy and Water Supply Regulatory Commission
<b>GoG</b>	Government of Georgia
<b>GOGC</b>	Georgian Oil and Gas Corporation

<b>GREDA</b>	Georgian Renewable Energy Development Association
<b>GSE</b>	Georgian State Electrosystem
<b>GTU</b>	Georgian Technical University
<b>GWP</b>	Georgian Water & Power
<b>GYLA</b>	Georgian Young Lawyers' Association
<b>HICD</b>	Human and Institutional Capacity Development
<b>HIPP</b>	Hydropower Investment Promotion Project
<b>HPEP</b>	Hydro Power and Energy Planning Project
<b>HPP</b>	Hydro Power Plant
<b>HR</b>	Human Resources
<b>IFC</b>	International Finance Corporation
<b>IFI</b>	International Financial Institution
<b>IFRS</b>	International Financial Reporting Standards
<b>KfW</b>	German Government-Owned Development Bank
<b>kV</b>	Kilovolt
<b>LNG</b>	Liquified Natural Gas
<b>MO</b>	Market Operator
<b>MoEPA</b>	Ministry of Environment Protection and Agriculture of Georgia
<b>MoESD</b>	Ministry of Economy and Sustainable Development of Georgia
<b>MoHLSA</b>	Ministry of Health, Labour and Social Affairs of Georgia
<b>MoU</b>	Memorandum of Understanding
<b>MP</b>	Market Player
<b>MRDI</b>	Ministry of Regional Development and Infrastructure of Georgia
<b>MW</b>	Megawatt
<b>NARUC</b>	National Association of Regulatory Utility Commissioners
<b>NEA</b>	National Environmental Agency
<b>NERA</b>	Economic Consulting
<b>NGMDAP</b>	Natural Gas Market Development Action Plan
<b>NGO</b>	Non-Governmental Organization
<b>NIRAS</b>	Consortium of Danish Company
<b>NREAP</b>	National Renewable Energy Action Plan
<b>NTC</b>	New Technology Center
<b>NVE</b>	Norwegian Water Resources and Energy Directorate
<b>OTC</b>	Over the Counter
<b>PPA</b>	Power Purchase Agreement
<b>PPD</b>	Public Private Dialog
<b>PPP</b>	Public Private Partnership
<b>PPT</b>	Power Point File format/extension (Microsoft)
<b>PSS/E</b>	Power System Simulator for Engineers
<b>PV</b>	Photovoltaic
<b>QWF</b>	Qartli Wind Farm
<b>RIA</b>	Regulatory Impact Assessment
<b>RoAid</b>	Roman Agency for International Development
<b>SARAS</b>	Service for Accounting, Reporting and Auditing Supervision
<b>SC</b>	Steering Committee
<b>SDSU</b>	San Diego State University Georgia

<b>SGG</b>	SOCAR Georgia Gas
<b>SIDA</b>	Swedish International Development Cooperation Agency
<b>SoLR</b>	Supplier of Last Resort
<b>SPP</b>	Solar Power Plant
<b>SSSG</b>	State Security Service of Georgia
<b>TECR</b>	Threshold Environmental Checklist and Review
<b>TPP</b>	Thermal Power Plant
<b>TSO</b>	Transmission System Operator
<b>TYNDP</b>	Ten Year Network Development Plan
<b>UGS</b>	Underground Gas Storage
<b>UNDP</b>	United Nations Development Program
<b>UNIDO</b>	United Nations Industrial Development Organization
<b>USAID</b>	United States Agency for International Development
<b>USD</b>	United States Dollar
<b>USEA</b>	United States Energy Association
<b>USG</b>	United States Government
<b>USoA</b>	Uniform System of Accounts
<b>VDRAS</b>	Variation Doppler Radar Analysis System
<b>VRE</b>	Variable Renewable Energy
<b>WB</b>	World Bank
<b>WEG</b>	World Experience for Georgia
<b>WG</b>	Working Group
<b>WPF</b>	Wind Power Forecasting
<b>WPP</b>	Wind Power Plant

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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 enhance the security of energy supply by promoting the development of relevant infrastructure, increasing market integration and enhancing the gradual regulatory approximation towards the key elements of the EnCT, and promoting the use of renewable energy sources. In order to meet its strategic commitments in the energy sector, Georgia requires 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, among others.

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 the national security. The project will have a significant impact on the 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) evaluate the fiscal and long-term impacts of regulatory changes, (3) promote energy investments, primarily in variable renewable energy development, (4) 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 the European requirements and encourages competitive energy trade and private sector investments.

## SUMMARY

USAID Energy Program has been progressively conducting its activities to achieve the goals articulated in the Year 1 Work Plan. However, slow Government decision making and changes in the Government personnel directly delayed the implementation of certain activities which were deferred in the Year 2.

Successful project activities cover a broad and diverse range of areas: creating and conducting Steering Committee (SC) and Working Groups (WGs) meetings with the participation of the energy sector stakeholders; identifying the potential non-hydro renewable energy projects and developing recommendations on investor support schemes; providing research on Variable Renewable Energy (VRE) power production forecasting availability and perspective of their integration into the grid; overviewing the existing legislation covering Energy Security issues and upcoming obligations of the country, etc.

USAID Energy Program Annual Report details the progress in each task in reference to the corresponding areas of USAID Energy Program Year 1 Work Plan.

At the close of Year 1, USAID Energy Program has completed 33 technical deliverables. Below are provided the list of key deliverables:

- Renewable Energy Support Scheme;
- Critical and Timely Issues for Georgia's Energy Security;
- Available Variable Renewable Energy Forecasting Tools and Methodologies;
- Electricity Sector Reform Action Plan;
- Gas Sector Action Plan;
- Final Selection of Ten Renewable Energy Businesses to Receive USAID Energy Program Technical Assistance;
- White Paper on Natural Gas Market Concept Design for Georgia;
- White Paper on Electricity Market Concept Design of Georgia;
- Comments on Draft Energy Law;
- Natural Gas Sector Distribution Connection Tariff Methodology;
- Natural Gas Sector Transportation Connection Tariff Methodology;
- Comments on the Draft National Renewable Energy Action Plan;
- Natural Gas Storage for Georgia: Access Regime and Remuneration Services;
- Gap Analysis Between Draft Energy Law and Grid Code for Gas Market Rules;
- Comments on Draft Law of Georgia on Promoting the Production and Use of Energy from Renewable Sources.

Among the deliverables were the draft and/or advise on primary and / or secondary legislation on gas and electricity. USAID Energy Program met Year 1 targets by providing 10 legislative deliverables.



## CHALLENGES

**Government reorganization and personnel changes.** The key institutional counterpart for USAID Energy Project, the Ministry of Energy, was dissolved and folded into the Ministry of Economy and Sustainable Development of Georgia (MoESD) in December 2017. The Minister of MoESD was changed in March 2018. Our key counterpart at the MoESD was shifted to Georgian Energy Development Fund (GEDF) in September 2018. Each change required notifying ministers on USAID Energy Program goals which was successfully done. As of the start of the Energy Project's year two, more changes at the top are still occurring.

Progress on Regulatory Impact Assessment (RIA) was hindered by the changes in the government of Georgia (GoG), leaving the MoESD with only one person responsible for RIA. USAID Energy Program responded by proposing trainings for more people within the Ministry.

USAID Energy Program itself, in the first year, had changes by losing both the Chief of Party (CoP) and the Deputy Chief of Party (DCoP) each for personal reasons. Even so, new personnel were recruited without disruption.

The Energy Map was delayed due to challenges in required data collections, limited availability of printing sources and overloaded schedule of the company. Alternative printing options would have been exorbitantly expensive.

**Georgian stakeholder not aligned on market framework.** Different entities have different visions about roles and responsibilities in the post reform market environment. Some entities are going in different directions in ways that are not compatible, such as claiming which entity should be electricity market operator. While the Energy Project contract is about managing these issues and getting to workable decisions, some ideas are fundamentally in conflict.

**Turf Battles with other Donors.** Relations with almost all donors have been excellent, however the EU Commission was not warmly cooperative and was possessive about retaining control largely over the electricity sphere and somewhat regarding the gas sector. As of end of the year, the roles of different donor programs have been pretty much settled, and the main workstreams are being followed without issue.

# PROJECT HIGHLIGHTS

## USAID ENERGY PROGRAM LAUNCH

On February 14, 2018 the US Ambassador to Georgia, Mr. Ian C. Kelly, and the First Vice-Prime Minister, Minister of MoESD, Mr. Dimitry Kumsishvili, opened the launch ceremony at Georgian State Electrosystem (GSE). The event was attended by the energy stakeholders, the government, private sector and international organizations. Mr. Jake Delphia, USAID Energy Program CoP, briefed the participants on the program goals and the significance of planned achievements for Georgia's energy sector.



*USAID Energy Program Launch*

## ESTABLISHMENT OF STEERING COMMITTEE AND WORKING GROUPS

Together with the MoESD, USAID Energy Program initiated the establishment of a SC and the reform related WGs under its supervision. The SC will mainly discuss and agree on policy-related issues at a high level, while WGs will complete work on the development of specific documents and proposals necessary for actual reform making process in the energy sector. In agreement with the MoESD, the SC and five WGs were formally established: 1) Electricity Market Development WG; 2) Gas Market Development WG; 3) Renewable Energy Investment Advisory WG; 4) Donor Coordination WG; 5) Stakeholder Public Private Dialogue (PPD) WG.

## THE FIRST WORKING GROUP MEETING ON INITIAL ELECTRICITY MARKET OPENING



*The First WG Meeting*

On February 7, the first WG Meeting on Initial Electricity Market Opening was held at the MoESD to discuss the challenges associated with the May 1, 2018 market opening and to design the following steps. The meeting was attended by the

representatives of the energy sector entities and donor organizations. USAID Energy Program highlighted the need to develop an action plan for the WG and called for timely actions. The changes in the Government affected the progression of the WG meetings and the work stream itself was split among the different donors and stakeholders.

## “WOMEN IN THE ENERGY SECTOR”

USAID Energy Program organized a conference – “Women in Energy, Transport and Logistics” in cooperation with USAID Governing for Growth (G4G) in Georgia and Women Business Council. The conference highlighted the growing role of women in all industries. Women have started adopting non-traditional roles in various fields including the energy sector. Head of the Energy Department of

MoESD provided opening comments followed by successful women who elaborated on the relevant contribution of women in the energy sector. Among the speakers were female students, who encouraged the future generation, particularly females to get engaged in the energy sector advancement.



*Conference on 'Women in Energy'*

### OPEN HOUSE EVENT

On April 4, 2018, USAID Energy Program hosted the Open House event to increase awareness of the Program. Among the guests were the MoESD, Georgian National Energy and Water Supply Regulatory Commission (GNERC), the energy sector stakeholders, USAID Georgia, USAID partners, International Financial Institutions (IFI's), representatives of the private sector, potential investors, and universities. In a less formal environment, the Open House formed a face-to-face networking platform enabling USAID Energy Program team to interact with invitees, share opinions with professionals and obtain constructive feedback.



*Open House Event*

## ENGURI HYDRO POWER PLANT SITE VISIT



Enguri HPP Site Visit

USAID’s Contracting Officer’s Representative (COR) and the representatives of USAID Energy Program met USAID Assistant Administrator for Europe and Eurasia, Mr. Brock Bierman, at the Enguri Hydro Power Plant (HPP) dam. The topics discussed during the meeting were: the importance of the HPP to Georgia’s energy security, the difficulties of the increasing demand for electricity in Abkhazia without payment, the capital improvements planned for the HPP and USAID Energy Program’s support to the HPP including sponsoring a Study Tour for plant operators to the US in April.

## USA STUDY TOUR



USA Study Tour

USAID Energy Program Expert and a Group of Engineers visited Hydropower Facilities as a part of the Federal exchange program Open World. The Study Tour was aimed at enhancing the capacity of the energy sector professionals in the emerging countries and increasing awareness on the value of legislative functions in creating and sustaining democracies.

The Study Tour included high-level meetings with the representatives from the US Department of State and the US Department of Treasury. Among the relevant visits was meeting with Northwest Power & Conservative Council. The Study Tour also included meeting with the members of the Upper Columbia United Tribes to discuss the Columbia River Treaty and the way it governs operations of dams on both sides of the US-Canadian border. Georgian group also held visits at the largest hydroelectric dam in US – Grand Coulee Dam and visited small scale HPP and waste power plant located in Washington State.

The Study Tour provided valuable input for enriching the experience and facilitating cultural understanding that will provide

a sound basis for making strides in Georgia’s energy sector and implementing the best practices in the energy sector.

## ENERGY SECURITY WORKSHOP

On August 14, in support of the MoESD, USAID Energy Program facilitated the workshop on Georgian Energy Security Challenges. The event provided a unique venue for bringing together Georgian energy sector stakeholders for sharing views and discussing the existing challenges on Georgian energy security.





*The First Energy Security Workshop*

The meeting was opened by the new USAID Energy Program CoP Mr. Daniel Potash with the welcoming remarks, followed by the Deputy Minister (DM) of the MoESD Mr. George Chikovani who thanked USAID Energy Program for supporting in the energy market development. Welcoming remarks were continued by Ms. Veronica Lee Director of Economic Growth USAID. Ms. Lee underlined the importance of energy security in Georgia and on behalf of the US Government expressed contentment for supporting the GoG in one of the biggest initiatives of establishing a competitive market which represents a vital part of the energy security.

The workshop proceeded with the presentation on current Georgian energy security related issues, opened by Mr. Gurgen Hakobyan, Sr. Energy Sector Expert. Another presentation was delivered by USAID Energy Program CoP Mr. Potash by reviewing the requirements of the treaty and the different aspects of the energy security for gas and electricity. The DM also made remarks on the Government undertakings in relation to the energy sector development.

Throughout the event, participants have been expressing gratitude towards USAID Energy Program for facilitating such deliberations which can contribute to improved structuring and understanding of challenges that hinder the development of Georgia's energy sector.

# PROGRESS OF ACTIVITIES BY REFORM

## 1. ENERGY MARKET DEVELOPMENT (TASK 1)

### PROGRESS AGAINST THE WORK PLAN

#### ENERGY MARKETS DEVELOPMENT ACTION PLAN FOR ELECTRICITY AND GAS SECTORS & IMPLEMENTATION OF ACTION AND TRANSITIONAL PLANS

In the Year 1, USAID Energy Program prepared draft action plans for the development of Electricity and Gas Markets. The Action Plans provide detailed activities to be accomplished during the electricity and gas market transition that will enable the markets to be competitive. The action plans were developed in line with the obligations of the Energy Community (EC) requirements, based on the rationalized secondary legislation list, drafted by the Energy Community Secretariat (ECS). The initial Action Plans were shared among the counterparts and other stakeholders, including the international donor organization, to establish the responsibilities of various parties in support of all activities. In January 2018, the first version of the Electricity and Natural Gas Market Development Plans were presented at the MoESD to IFI's, Donors and key stakeholders of the energy sector. Throughout the Year 1, the action plans were modified and in September 2018, updated electricity and natural gas sector development plans were shared at Donor Coordination meeting at the MoESD. The Action Plans will be updated over the life of the Program.

In the Year 1, USAID Energy Program has developed a White Paper on the Natural Gas Market Concept Design and a White Paper on Electricity Market Concept Design, in accordance with the draft Law on Energy of Georgia developed by ECS. With the aim to support the development of the Market Concept Designs for both sectors, the white papers were sent to the relevant stakeholders and counterparts. USAID Energy Program participated in several discussions on the Gas Market Concept Design that was presented and initiated by the ECS. As a result, USAID Energy Program reviewed the Gas Market Concept Design, developed by the ECS and compared it with White Paper on Gas Market Concept Design developed by USAID Energy Program. Corresponding changes and comments were summarized in respective document. Consequently, USAID Energy Program gas team finalized the report "Comments on the Natural Gas Market Concept Design". The report was submitted to Gas Market Development WG members to contribute development of Gas Market Concept Design.

USAID Energy Program held several meetings with GNERC to discuss the presented Gas Market Concept Design scenarios and obtain GNERC's feedback. USAID Energy Program developed an Internal Roadmap for coordinating and planning gas market development activities based on the deadlines provided by GNERC and the first-year work plan.

USAID Energy Program initiated the creation of Gas Market Development WG under the MoESD. The



*Gas Market Development Working Group*

first Gas Market Development WG meeting was held at the MoESD on March 23, 2018, facilitated by the DM. Mr. George Chikovani. Among the participants were the MoESD, GNERC, Georgian Oil and Gas Corporation (GOGC), Georgian Gas Transportation Company (GGTC), EU4Energy, USAID Georgia and USAID Energy Program. USAID Energy Program Gas expert Ms. Gergana Stoitcheva elaborated on "Gas Market Concept Design for Georgia". The presentation was followed by discussions.

## NATURAL GAS MARKET RULES

In accordance with assigned tasks under the Year 1, USAID Energy Program planned to develop the draft Natural Gas Market Rules and held several working meetings in this regard. However, changes in the GoG affected the finalization of the Natural Gas Market Concept Design by the ECS.

Consequently, USAID Energy Program was unable to draft the Market Rules since the Natural Gas Market Concept serves as a basis for the Market Rules. As a result, the development of Natural Gas Market Rules was deferred in the Year 2.

USAID Energy Program's gas team met National Association of Regulatory Utility Commissioners (NARUC's) experts to discuss the scope of Gas Market Rules in view of a draft Gas Grid Code provisions and a draft Law of Energy of Georgia. NARUC Experts confirmed that the drafted grid code was in line with EU energy legislation, however noted that the Gas Market Rules were not common practice in EU (In most EU countries, Gas Supply Code, or Gas Exchange Rules are the ones that complement EU network Code). The parties also deliberated on the balancing rules currently representing a part of the grid code and shared a common view that the development of both grid code and gas markets (including balancing market) should be a gradual process.

In the scope of developing Natural Gas Market Rules USAID Energy Program gas team finalized a Gap Analysis report for Network Code and draft Energy Law for Market Rules development along with a presentation and delivered to the Chair of GNERC.

## TARIFF METHODOLOGIES

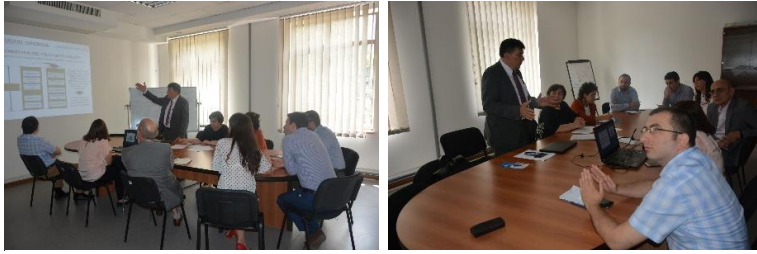
GNERC requested USAID Energy Program to support in the development of methodologies on calculating fees for connection to the gas and electricity networks in line with the list of secondary legislation provided by the ECS. As a result of several meetings with the Methodological Department of GNERC and the Electricity and Gas Departments, the parties agreed on the following topics: the structure and the main parameters of connection to the gas and electricity network methodologies, normative documents related to the methodologies, technical requirements for new connection, disconnection and reconnection, standard costing methodologies and monitoring related to connection services.

USAID Energy Program completed a draft Tariff Methodology for Calculation of Services Provided by Supplier of Last Resort (SoLR). The Methodology is drafted pursuant to the Article 121 of the draft Law on Energy of Georgia and in compliance with the Georgian Power Market Concept Design and the draft Operational Rules for Electricity Supply by the SoLR of Last Resort.

USAID Energy Program completed the draft tariff methodology for calculation of Electricity Supply by the Universal Service Supplier pursuant to the Article 119 of draft Law on Energy of Georgia and in compliance with the Georgian Power Market Concept Design Operational Rules for Electricity Supply by the Universal Service Supplier.

Throughout the Year 1, USAID Energy Program held regular meetings with the Electricity, Gas and Methodological Departments of GNERC to discuss the Connection Fee Methodology for the connection to the Transmission Networks and the Methodology for Connection Fee Methodology for the connection to the Distribution Networks. As a result of discussions, USAID Energy Program provided several working documents, listed below:

- Review of the costs for intangible assets and membership fees for the creation of Market Operator in Georgia;
- Analysis of the estimated costs for installation of Market Operator's trading software in different stages of development of the power market;
- Presentation on "Market Operator's services fees";
- Presentation on "International Experience in the Creation of Market Operator".



*Technical Training for GNERC*

Upon the request of stakeholders, USAID Energy Program provided tailored training on the Policy and International Experience in Connection Fee Methodologies, connection principles, determination of connection assets for different types of customers in different connection schemes, costs to be recovered by

connection fees, capital costs recovering options, and disconnection and reconnection costs.

USAID Energy Program also organized a workshop on the Natural Gas Transmission & Distribution Network Connection Tariff Methodologies at GNERC. USAID Energy Program Senior Energy Expert Mr. Jake Delphia explained transmission and distribution connection fee calculation methodologies for different services, based on the international practice in view of the local circumstances.

Constant meetings and consultations with GNERC, enabled USAID Energy Program team to develop reports on the Connection Fee Methodology for the Connection to the Transmission Networks and Methodology for Connection Fee Methodology for the Connection to the Distribution Networks. Both reports have been finalized and submitted to GNERC. Deputy Director of GNERC's Natural Gas Department, Mr. Irakli Galdava sent a letter expressing gratitude for the delivered connection fee methodologies with no further engagement requirements in relation to these topics.

As a part of programs first year accomplishment, USAID Energy Program finalized the report on "Comments on Draft Law on Energy of Georgia".

At the end of the Y1, USAID Energy Program together with the USAID (Contracting Officer's Representative (COR)) Mr. Nicholas Okreshidze held a meeting with Ms. Irina Milorava – the chair of GNERC to discuss the outcome of assistance USAID Energy Program provided to GNERC in the first year of the Program and identify the areas of further support. The parties agreed that USAID Energy Program will continue working on previously agreed tariff methodologies despite the pending adoption of Market Concept Design and the Program will support GNERC in the impact assessment of the secondary legislation.

## USoA

In May 2018, GNERC approached USAID Energy Program with the request to support the Commission in the development of the Natural Gas Uniform System of Accounts (USoA). After a series of internal consultations and careful budget analysis, USAID Energy Program identified reserves that enabled the Program to engage a consultant to support the activity that wasn't originally planned.



*Awareness Training on USoA*

in that regard, with the initiative of USAID Energy Program to create a USoA for Gas Distribution Companies, GNERC facilitated a meeting with GGTC, SOCAR Georgia Gas (SGG) and KazTransGas. During the meeting USAID Energy

Program expert Mr. Gagik Hovhannisyan exposed the audience to the practices of USoA application in the energy sector. Gas distribution companies agreed on further cooperation, which entailed sharing required accounting data. In that regard, GNERC facilitated the provision of accounting data from the Gas companies with the aim to provide a basis for launching the USoA system development.

USAID Energy Program held a meeting with the SARAS - Service for Accounting, Reporting and Auditing Supervision, to create awareness on the Program support to Georgian Gas Sector for the development of USoA in collaboration with GNERC. SARAS also shared their experience and practice in auditing and reporting with a particular emphasis on the fact that all statements are in line with the EU requirements and all applied standards are based on International Financial Reporting Standards (IFRS).



USAID Energy Program introduced the draft Action Plan for USoA development to GNERC and discussed a draft Chart of Account, developed by the Gas and Tariff department for gas utilities. USAID Energy Program continuously held meetings with GNERC to discuss the various technical aspects of USoA. GNERC also organized a workshop with the main purpose to agree on the final draft of the USoA Action Plan.

The Action Plan for the USoA development has been prepared by USAID Energy Program and submitted to GNERC Tariff Department and Gas Department for further comments in the Year 1.

GNERC also requested USAID Energy Program to support in providing feedback on the technical questions, provided by the representatives of Utilities to GNERC regarding the USoA.

## **ELECTRICITY AND GAS MARKETS TRANSITION PLANS**

At the request of the DM of the MoESD, USAID Energy Program developed a presentation on the strategy concept for Georgia: “Development Perspectives for Georgia: through Competitive Energy to Competitive Economy”. The pivotal topics of the presentation were: the energy market reforms, increased renewable energy promotion and energy security issues. The presentation was delivered to the DM Mr. George Chikovani.

A draft high-level presentation of the Electricity Market Transitional Plan was also prepared and shared with the DM Mr. George Chikovani to establish the overall direction of the transition to the new electricity market model. The transition plan is under development by USAID Energy Program and will be finalized in the Year 2.

USAID Energy Program held several meetings with GNERC to discuss the list of activities for the electricity and natural gas sectors, in which GNERC requires assistance from USAID Energy Program. However, the priority topics from GNERC are: gas storage scenarios (access regimes and tariffs), gas market rules, transmission entry-exit tariff system methodology and USoA for gas. Upon request, USAID Energy Program developed a draft presentation on Underground Gas Storage (UGS), describing its role, functions, and regulatory aspects. The presentation included a case study from Bulgaria.

USAID Energy Program Gas team also provided the presentation on “The Value of Gas Storage” and the additional issues that might be included for further discussion with the stakeholders. Market concept design and gas storage creation were identified as the main priorities to be described by USAID Energy Program gas team. GNERC expressed interest and asked support in conducting the assessment related analysis for various scenarios of gas storage regulation (commercial, strategic or mixed).

## **VULNERABLE CUSTOMERS**

EU legislative framework envisages the presence of an efficient protection mechanism for vulnerable customers during the energy market reform transition process which remains ambiguous in Georgia. USAID Energy Program together with the USAID COR and EU4Energy held a meeting with the Ministry of Health, Labour and Social Affairs of Georgia (MoHLSA). In light of anticipated changes in the electricity and gas market functioning, the meeting was aimed at clarifying the uncertainty surrounding the vulnerable customers. Particularly the emphasis was made on how these groups would be integrated into a new competitive electricity and gas markets and what allowances would be granted to each group. Due to a sensitive nature of the topic, the parties demonstrated particular circumspect and agreed to organize a workshop on this topic with the inclusion of the MoESD. However, the MoHLS requested the access to the draft Energy Law provisions regarding the vulnerable customers as a prerequisite of workshop. The draft Law on Energy of Georgia being revised forced the rescheduling of this activity in the Year 2. Similarly, the development of transitional plan for vulnerable consumers was deferred in the Year 2.

## **DONOR COORDINATION MEETING**

In January 2018, the first Donor coordination meeting was held to discuss the Electricity and Natural Gas Market Development Plans. The audience was represented by the MoESD, IFI's, and other Donors and key stakeholders of the energy sector.

In Sept 2018, USAID Energy Program organized Donor Coordination meeting in order to discuss the modified action plans and present the off-grid project concept to major stakeholders and donors.

As an effort to enhance the awareness of the project on Sept 27, USAID Energy Program organized Donor Coordination Meeting in collaboration with the MoESD at the MoESD premises. The parties agreed to organize meetings on a continuous basis to enhance the implementation of the program on Installation of Solar PV Systems for Off-Grid Households in Mountain Villages of Georgia.

On September 7, USAID Energy Program attended a Donor Coordination Meeting hosted by GSE to discuss the Electricity Market Concept Design accompanied by the transitional measures, developed by Nord Pool Consulting in collaboration with Blueberries consulting. During the meeting, a detailed structure of the future market was reviewed including the roles and responsibilities of the Governmental institutions. USAID Energy Program had significant reservations on the Nord Pool approach and therefore voiced concern on its use. The participants agreed to hold the donor coordination meeting on a monthly basis with the aim to analyze the progress and provide feedback.

## REGIONAL ENERGY COOPERATION

### Working Group Armenia

USAID Energy Program organized meeting at Georgian State Electrosystem (GSE) in order to plan the WG in Armenia. The parties identified several relevant topics for inclusion such as:

- Changes of the existing trade (using island mode) - transition from barter to monetary trading;
- Georgia-Armenia new interconnection – current status, possible options, required time for construction;
- Electricity transit through Armenia and Georgia in current conditions;
- Future (using new interconnection) electricity trade and transit principles;
- Construction of a new interconnection.

USAID Energy Program drafted an event brief of the Joint WG Meeting, a plan for roundtable discussions on cross-border trading and agenda. USAID Energy Program approach was to initiate the first high level meeting with the aim to determine the important topics for both countries and facilitate the creation of working groups on agreed subjects. However, despite several meetings with the stakeholders and the MoESD, this initiative was halted due to changes both in the government of Georgia and Armenia. These high-level changes were outside the control of USAID Energy Program and hence prompted the deferral of the WG meeting in Armenia in the Year 2.

The same challenges have been observed in relation to organizing the Turkey Georgian WG meeting in Turkey. In addition to high level changes in Georgian Government, which affected the organization of WG meeting in Turkey, USAID Energy Program experienced other uncontrollable challenges from Turkish side. USAID Energy Program did have the experience of cooperating with different Turkish energy entities from the previous projects such as USAID Hydropower Investment Promotion Project (HIPP) & USAID Hydro Power and Energy Planning Project (HPEP) projects. However, the created networking turned out to be ineffective due to significant management changes in those entities. The combination of these challenges triggered the deferral of Georgia Turkey WG meeting in the Year 2.

According to the MoESD, Turkey – Georgia WG meeting will be planned during Year 2 of the program. USAID Energy Program will also be required to provide similar support.

## PUBLIC OUTREACH



*Training on Gas Market Concept Design*

In order to ensure effective public outreach USAID Energy Program held regular meetings with the major counterparts and organized tailored awareness raising trainings. In that regard USAID Energy Program conducted several trainings for GNERC staff on the Gas Market Concept Design. Upon the request of World Experience for

Georgia (WEG), USAID Energy Program provided awareness raising training to WEG as well.

As a part of outreach program, USAID Energy Program conducted several meetings to increase awareness on the ongoing reforms in the Gas market and to obtain feedback. In that regard, a meeting was held with the director of the natural gas Distribution Companies (DISCO) "Varketilairi" - a small Distribution System Operator (DSO) serving 15,000 customers located in Varketili district,

Tbilisi. USAID Energy Program also met private sector representatives in the Gas sector with the aim to raise awareness on the ongoing reforms pursuant to the EC Accession protocol, General provisions of draft Law on Energy of Georgia and upcoming changes in the Gas Market.

Awareness meetings were also held with the European Business Association (EBA), Georgian – Abkhazian Institute and Georgian Young Lawyers' Association (GYLA).

Various events also provided platform for communicating the Program activities and goals to a large audience. Among such events were the international conference "Customer Day", organized by the Austrian ANDRTIZ Hydro company at Radisson Blue Hotel in Tbilisi, the 15<sup>th</sup> Batumi International Conference "Georgia's European Way", "Ichange.gov.ge Public Awareness and Education Campaign", the 5<sup>th</sup> International Caspian Energy Forum in Tbilisi and the 5<sup>th</sup> South Caucasus Security Forum in Tbilisi.

Within the framework of public outreach, USAID Energy Program attended the Regional Advisory Council meeting in Sachkhere attended by the acting Governor of Imereti – Mr. Grigol Dalakishvili, Vice Governed – Mr. Joseph Khakhaleishvili, Mayors of Municipality, Sakrebulo Chairmen, Parliament members, USAID, USAID Energy Program and other invited guests.



*Public Lawrence in Sachkhere Municipality*

During the meeting, USAID COR Mr. Nicholas Okreshidze elaborated on the historic assistance of the American People, who have been dedicating Millions to Georgia to stimulate economic growth. USAID Energy Program CoP Mr. Jake Delphia also had a chance to create awareness on market opening with the focus on the protection of vulnerable customers in the light of market liberalization. At the end of the presentation, USAID COR Mr. Nicholas Okreshidze and USAID Energy Program CoP Mr. Jake Delphia responded to the multiple questions of the audience.

USAID Energy Program met the Bloomberg representative Ms. Julia Attwood at Deloitte Georgia's office. Blumberg boasts to be the bridge between the decision makers and a dynamic network of information, people and ideas. Ms. Atwood noted, for the first time in 2017 Georgia entered in the list of Blumberg ranking in terms of assessing the investment climate for potential investors. For that reason, Ms. Attwood wanted to inquire about the changes in the energy sector with a particular focus on VRE. USAID Energy Program representatives had a chance to increase awareness on the purpose of the program and its value in the background of changes in the energy sector.

## **USAID ENERGY MAP**

In the first year, USAID Energy Program has been engaged in data collection process required for the energy map update and got engaged in research process for selecting the best option for the energy map production. The research results suggested keeping collaboration with the initially selected company due to previous partnership in terms of the energy map creation, which needs to be updated and the company's experience of working with our major stakeholders which equips them with the industry knowledge. The delay was attributed to two challenges, one was the tough schedule of map producing company and the other one was the delay in the data collection from the relevant energy stakeholders.

## 2. INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING (TASK 2)

### PROGRESS AGAINST THE WORK PLAN

#### REGULATORY IMPACT ANALYSIS TOOLS

In collaboration with the GoG USAID Energy Program had to identify the topics of RIA. The initial draft Law of Georgia on Energy was provided to USAID Energy Program for comments in March 2018 which was followed by the respective comments from the Program. The following step included identification of the law and/or specific topics under the selected law for RIA. In the meantime, the MoESD saw significant changes in March 2018 when the Minister of MoESD was changed, followed by another change in September 2018. Each change required notifying ministers on USAID Energy Program goals which turned out to be time consuming in terms of meeting the deadlines for the implementation of targeted activities of the Program. As a result of these changes the progress on RIA was significantly affected, by creating gap in the decision-making process and leaving the MoESD with only one person responsible for RIA. Hence, RIA got off to a slow start due to aforementioned changes in the GoG.

USAID Energy Program designed the selection criteria for RIA training which focused on the ability of institutions to create a sustainable system, where the selected institutions would be responsible and capable of delivering constant trainings to GoG staff in RIA. Throughout the long list of institutions, task team selected the major players within the industry and Non-Governmental Organizations (NGOs).

USAID Energy Program together with the COR Mr. Nicholas Okreshidze held several meetings with the MoESD for improved understanding of the RIA strategy and application within the MoESD. Most importantly the meetings aimed at identifying the MoESD needs in an effort to plan RIA trainings in line with their requirements. In parallel, USAID Energy Program coordinated with the Head of Energy and Environment Policy Research Centre Mr. Norberto Pignatti and Deputy Head of Energy and Environment Policy Research Centre Mr. Levan Pavlenishvili from ISET- Policy Institute (International School of Economics at Tbilisi State University) to ensure the rational structure of RIA trainings. The parties agreed on the following topics: Energy RIA and the impact of anticipated changes in the energy sector on the vulnerable customers. However, due to pending decision making the actual implementation of RIA training was delayed till the Year 2. The trainings took place in October 22 - 23, 2018.

#### CAPACITY BUILDING

##### Technical trainings

For the purpose of institutional strengthening and capacity building, USAID Energy Program organized several trainings for the energy sector representatives on following topics: Energy Trading Strategy Development; Over the Counter (OTC) Trading; Renewable Energy Support Scheme; efficient development of Renewable Energy resources and the subsequent benefits delivered to the country. The training provided a unique platform for picking up fresh ideas and perspectives from the international practice that will lead to a greater efficiency under the new competitive market.





*Institutional Strengthening and Capacity Building Initiatives of USAID Energy Program*

The training also highlighted the need for non-hydro renewable energy development which will respond to the challenges of a new energy market, the need for optimal utilization and support of mechanisms for the development of renewable energy resources. Among the attendees were Georgian Renewable Energy Development Association (GREDA), MoESD and USAID G4G.

As a capacity building initiative USAID Energy Program also held tailored training for GNERC on the High Voltage Connection Fee Methodology and the Low Voltage Connection Fee Methodology. Following the training, GNERC provided their comments on the Methodologies that were reviewed and responded by USAID Energy Program.



*Mr. Simonas Satunas, Lithuanian Electricity and Gas Market Expert*



USAID Energy Program hosted the Lithuanian energy expert Mr. Simonas Satunas who shared the experience of Lithuanian electricity and gas market opening. The practice of Lithuania is appealing and can be considered in the local context with the adjustments tailored for Georgia. Mr. Satunas also elaborated on the solar

panels. Lithuania represents one of the producers of solar panels, therefore, they can be of great assistance to Georgia. With the immense experience of solar panels, the Lithuanian party offered assistance to USAID Energy Program in this field and suggested consideration of Study Tour in Lithuania. The experience of Lithuania is significant for Georgia, thus further collaboration will be beneficial in terms of sharing the experience and knowledge of the former Soviet country.

## **HICD SUPPORT TO GGTC**

In anticipation of changes in the energy sector and draft Law on Energy of Georgia, GGTC Deputy General Director Mr. Vakhtang Todria requested USAID Energy Program to provide Human and Institutional Capacity Development (HICD) support for the company with the aim to address the existing gap. Following the meetings, USAID Energy Program deployed HICD international expert Mr. Lee Mazanec who developed a maturity benchmarking tool for the relevant institutions / companies.



*CYPRESS Maturity Model Benchmarking Workshop for GGTC*

Mr. Lee Mazanec conducted a 2-day CYPRESS Maturity Model Benchmarking workshop for GGTC aimed at capturing the current behavioral capacity of the company and identifying the required actions to meet the new market requirements of the EU.

The workshop incorporated the comparison of leading international practice to the existing practice in GGTC in an effort to recognize the existing challenges and gaps. The interactive workshop allowed the participants to evaluate the level of maturity within the organization and identify needed activities in order to unleash the cycle of changes. The provided benchmarking tool has proven to be one of the major contributors to a successful strategic plan for many companies globally. Therefore, a two-day targeted workshop provided valuable input to GGTC's strategic planning process, which is of high importance in the light of the gas market transitional period.

In addition, during a visit Mr. Mazanec, visited GSE and GNERC to evaluate the HICD progress assisted by USAID in 2014. GSE shared experience and provided suggestions regarding the maturity benchmarking tool, whereas GNERC made progress in that regard. The maturity model, developed in 2014 under USAID HPEP program turned out to be successful, which is successfully being implemented by GNERC with no additional training requirements.

Following the trainings, USAID Energy Program nominated GGTC and GNERC for further HICD support. Both nominees won the competition and will be supported in the development of concerns areas in the Year 2. In case of GGTC comprehensive approach will be applied, whereas GNERC seems to have more organized structure therefore focus will be made on already identified weakness which is Human Resources (HR) development and related capacity building. The following steps include the gap analysis followed by the actual implementation of a plan.

## **STUDY TOURS**

As a part of a capacity building and institutional strengthening USAID Energy Program performed several activities which included planning of the study tours and execution of one study tour to the USA (more details are provided in the above section of major highlights).

The study tours were planned for the numerous major stakeholders, each having a tough schedule. Moreover, coinciding the availability of these relevant stakeholders for the study tours was the challenging issue for the Program. After continuous planning process the parties managed to agree on the selected date which pushed the tour in the Year 2.

As a part of a capacity building and institutional strengthening USAID Energy Program planned organize a Study Tour to Romania. Among the identified participants were the MoESD, GNERC, GSE, CoP and technical lead from USAID Energy Program, and representative from GEDF.

During the preparation process, USAID Energy Program CoP Mr. Daniel Potash met Romanian Ambassador to Georgia Mr. Radu-Liviu Horumba and the Deputy Head of Mission Mr. Dumitru Vasile to confirm the planned Study Tour to Romania. USAID Energy Program carefully planned the tour, with the consideration of stakeholders' requirements to ensure the trip comprised vital meetings capable of delivering value to Georgian energy sector representatives.

During the Year 1, USAID Energy Program also commenced preparation for another Study Tour for Georgian energy stakeholders in Bulgaria that will take place in Year 2, in Sofia with the support of USAID Energy Program and Bulgarian Embassy in Georgia. The Study Tour aims at increasing the institutional capacity among Georgian energy stakeholders in the areas related to the development of competitive electricity and natural gas markets, VRE grid connection, protection of the vulnerable customers during the market reform transition process.

## TRAINING ON STRATEGIC COMMUNICATIONS

USAID Energy Program team has developed a draft communication strategy for electricity market opening, which is in the process of finalization and upon completion will be presented to the MoESD in the Year 2.

In the light of electricity market opening, USAID Energy Program developed the communication strategy. According to the MoESD, there will be four specific groups involved in electricity market opening: power generators, large consumers that will trade in the wholesale market, vulnerable household consumers, and other electricity consumers. Therefore, the communication task team created respective messages for each group and delivered to the MoESD and GNERC for consideration and dissemination.



*Training on the Importance of Strategic Communication for GNERC*

Throughout the Year 1, USAID Energy Program closely collaborated with GNERC and the MoESD to create an efficient communication platform at the background of partly opened market, which became effective from May 1, 2018. GNERC has a plan to launch an effective awareness campaign for media and households both at the local and

regional level with the aim to minimize resistance usually associated with changes. In that regard USAID Energy Program and GNERC viewed the education of selected media representative as an essential input in the awareness campaign since media has access to a wider audience and will be in charge of disseminating accurate information among the public.

The joint training for the media representatives planned by USAID Energy Program, GNERC and the MoESD was twice deferred in the Year 1 due to unforeseen changes in the government and the busy schedule of the top management. USAID Energy Program suggested conducting training without the presence of GNERC Chair and the deputy minister. However, GNERC PR department deems the involvement of the Government and the GNERC Chair vital in terms of exposing the journalist to sensitive information on anticipated changes in the energy sector, where the level of exposure should be monitored by the top management. Therefore, the training was deferred in the Year 2.

At a later phase, an awareness campaign will cover vulnerable customers, therefore, USAID Energy Program has already started becoming familiar with the best practice from other countries that might be applicable locally. Respectively, meetings were held with the MoHLSA to better understand the criteria for obtaining the status of vulnerable customers and get access to available data, that provides valuable input for designing adequate Regulatory Impact Assessment (RIA) trainings. In addition, USAID Energy Program facilitated cooperation between the MoHLSA and MoESD, so that parties can jointly work on the vulnerable customers' issues which need to be addressed prior to the full opening of the electricity and gas markets.

During Year 1 USAID Energy Program conducted various trainings under the Tasks 1, 2, 3, 4 and 5:

- Under the Task 1, USAID Energy Program organized the training on the Electricity Market Concept Design for the MoESD, GSE, GNERC, Electricity Market Operator (ESCO), World Bank (WB) and G4G. The event brought together respective stakeholders for discussion and feedback on the Electricity Market Concept Design;
- Under the Task 1, USAID Energy Program organized the training on the OTC Broker for the market participants, GREDA, MoESD, WEG, G4G and Georgian Water & Power (GWP);
- Under the Task 1, USAID Energy Program organized the training on the Energy Trading Strategy Development for the market participants, GREDA, MoESD, WEG, G4G and GWP;

- Under the Task 3, USAID Energy Program organized the training on Renewable Energy Support Schemes for the market participants, G4G, GREDA, GWP and WEG. The main topics included a need for non-hydro renewable energy development which can respond to challenges of a new energy market and a need for optimal utilization and support mechanisms for the development of renewable energy resources;
- Under the Task 4 the training on VRE Forecasting and Discussion of Wind Speed Forecast in the Test Mode was delivered to GSE and National Environmental Agency (NEA) on the following topics: the available forecasting models, approaches incorporated in forecast models, uncertainty measurement parameters and technique which could be employed for the forecast service vendor selection or forecast model selection and the Test Mode concept;
- Under the Task 2, USAID Energy Program organized the training on the Importance of Strategic Communication for the MoESD and GNERC. The training focused on the importance of ensuring timely communication with the target group with the aim to disseminate accurate information on the values of a competitive market and how each consumer will benefit from entitled choice and voice;
- Under the Task 5, the training on the Gas Storage Regulation Scenarios was delivered to the GNERC. The major topics covered during the training were: the gas storage regulation scenario and values, international experience in UGS regulation and its impact on market transactions.

### **3. ENERGY INVESTMENT OPTIMIZATION (TASK 3)**

#### **PROGRESS AGAINST THE WORK PLAN**

##### **RENEWABLE ENERGY SUPPORT SCHEME**

In the Y1, USAID Energy Program completed a report on the Renewable Energy Support Schemes. The report provides a general framework of incentives for renewable energy support including Tax, Financing, Contractual and Regulatory, Operational, Land and Network incentives. The aim of the incentives is to promote the development of non-hydro renewable projects and respond to challenges of a new energy market. The Program held several meetings with various stakeholders and discussed the possible incentive schemes that might be reflected in the relevant primary / secondary legislative acts. Next steps include the selection of applicable incentive schemes in Georgia.

USAID Energy Program proposed a presentation on Renewable Energy Support Mechanisms to the MoESD, GNERC and Consortium of Danish Company (NIRAS). The parties agreed on introducing the supporting schemes to developers and / or investors and on obtaining appropriate feedback from them.

USAID Energy Program finalized the report on the “International Best Practices on Support for Renewable Energy Schemes”. The document envisages the need for optimal utilization of renewable energy resources and support mechanisms for the development of renewable energy in the country.

##### **INVESTOR ADVISORY GROUP MEETINGS**

USAID Energy Program organized and participated several meetings and trainings with the aim to introduce the importance of Renewable Energy resources development to stakeholders and associated benefits.

During the reporting period, USAID Energy Program conducted several meetings with the International Donors, Financial Institutions, VRE developers, GNERC, MoESD and NGOs involved in VRE production. Meetings with the IFIs were aimed at becoming familiar with their approach to VRE funding and creating awareness on USAID Energy Program support to VRE in Georgia.





*Discussions on Renewable Energy Support Mechanisms*

In May 2018, USAID Energy Program attended the Renewable Energy Conference, organized by the MoESD and Energy Efficiency Center Georgia (EEC Georgia). The draft “National Renewable Energy Action Plan” (NREAP) was a topic of discussion during the conference. Following the conference, USAID Energy Program prepared “Comments on the Draft National Renewable Energy Action Plan” developed in March 2018. EEC Georgia closely cooperates with USAID Energy Program in off-grid solar projects.

USAID Energy Program attended a workshop organized by NIRAS, Danish International Development Agency (DANIDA) and Norwegian Water Resources and Energy Directorate (NVE) in collaboration with the MoESD. The meeting was aimed at reviewing the Draft Law on Energy of Georgia on Promoting the Production and Use of Energy from Renewable Energy Sources accompanied by the list of secondary legislation, developed by NIRAS and DANIDA which need to be adopted discretely. The participants agree to provide comments and recommendations. As a follow up, USAID Energy Program team prepared “Comments on the Draft Law of Georgia on Promoting the Production and Use of Energy from Renewable Sources” and delivered to the Energy Department at the MoESD.

On Sept 6, USAID Energy Program, with the support of the MoESD organized Investor Advisory Group meeting at the MoESD. The event provided a unique venue for bringing together Georgian energy sector stakeholders and renewable energy project developers for sharing views and discussing the existing challenges.



*Investor Advisory Group Meeting*

The topics of presentations were: incentives schemes on renewable energy, the international experience in net metering, EU policy and net metering technology and recent global trends of renewable energy pricing and financing structures. The presentations were followed by discussions which enhanced the improved understanding of issues faced by the developers and other key objectives relevant for the successful development of a project.

## **WORKSHOPS AND TRAININGS**

USAID Energy Program organized a training on Financing of VRE and Public Private Partnership (PPP) in VRE. The training was conducted by USAID Energy Program CoP Mr. Daniel Potash and Senior Renewable Energy Expert Mr. Ankit Patel. The audience comprised of the representatives from GEDF, GSE, ESCO, Infinity Energy, Georgian Industrial Group (GIG), GNERC, Sun House Ltd, Green Energy and New Technology center. As a result of this meeting and USAID Energy Program’s continuous cooperation with the key developers, efforts were directed towards introducing the developers to financing parties.



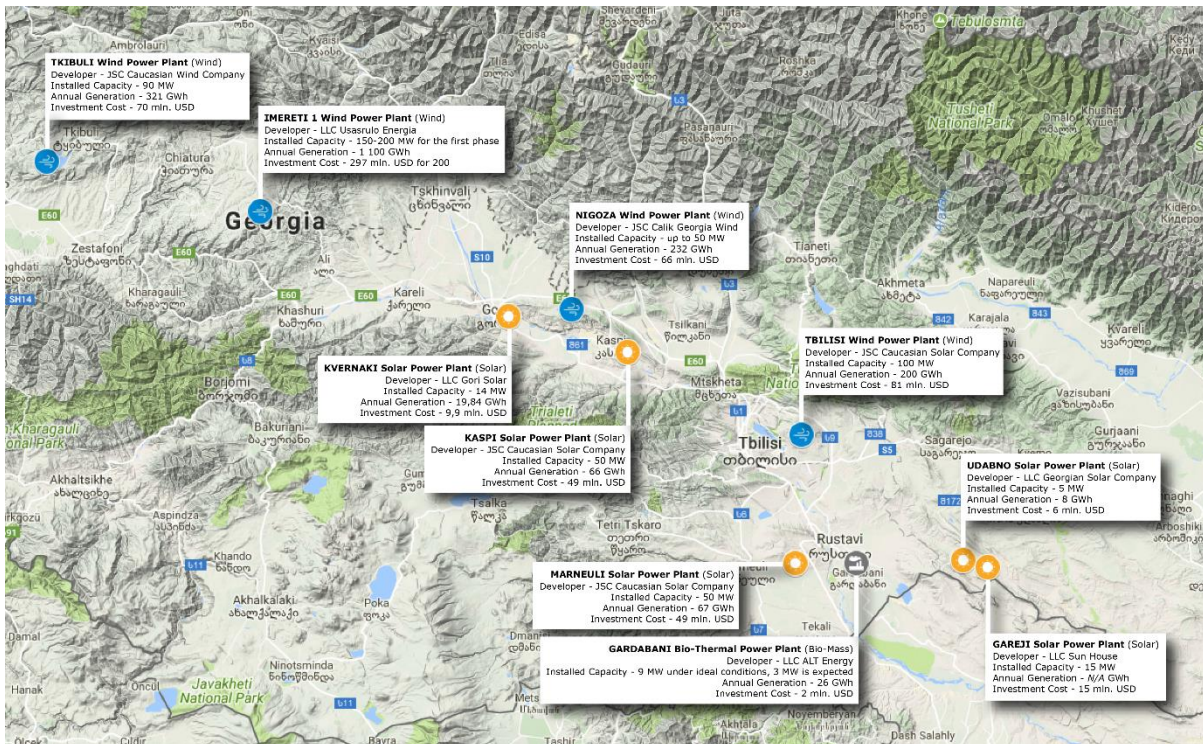
Training on Financing VRE and PPP



The presentation was followed by discussions to better understand the developers, particularly their expectation of PPP Law, anticipated level of support from the Government to provide energy security and the government's involvement in mitigating investors risk.

## SUPPORTING ENERGY INVESTMENT PROJECTS

USAID Energy Program selected 10 potential renewable energy projects for further support and close cooperation during the Year 1.



Location of 10 renewable energy projects, selected by USAID Energy Program for support

## MEETINGS AND SITE VISITS IN SUPPORT OF ENERGY INVESTMENT PROJECTS



Meeting with Mr. Alexander Bakhutashvili, Solar JAMJAMA

USAID Energy Program held several meetings with Grid-connected solar Photovoltaic (PV) developers from “LLC Gori Solar”, who signed a Memorandum of Understanding (MoU) with the MoESD in March 2018. The MoU covers three solar plants, with the total installed capacity of 23 MW. USAID Energy Program has been providing technical assistance to the developer in terms of establishing viable contractual structure. One of the projects of “LLC Gori Solar” is in the list of selected 10 projects. USAID Energy Program team also provided technical and professional assistance to Solar JAMJAMA and facilitated contacts between Mr. Alexander Bakhutashvili and the financial advisory company.

USAID Energy Program held several meetings with International Finance Corporation (IFC) consultants and Infinite Energy - a company developing the proposed 150-400 MW wind power project in Georgia. The meeting with Infinite Energy Representative Mr. Tornike Bakhturidze and Mr. Krešimir Čondić from IVICOM Consulting was related to the ongoing project Imereti 1 WPP, with the total installed capacity of 300 MW. The company asked for facilitating the cooperation with the

MoESD and GSE to obtain Power Purchase Agreement (PPA) and access on the grid connection. As a result of further cooperation, the project was included in 10 VRE projects list. Upon the request of Mr. Bakhturidze, who asked assistance in terms of putting up the contract on Power Purchase with ESCO, USAID Energy Program developed a document on Regulatory Review of Draft Power Purchase Agreement. Consequently, the Program received a "Letter of Thanks" from the Infinity Energy for continues support of the Program and particularly for facilitation of valuable linkages.

USAID Energy Program organized meetings with the director of Ltd "Alt-Energy" Mr. Irakli Tavberidze. Ltd "Alt-Energy" has signed the MoU with the GoG on Bio TPP development. The project envisages the construction of 3 MW power plant in Gardabani Region. Parties agreed to cooperate on a continuous basis. The project was included in the selected 10 projects for further support.

USAID Energy Program conducted several meetings with Mr. Levan Vepkhvadze, a representative of GIG, who provided recommendations on the incentive schemes. The company has a desire to develop 20 MW wind power project in Skra, with the possibility to increase the capacity up to 50 MW. Mr. Vepkhvadze asked USAID Energy Program for support in obtaining Power Purchase Agreement (PPA) and grid connection access, which is of high importance for the project implementation.

Throughout the year, USAID Energy Program has been collaborating with the Solar energy developing company Green Energy and providing continuously technical assistance and consultation regarding the construction and operation of the Solar Power Plant (SPP) in Tbilisi. The Program also supported the Green Energy in drafting the contractual conditions by providing the draft on the Legal Contract for roof leasing and draft PPA to Mr. David Shvangiradze. In addition, renewable energy expert Mr. Ankit Patel initiated work on the financial models for solar and wind project.

USAID Energy Program attended stakeholders' meeting regarding the project on the "Opportunities of Efficient Conversion of Renewable Energy Sources in Mountainous Regions of Georgia", held at MoESD. During the meeting, a presentation was delivered on "Operation of Hybrid Micromanagement System Utilizing Renewable Energy", a conceptual project draft prepared by Georgian and Lithuanian Biomass Associations, New Technology Center (Georgia) and Enerstena (Lithuania). USAID Energy Program received an official letter from the New Technology Center (NTC), asking for support in several areas such as: reviewing the Feasibility Study, providing recommendations and assisting in the preparation of the project's summary. With the technical assistance of USAID Energy Program, New Technology Centre has completed a teaser on the ongoing project regarding the "Establishment of Hybrid Energy Station in Borjomi Municipality for Achievement of Green Status by the City". USAID Energy Program also made recommendations and shared several appropriate financial examples to developers and advised the creation of a diagram and teaser of the project. As a result, the project developers prepared pertinent documents for distribution among the donors and IFI organizations.

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). Ms. Todria promised to introduce the DRIVE program and several biomass producers in Georgia supported by the embassy. The Embassy expressed willingness to provide technical support to biomass projects. In addition, Mr. Niels Bahnsen from NIRAS was contacted, who expressed interest in further discussions on the Borjomi biomass distributed energy project from a climate financing perspective. USAID Energy Program facilitated linkages and introduced NTC to Dutch embassy and to Mr. Niels Bahnsen from NIRAS for further possible cooperation.

USAID Energy Program conducted several meetings with USAID ZRDA program, implemented by Chemonics and identified areas of collaboration which envisaged the assistance in the technical evaluation of a project and the development of a pilot project budget. As a result, the launch of a pilot project was agreed, comprising the deinstallation of individual Solar PVs on the rooftops in order to build a micro-grid for common usage. The parties agreed on further collaboration.

Throughout the Year 1, USAID Energy Program has been supporting Mr. Giorgi Abulashvili from EEC Georgia, who is developing a project in the village Erisimedi in Signagi region, near the Azerbaijani border. The project has a potential to be funded by a grant from British Petroleum (BP). The estimated investment cost is around USD 47 000. The second Biomass Power Plant project implementation is planned in Telavi with the estimated project cost of EUR 7 000 000. 80% of the total cost will be covered by a grant from the EU, and the remaining 20% will be a contribution from the local municipality.

USAID Energy Program held a meeting with Resident Twinning Adviser at the Ministry of Environment Protection and Agriculture of Georgia (MoEPA) Ms. Daiva Matoniene who shared the experience of applying the Energy Efficiency measures and practices in Lithuania. USAID Energy Program team facilitated linkages between Mr. Giorgi Abulashvili from the EEC Georgia and Ms. Margalita Arabidze Deputy Head of Energy Department from the MoESD.

USAID Energy Program communicated the representative of Tesla and created awareness on USAID Energy Program, in addition the focus was made on over-viewing Georgia's electricity system, Renewable Energy potential of the country and challenges in integrating the renewables into the grid. At the request of Tesla, USAID Energy Program team provided a short summary on the energy market of Georgia.

USAID Energy Program attended the conference on "Advancing Renewable Energy in Georgia" hosted by the EEC Georgia and the MoESD. Topics covered during the conference were the national policies and actions in support of clean energy development in Georgia as well as measures and projects implemented for enhancing the development of Renewable Energy in Georgia. During the conference, the MoESD focused on cooperation between MoESD, NIRAS and NVE, which greatly facilitated the implementation of the draft Law on Renewable Energy. As a result, USAID Energy Program prepared comments on NREAP and provided it to the MoESD.

USAID Energy Program held several meetings with GEDF with the aim to obtain updated information on the current projects of GEDF. The parties agreed to cooperate in VRE database information collection. GEDF asked USAID Energy Program to provide assistance in grid integration of VRE. GEDF is the government-owned fund and in cooperation with big Turkish Company Calik Enerji is developing 50 MW Wind Power Plant (WPP) "Nigoza" in Gori region. GEDF asked USAID Energy Program for support in the analysis of constraints in connection to the grid 50 MW wind farm.

## SITE VISITS



*Nigoza Site Visit in Gori*

As a result of meeting with GEDF, USAID Energy Program team held 2 site visits: 1) in April, team together with the representatives of GEDF visited Gori 220 kV substation. The aim of the field visit was to visually inspect the technical conditions of the equipment in the substation, discuss the load patterns, check the availability of space for additional equipment which is required for interconnection. 2) In May, the visit was held on the proposed sites for Nigoza Wind Farm. During the site visit, GEDF showed two installed wind metering devices - anemometers and development areas. As a result of further cooperation, 2 projects from GEDF were included in 10 VRE projects list.

USAID Energy Program organized a field trip to Zestaponi to determine the accessibility to the construction sites, soil conditions, the shape of areas, location of transmission lines and collect the spatial information and photos for desk research of the wind project pre-feasibility studies. Based on information gained from site visits, USAID Energy Program developed the document on Preliminary Review and Analysis of Gori Substation and Ability to Connect the Proposed GEDF Calik Wind Farm.



*Waste Refinery Facilities in Gumbra*

Following the comments of USAID Energy Program Sr. Environmentalist on relatively new environmentally friendly ways of waste utilization applied by one of the companies in Georgia, USAID Energy Program team visited waste refinery facilities operated by "Georgian Synthetic Oil Company" located in Imereti region, Tskaltubo municipality, village called "Gumbra". Currently, the company has the capacity to refine 25 tons of industrial waste. With the major input supply of old tires, the output material ranges between the various types of fuel and natural gas. The objective of the company is to expand its operation and deliver various output materials. The company is processing rubber, technical and plastic waste to different types of fuel and gas. It has a regional expansion plan to cover not only Tbilisi but Imereti region. The operation undertaken by the company has

zero emission or carbon footprint, which represents a relatively nascent activity in Georgia. Consequently, the Law regulating the related procedures and required control of waste is not enacted. For that reason, the company requested USAID Energy Program support in this direction.

USAID Energy Program visited one of the potential wind power plant sites in Sachkhere Municipality. The site currently is under development and seems to be very promising in terms of delivering the value to the local population.



*Potential Power Plant Location in Sachkhere Municipality*

USAID Energy Program held several meetings with Georgian Global Utilities (GGU) solar and wind projects lead, Mr. Giorgi Bezhuashvili to discuss the VRE projects in the pipeline. Following the discussions and evaluation the four renewable projects from GGU were included in the support list of 10 projects.

In collaboration with GGU, USAID Energy Program visited 4 plots for the wind farm development named: Tbilisi 1, Tbilisi 2, Tbilisi 3 and Didgori. These sites near Tbilisi create great energy potential, however, winter icing may significantly influence the energy

production of wind farm. Therefore, USAID Energy Program provided a valuable piece of advice to developers on the preventive measures based on the international practices in order to avoid turbine icing in extremely low temperatures.



*Wind Farm Plots in Didgori*

USAID Energy Program visited two projects being implemented by the Green Energy. 1) The energy efficient building with 50 kW solar rooftop PV system in the city Telavi and 2) 2 kW generation Solar PV and 300 Lt. water heating system project in the village of Saguramo. Upon the request of the company, USAID Energy Program created awareness on the main challenges in the methodology of transmission connection, net metering system and the availability of the grid connection among GNERC representatives. The parties agreed on cooperation for creating awareness on the benefits of renewable energy and net metering systems among the local municipalities and population.



*Rooftop Solar PV System in Telavi and Solar PV Water Heating System in Saguramo*

### **OFF GRID SOLAR PV SYSTEM PROJECT FOR HIGH MOUNTAIN HOUSEHOLDS**

Throughout the Year 1, USAID Energy Program has been intensively collaborating with the MoESD in the implementation of the project on the installation of Solar PV panels for off-grid high mountain households. Under the EnCT, the GoG has undertaken an obligation to ensure the supply of energy sources to all citizens of the country. According to the Energy Department, in Georgia there are around 400 identified priority off-grid houses in the high mountain regions of 120 villages with no access to electricity. USAID Energy Program proposed the installation of Solar PV panels on each off-grid house. The Ministry requested 500 W PV panels for each household. Initially, the project implied a complementary supply of household with electrical equipment for each house. The Ministry expressed interest in the implementation of the project, hence the parties agreed on further collaboration. The Government also expressed interest in integrating 150 Lt solar hot water facilities in addition to the PV system. The parties selected NGO EEC Georgia to coordinate the implementation of the project. The initial proposed Project funding could be as follows: 25% - by the GoG and the remaining 75% - subject to grant funding from potential IFI's and Donor organizations.

In order to facilitate the project implementation, several meetings were held with the MoESD, Dusheti Municipality, as well as with donor organizations, and other interested parties. Among the relevant meetings were:

- United Nations Industrial Development Organization (UNIDO) National Expert in Georgia Mr. Giorgi Todua;
- Managers of Sun House;
- Mr. David Shvangiradze co-founder of Green Energy;
- Mr. Giorgi Abulashvili from the EEC Georgia;
- Ms. Sharune Kubiliute – Counsellor of Political and Economic Affairs, Development Cooperation at the Embassy of Lithuania;
- German Government-Owned Development Bank (KfW) subsidiary German Investment Corporation (DEG).



Off-Grid Family Visit in Tchontili Village



In that regard, USAID Energy Program together with the General Director of Green Energy Mr. David Shvangiradze visited Dusheti Municipality. The meeting was held with the Mayor of Dusheti Mr. Zurab Burduli and his deputy. The parties discussed the required further steps and the scope of collaboration.

Within the scope of the trip to Dusheti, USAID Energy Program visited one of the high mountainous villages Tchontili. The village is located close to the Russian border and remains without the electricity supply since 1990es. The meeting was also conducted with the local community, in order to increase

awareness of the importance of the project.

On August 23, the MoESD, the Ministry of Regional Development and Infrastructure of Georgia (MRDI) and the Prime Minister discussed the issues related to Solar PV system project for off-grid villages in the country. The prime minister revealed an interest in the successful implementation of the project. Hence, the GoG decided to participate in co-funding by allocating 25% of the project's total cost from the central budget.

USAID Energy Program conducted several meetings with the donor organizations and the MoESD representatives to discuss the topic of the ongoing project. In the meantime, the DMs of MoESD, in a less formal environment tried to convince the major donors to work towards raising the remaining required 75%.

USAID Energy Program assisted Mr. Giorgi Abulashvili from EEC Georgia in preparation of the final draft concept on Off-grid Solar Rooftop Project for 400 Households in high mountainous regions of Georgia. As an effort to enhance the awareness of the project on Sept 27, USAID Energy Program organized Donor Coordination Meeting in collaboration with the MoESD at the MoESD premises. The parties agreed to organize meetings on a continuous basis to enhance the implementation of the program on Installation of Solar PV Systems for Off-Grid Households in Mountain Villages of Georgia.

## 4. GRID INTEGRATION OF VARIABLE ENERGY RESOURCES (TASK 4)

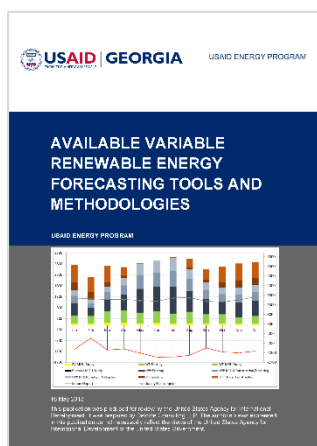
The purpose of the Task 4 is to assist GSE in establishing an effective system for VRE forecasting for greater network integration of renewable energy and for low-emission growth in the energy sector. In line with USAID Energy Program objective to support the integration of VRE projects into the Georgia power system, the following activities were undertaken as a preparatory stage for the development and implementation of VRE forecasting in Georgia.

Those activities were:

- The survey of potential vendors capable of provision of VRE forecasting services applicable to Georgia;
- Research of Available Methods and Models for VRE Forecasting;
- Capacity building on stakeholders on VRE forecasting;
- Recommendation for the implementation of VRE forecasting system;
- Creation of WG comprising representatives from GSE, NEA and QWF for Wind Speed Forecast in Test Mode;
- Assessment of infrastructure for provision of data as an input of VRE forecasting;
- Assessment of Legislation to ensure the provision and or access to data required for VRE forecasting;
- Identification of Hosting Agency;

Development of VRE forecasting concept design and implementation plan, which started in Year 1 and will be accomplished in Year 2.

## PROGRESS AGAINST THE WORK PLAN



Report (cover page)

In the Year 1, USAID Energy Program developed the Report on “Available Variable Renewable Energy Forecast VRE Forecasting Tools and Methodologies”. The report incorporates the introduction of available models and methodologies, the results of a survey of VRE forecasting vendors and specific recommendation which have been discussed with the main counterpart GSE. The survey of VRE forecasting vendor resulted in the interest of provision forecasting services in Georgia of 6 (six) well-known companies providing the VRE forecasting worldwide.

USAID Energy Program produced specific recommendations to support the integration of VRE project to the grid. Those recommendations were devoted to supporting and enabling environment for VRE forecasting procurement and ensuring proper data input and its functioning. The report, its content and developed recommendations were agreed and accepted by USAID Energy Program counterpart GSE. The said organization proposed to be the hosting agency and the main user of

VRE forecasting. Apart from positive feedback on the report, GSE requested additional support in VRE forecasting system development and implementation, namely it refers to:

- Pros and cons of centralized forecasting systems vs decentralized systems;
- The accuracy of forecasting provided by centralized forecasting systems at various intervals vs forecasting provided by wind and solar station;
- Service fee and guaranteed accuracy;
- Quantitative and qualitative assessment of the existing infrastructure and Met-mast in order to obtain highly accurate forecasting;
- Identification of new required infrastructure, adequate works and expenses in order to advance the forecasting accuracy.

To ensure the implementation of actions envisaged under the above-mentioned recommendations, USAID Energy Program created WG on wind speed forecasting in test mode comprising of the representatives from GSE, NEA, GEDF owned Qartli Wind Farm (QWF) and USAID Energy Program.

WG would remain active until NEA continues uploading the forecast of wind speed at File Transfer Protocol (FTP) server created by USAID Energy Program. Nevertheless, performing forecast specific to Wind Power Forecasting (WPF) input meteorological parameters in Test Mode at some extent would provide notion on strength and weaknesses of the system currently employed for the forecasting of meteorological parameters such as wind speed. This would allow the identification of issues challenging the commercial viability on the provision of services required for wind power forecasting and assessment of cost effectiveness for required improvements on measurement infrastructure and upgrades of models employed.

The existence of operational VRE forecasting system requires the supply of the so-called static and dynamic data either to the owner of the forecasting system or to the suppliers of the forecasting services. With the aim to study the accessibility and availability of data required for proper functioning of the VRE forecasting system, USAID Energy Program performed the assessment of infrastructure and legislation which might be utilized to generate or ensure the access to data proposed as an input for the system. Those were performed through the reports on VRE Forecasting Infrastructure and VRE Forecasting Legislation Assessment which replenished series of report devoted to preceding and enabling environment for VRE forecasting.

During the assessment of VRE forecasting infrastructure, the key services on the provision of meteorological data (historical and real time) specific to the industry forecast of meteorological parameters were identified which can be provided by NEA.

Also, NEA is practicing the prediction of heavy rainfalls through the utilization data derived from meteorological radars which also might be necessary input for - Variation Doppler Radar Analysis System (VDRAS) system which if applied could be utilized for both solar and wind power forecasting in time horizon less than 3-4 hours with the update frequency of 15 minutes. At this stage, the non-



availability of forecasting system limits USAID Energy Program's effort to access the usefulness and reliability of meteorological data input from radars and from the vicinity of the VRE project meteorological stations.

From the viewpoint of legislation, data requirement and data provision obligations on static as well as on dynamic data, related to the power generation, exist in the Network Rules. However, with the consideration of the current version of the mentioned rules, it might lack the requirement on the provision of the meteorological data. As demanded, USAID Energy Program would draft and discuss with the relevant stakeholders' amendments to the Network Rules or other legislative acts for the proper functioning of the VRE forecasting system.

Report on VRE Forecasting System Design and Implementation is the last report for the Year 1 from the series of reports devoted to studying the availability of VRE forecasting for Georgia and its implementation at the early stage of VRE projects penetration to the grid. The report aims to provide insights of VRE forecasting concept design which might be applicable for Georgia. Furthermore, the report entails details on the implementation process such as how to organize a bidding process on VRE forecast service procurement and which uncertainty metrics might be utilized. As Study Tour was delayed to Romania, the finalization of the mentioned report was deferred for the first month of the Year 2, due to usefulness of incorporating the obtained experience into the report. Both the conceptual design and the implementation plan would be discussed with GSE in the Year 2.

According to Ten Year Network Development Plan (TYNDP 2018-2028) for system short and long-term planning purposes which might consider the analysis and simulation of power flow, losses, system stability and short circuit analyses, GSE has been applying the model developed by Power System Simulator for Engineers (PSS/E) software, and for Harmonic analysis – Digsilent Power Factory software since 2005. PSS@E is a power system simulation and analysis tool for Power Transmission Operations and Planning. To obtain the Demo version of PSS/E, those whose proposals are in charge of performing the simulation for evaluation purposes shall enter to the PSS@E Evaluation Agreement. Article 'c' of PSS@E Evaluation Agreement states the following:

“c” A recipient will use the Program(s) solely for the purpose of evaluating their suitability for Recipient's engineering purposes related to systems owned by Recipient and will not use it for the benefit of any third party or entity outside Recipient's organization.

Currently, GSE network is obtaining knowledge on determining transmission network capability to integrate the VRE generation. Educational versions (PF4E) and research versions (PF4R) are only offered for universities and research institutes – they are not available for private use or companies and enterprises.

USAID Energy Program had to develop a report on the best solutions for short-term and long-term planning tools and methodologies. Due to limited access to the demo versions of the PSS/E and Power Factory software, utilized by the GSE since 2008, the accomplishment of this task is challenged. Moreover, the comparison of those two-software functionality in terms of short and long-term planning requires specific data on transmission system arrangement (schematics regimes and other technical information) access on which might be more challenging than access to the demo versions of the mentioned planning software. Furthermore, if case is to look better than the PSS/E of Power Factory, it might be more challenging due to the capacity required for such performance. With the consideration of the above mentioned the accomplishment of the task would be challenging.

## **5. STRATEGIC ADVISORY ASSISTANCE TO THE GOG TO INCREASE ENERGY SECURITY (TASK 5)**

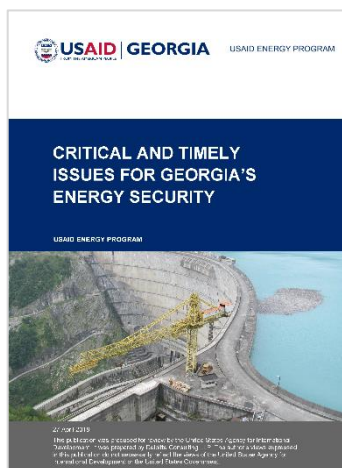
### **PROGRESS AGAINST THE WORK PLAN**

USAID Energy Program organized “Georgian Energy Security Challenges Workshop”. The event brought together Georgian energy sector stakeholders and key parties for sharing views and discussing the existing issues and challenges in Georgian energy security. The workshop exposed participants to the international experience that will contribute to finding the consensus for the development of a necessary action plan. In view of feedback, recommendations will be developed by USAID Energy Program in the Year 2. The Program actively supported the creation of the Energy Security WG and will provide consultancy for planned meetings in Year 2 based on the comments and references on the existing issues and challenges raised by the Georgian energy sector stakeholders and key parties during the Workshop.

The gPower power plant has characteristics that contribute to the security of the power system. The gas turbine power plant is needed for the management of the power reserve. Fast production reserve is relevant for ensuring the system security of the Georgian power system in the event of power plants' or transmission systems' malfunction. Majority of gas TPPs in Georgia were built during the period 1960-1980, hence remain in need of reconstruction and renovation, while the newer gPower plant provides backup generation for VRE power plants and black start capability for the power system of Georgia. The introduction of ancillary services market in Georgia will allow the gPower power plant to provide fast load response, backup generation for the VRE generators and black start. Installation of a third backup gas compressor will increase the operational reliability of the power plant.



*Gardabani Site Visit*



*Report (cover page)*

During the Year 1, USAID Energy Program finalized several deliverables, the report on “Three Years - Energy Security Roadmap Matrix for Georgia” which is a guideline for establishing the process for the evaluation and improvement of energy security via predefined comprehensive methodology and the report on “Summarizing Timely and Critical Energy Security Issues for Electricity, Natural Gas and Natural Gas to Power”.

USAID Energy Program team completed the proofreading of the translated version of the “Critical and Timely Issues for Georgia’s Energy Security”. The final document was distributed among the stakeholders for consideration and comments. Based on feedback from the training participants, recommendations were developed.

Based on the initial analysis, the task team developed a presentation on the preliminary list of energy security issues and concepts for prioritization criteria. The presentation was delivered to USAID at the US embassy in Tbilisi, followed by the comments and feedback from USAID.

USAID Energy Program developed a list of potential security of supply issues, relevant for Georgia. After prioritization, certain issues will be studied by USAID Energy Program. The initial list envisages the energy security issues for Georgian electricity, natural gas and power to gas sectors. In total, more than 40 energy security questions / issues were identified. The team reviewed Georgian legislation and documents and international studies pertinent to Georgia’s Energy Security.

USAID Energy Program has analyzed statistical data and information regarding the generation of Enguri and Vardnili HPP vs consumption of Abkhazia. As a part of the energy security assessment, the primary and secondary legislation, high-level national security and energy policy documents and network development plans related to energy security issues of Georgia were analyzed and corresponding report was developed.

USAID Energy Program developed the report “Review of Current Georgian Legislation on Energy Security Issues and Energy Community Requirements”, covering the assessment of the existing primary and secondary legislation, policy documents and network development plans of Georgia

related to the energy security. The report contributes to improved understanding of the existing situation in Georgia, particularly in terms of the available legislation and responsibilities of parties. USAID Energy Program identified the main stakeholders, both directly and indirectly involved in energy security issues. Provisions, regarding the electricity and natural gas security of supply under the new draft energy law, were analyzed and added to the draft report assessing the existing Georgian legislation on the energy security. In that regard, USAID Energy Program met Mr. Simon Bakhturidze, from the State Security Service of Georgia (SSSG) to identify the role of the SSSG in the energy security. The meeting created a venue for discussions of the priority directions of the energy security and the key challenges. Currently, the level of SSSG involvement in the energy security remains ambiguous, but USAID Energy Program will continue coordination with the key stakeholders in the Year 2.

As a crucial part of the Energy Security, USAID Energy Program evaluated the reports related to the UGS regulations and the financial aspects developed under the Asian Development Bank (ADB) and European Bank for Reconstruction and Development (EBRD) funded projects for GNERC and GOGC. The Program developed a draft list of required statistical data for analyzing the role of gas storage in satisfying the seasonal and daily fluctuations. At the same time, USAID Energy Program had a conference call with KfW representative to obtain insights regarding the loan conditions and deadlines for implementation of the UGS related legislation. KfW expects the presence of a sufficient regulatory basis for the UGS (e.g. Energy Law must have been passed by the Parliament along with high-level tariffs principles or equivalent) in order to ensure the disbursement of the construction phase.

USAID Energy Program continued assessment of materials related to the UGS regulations and aspects of project financing. The various scenarios for UGS cost allocation by tariff groups were analyzed. The corresponding report, Natural Gas Storage for Georgia: Access Regime and Remuneration Services, provides an overview of the legal, regulatory and contractual frameworks of UGSs in Europe and derives the main characteristics of the UGS for Georgia related to access regime and remuneration services.



*Presentation (cover page)*

During the reporting period, GIG requested USAID Energy Program to assist in addressing Coal-Bed Methane and Coal Mine Methane (CBM/CMM) issues and in providing the Coal and Methane Resources Study in support of the analysis. A power point presentation on CMM and CBM, including perspectives for Georgia, was prepared and delivered to USAID at the US Embassy on January 20, 2018. The presentation envisaged the worldwide experience of CMM extraction technologies, development trends and CMM/CBM potential projects in Georgia. The presentation was

followed by discussions and gained interest of the USAID. As a follow-up of the meeting, USAID Energy Program continued gathering information on CBM and CMM potential in Georgia and held a meeting with the representatives of GIG, USAID representatives and officials from the US Embassy. In February 2018, USAID Energy Program representatives organized a site-visit in Tkibuli-Shaori coal mine territory to overview coal power plant, coal enrichment plant and potential CBM fields.

A meeting was also held with the Director of WEG Mr. Murman Margvelashvili with the purpose to discuss aspects related to Georgian Energy Security. The overall objective, concepts, approach, activities and status were presented by the representatives of USAID Energy Program. It was agreed to organize regular follow up meetings between WEG and USAID Energy Program. WEG provided its comments and suggestions to the Energy Security presentation.

# CROSS CUTTING

## GENDER EQUALITY

USAID Energy Program held a series of meetings with GNERC Commissioner, Gender and Youth Inclusion Director at San Diego State University Georgia (SDSU) and the Dean of Power Engineering at Georgian Technical University (GTU) to discuss Gender Diversity Index (GDI) developed within the framework of USAID Energy Program. The parties highlighted their intention to support women's integration in the energy sector and advice and guide them through the contemporary challenges.

USAID Energy Program in cooperation with USAID G4G and Women Business Council organized the conference "Women's Role in Energy, Transport and Logistics" in the framework of the Women Empowerment Week. The goal of this conference was to strengthen and promote young women leaders' role in Georgian energy sector, stimulate open discussion and exchange information on recent developments in the energy sector. The conference highlighted the growing role of women in all industries. Women have started adopting non-traditional roles in various fields including the energy sector. Head of the Energy Department of the MoESD provided opening comments followed by successful women who elaborated on the relevant contribution of women in the energy sector.

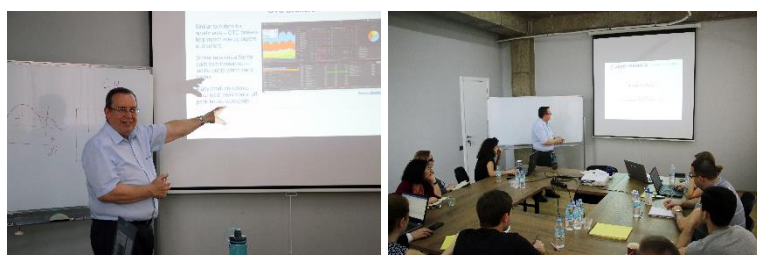
## YOUTH SKILL DEVELOPMENT AND CIVIL PARTICIPATION

As a part of youth skills development, USAID Energy Program mobilized internship program for university students in the Year 1 to build their professional skills and capacity to participate in USAID Energy Program supported energy (electricity and gas) market development. It included institutional strengthening and capacity building regarding the competitive energy markets and cross-border electricity trade, energy investment optimization, grid integration of VRE and assistance to Increase Energy Security, policy reform formulation, advocacy and PPD. Also, during the reporting period USAID Energy Program designed a youth program to build the students' capacity to effectively advocate for reforms.

**Table 1: Utilization of Interns**

Name of Intern	Internship period	Task	Supervisor
Beka Shonia	3/12/2018-09/11/2018	Task 1, 3, 4	Elene Ghubianuri, Ivane Pirveli, Valeriy Vlatchkov
Kakhi Nemsadze	3/14/2018- 09/13/2018	Task 3	Neka Danelia, Elene Ghubianuri
Giorgi Jangveladze	3/5/2018- 09/04/2018	Task 1, 3	Elene Ghubianuri, Neka Danelia, Tamar Murtskhvaladze
Ketevan Gogishvili	4/18/2018-10/18/2018	Task 1, 3, 5	Elene Ghubianuri, Ivane Pirveli, Tamar Murtskhvaladze

One of the key priorities for USAID Energy Program is to enhance the capacity building of interns. For that purpose, throughout the Year 1, USAID Energy Program experts have been conducting trainings on various topics such as "Electric Market Structures and the Roles of Market Players, Power Market Regulations and Integration of Renewable Energy into the Power Grid, Big Data Management, Time Value of Money". The presentations covered the following issues: the key principles of power market functioning, the trading arrangements, the basic trading models and functioning of various electric markets under each model, sufficient capacity required for meeting the peak demand, scheduling of services, markets availability for buyers and sellers, price setting under each model and roles available to market participants under each model.



*Capacity Building Training for Program Interns*

USAID Energy Program CoP conducted tailored training by covering several important features of electricity market functioning such as: (1) Aspects of Market Operator (MO) and Transmission System Operator (TSO) Operations; (2) Various Competitive Electricity Markets. All presentations were followed by Q/A

(questions and answers), where participants were given a chance to clarify ambiguities regarding the complex terminology or functioning of the electricity market.

The presentation made by interns at the end of the year, was a milestone for USAID Energy Program. The interns revealed the understanding of obtained knowledge on the ongoing strides in the energy sector and the impact of high-tech advancement on the power generation.



*USAID Energy Program Interns Presentation on the Impact of High-Tech Advancement on Power Generation*

USAID Energy Program kept enhancing the involvement of young generation in the energy sector, through conferences, capacity building and trainings. Among the speakers of the Conference “Women’s Role in Energy, Transport and Logistics” were female students from GTU and SDSU Georgia who encouraged the future generation, particularly females to get engaged in the energy sector advancement.

## ENVIRONMENTAL EVALUATION

Throughout the Year 1, all deliverables produced across the tasks were subject to environmental review procedure (according to the Threshold Environmental Checklist and Review (TECR) template approved by USAID) intended to identify the possible direct or indirect environmental impact attributed to the implementation of proposals or recommendations prescribed by the deliverables. In total, 31 deliverables produced during the reporting period were reviewed, out of which thirty may not result in a significant environmental effect due to informative nature of the documents. Accordingly, no further environmental review is required. The implementation of selected VRE projects under the deliverable – Georgian VRE project book, have potential to induce adverse environmental impacts. Therefore, for making farther decision on promotion of those projects to be operationalized by USAID Energy Program is to be based on clear knowledge that those projects will not pose significant irreversible threats to the environment.

## COLLABORATION WITH OTHER DONOR FUNDED PROJECTS

USAID Energy Program closely cooperates with other donors participating in the development of Georgia’s energy sector. Cooperation details during the Year 1 were as follows:

**EU:** USAID Energy Program works with EU4Energy, implemented by the ECS, to support the GoG in reform making process, to ensure the implementation of obligations undertaken by EU-Georgia Association Agreement (AA) and EC Accession Protocol.

**EBRD:** USAID Energy Program met EBRD to discuss their involvement in the natural gas sector of Georgia and particularly their participation in financing the proposed UGS facility in Samgori. EBRD commissioned NERA Economic Consulting to support the EBRD in analyzing gas storage tariff framework. Based on the study outcomes and GOGC requirements, EBRD decided not to participate in UGS project financing. The decision was stipulated for two reasons: (1) According to GOGC they have found cheaper finance sources, and (2) the absence of regulatory prerequisites for loan repayments. Currently, there is no specific technical assistance or project development under EBRD related to the gas market of Georgia. The GoG has requested EBRD to provide assistance through Policy Dialogue and Capacity Building in order to ensure the development of a sustainable and green hydropower sector in Georgia. Therefore, EBRD has retained a consultant for this work.

**Danish International Development Agency:** USAID Energy Program, Norwegian Water Resources and Energy Directorate and "NVE-NIRAS" (consortium of Danish Company "Niras") experts will cooperate in the development process of a draft law on Enhancing Energy Production from Renewable Energy Sources and in performance of RIA following the intensive PPD. It was also agreed that USAID Energy Program will participate in organizing the workshop committed to the above-mentioned topics.

**IFC:** USAID Energy Program works with IFC to cooperate in the development of Electricity Market Transitional Plan and Natural Gas Market Transitional Plan. USAID Energy Program also introduced

IFC to upcoming changes and the activities of USAID Energy Program in support of VRE in Georgia. IFC shared their experience, knowledge and challenges in pursuing VRE programs.

**WB:** USAID Energy Program actively collaborates with WB in assisting the GoG in the development of a competitive energy market. USAID Energy Program will support WB's consultants by guiding and providing information on Electricity and Gas Market Concepts and Electricity Trading Mechanism (ETM).

**UNDP** (United Nations Development Program): USAID Energy Program met UNDP Project on Biomass Promotion to obtain information on the existing and potential non-hydropower VRE projects and their developers in Georgia. As a result, the list of VRE projects was updated and existing information collected and specified.

**ADB:** USAID Energy Program works with ADB on identifying the existing and potential VRE projects in Georgia. The ADB has expressed interest in financing rooftop solar projects across Georgia.

**NARUC** and **USEA** (United States Energy Association): USAID Energy Program met the representatives of NARUC Black Sea Regulators Initiative and the USEA. The aim of the initiative is to harmonize regulations for cross-border energy trading in the region. The USEA is particularly concentrating on analyzing the possibility of supplying cross-border energy balancing services.

**KfW:** USAID Energy Program held several meetings with a meeting with Mr. Hans Rieck - Director Sector Coordination South Caucasus, Energy-Transport and Ms. Nino Shanidze - Senior Project Coordinator at KfW to discuss the electricity market reform, gas market concept and UGS. Parties also discussed the areas of assistance to be provided by KfW in organizing a Study Tour in Germany (tentative) for the decision-makers from the MoESD and energy sector stakeholders.

## CROSS CUTTING AND PROGRAM MANAGEMENT MEETINGS

USAID Energy Program met the Lithuanian expert, Mr. Simonas Satunas, and counsellor of the Lithuanian Embassy responsible for development and cooperation. During the meeting, USAID Energy Program's Sr. Renewable Energy Expert Mr. Ankit Patel made a presentation on the solar energy and on its benefits and how it can be applied in the local context. The presentation was followed by discussions on the possible future collaboration.

Ms. Veronica Lee, Director of the Office of Economic Growth at USAID and USAID Energy Program representatives held a meeting at the Embassy of Japan in Georgia with Mr. Tadaharu Uehara, Ambassador of Japan in Georgia and Mr. Masataka Obata, Counsellor, DCM. USAID Energy Program presented the project and discussed the common areas of cooperation including the support of the vulnerable customers during electricity and natural gas market transformation and education of support in the renewable energy options. As a next step, parties agreed to identify and focus on the specific areas of cooperation.

USAID Energy Program held several meetings at the Romanian Embassy to Georgia to discuss the details of an upcoming Study Tour to Romania. The parties discussed the two Study Tours in September and October aimed at instilling a greater understanding of the international practice among Georgian energy sector decision-makers and senior professional staff. The main topics of discussion also included sharing expertise and experience in VRE plants, development and integration of new VRE plants into the electricity grid, the significance of gas storages for Georgia and most importantly identified the area of collaboration. The Study Tour expenses were agreed to be shared by Roman Agency for International Development (RoAid) and USAID Energy Program. Mr. Ambassador highlighted the importance of cooperation between the USAID and RoAid in the framework of the bilateral memorandum signed in Washington in April 2016.



*Visit to Romanian Embassy*

USAID Energy Program together with USAID representatives held meetings with the Ambassador of Poland to Georgia Mr. Mariusz Maszkiewicz and the Ambassador Extraordinary and Plenipotential of the Embassy of the Republic of Bulgaria in Georgia Ms. Dessislava Ivanova and the Second Secretary Ms. Christiana Christova.

During the meeting at the Polish Embassy, the parties discussed the possibility of organizing a Study Tour in Poland for decision makers from the MoESD and other energy stakeholders. The tour might include visiting the Ministry responsible for Energy, Regularity Authority, Electricity and Gas TSOs and Distribution Companies (DISCOs) in Poland that will facilitate knowledge and experience sharing.

USAID Energy Program team met French Electric Utility Company (EDF) and EBRD representatives, who presented the program aimed at studying the dam safety in Georgia. EDF representatives also discussed the environmental, social and climate change consequences that may affect the HPP development. By the end of the year, the program aims to create a strong institutional data exchange platform. USAID Energy Program provided suggestions on capacity building and policy dialogue.



*Meeting with French Development Agency*

USAID Energy Program and USAID Georgia representative (project COR) met with representatives of French Development Agency (AFD). AFD mobilizes a policy-based loan to the Georgian Government on the energy sector reform, co-financed with the KfW. The AFD also mobilizes a grant to implement a Technical Assistance of his own, which will be provided by EDF. In order to further define the scope of assignment, AFD met with several stakeholders in the sector and requested the meeting with USAID Energy Program asking to share experience.

USAID Energy Program contacted Matriks Data Terminal – a Turkish software provider company for financial markets and capital markets, which offers a single program capable of analyzing and processing the data monitoring and processing platforms. The parties discussed the ongoing reforms in Georgian electricity market including the transition to the liberalized market. During the meeting, USAID Energy Program underlined the importance of the trading platform in Georgia. In that regard, Matriks expressed readiness to support the electricity market development in Georgia with a key focus on the launch of OTC market and promotion of OTC technology.

## ANNEX 1: COMPLETED AND ONGOING ACTIVITIES

Energy Market Development (Task 1)				
	Name of Deliverable	Counterpart	Expected Completion Date	Status
1	Electricity Market Development Action Plan (EMDAP)	Steering Committee	May 2018	Completed
2	Natural Gas Market Development Action Plan (NGMDAP)	Steering Committee	June 2018	Completed
3	Draft Electricity Market Transition Plan	Steering Committee	May 2018	Ongoing
4	Draft Natural Gas Transitional Plan	Steering Committee	May 2018	Ongoing
5	Cross Border Meetings Agendas and preparatory briefings for meetings with Turkish counterparts and with Armenian counterparts	MoESD	2 weeks prior to the meetings	Deferred in Year 2
6	Meeting minutes of joint meetings with Armenia counterparts	MoESD	September 2018	Deferred in Year 2
7	Reports on hurdles for cross-border bi-directional trading and market coupling	MoESD	September 2018	Deferred in Year 2
8	Proposal for harmonization of trade with Armenia	MoESD, GNERC	September 2018	Deferred in Year 2
9	Updated energy map	All Stakeholders	July 2018	Ongoing
10	Brochures, presentations, minutes for public awareness workshops	MoESD, Private Investors, Local residents	As needed	Ongoing
11	Public outreach events	GoG, public	As needed	Ongoing
12	Study tours	MoESD, GSE, GNERC	April 2018	Ongoing
13	Training minutes for TSO and MO capacity strengthening	GSE, TBD	10 days after the training	Completed
14	Proposed modifications to legislation to allow for market coupling	MoESD, GNERC	To be completed in Year 2	To be completed in Year 2
15	Comments on Draft Energy Law	MoESD, GNERC	August 2018	Completed
16	White Paper on Natural Gas Market Concept Design for Georgia	MoESD, GNERC, Market Participants	June 2018	Completed
17	White Paper on Electricity Market Concept Design of Georgia	MoESD, GNERC, Market Participants	February 2018	Completed
18	Comments on Draft Natural Gas Market Concept Design developed by ECS	MoESD, GNERC, Market Participants	August 2018	Completed
19	High Voltage Connection Fee Methodology	MoESD, GNERC	July 15, 2018	Draft Submitted
20	Low Voltage Connection Fee Methodology	MoESD, GNERC	July 15, 2018	Draft Submitted
21	Universal Service Supplier Tariff Methodology	MoESD, GNERC	October 15, 2018	Ongoing
22	Supplier of Last Resort Tariff Methodology (Electricity)	MoESD, GNERC	October 15, 2018	Draft Submitted
23	Market Operator Tariff Methodology	MoESD, GNERC	June 30, 2018	Ongoing
24	Natural Gas Market Rules	MoESD, GNERC	October 31, 2018	Ongoing
25	Market Operator Tariff Methodology	MoESD, GNERC	June 30, 2018	Ongoing
26	Natural Gas Sector Transportation Connection Tariff Methodology	MoESD, GNERC	July 15, 2018	Completed
27	Natural Gas Sector Distribution Connection Tariff Methodology	MoESD, GNERC	July 15, 2018	Completed
28	Report on applying different approaches (on Gas Transmission Entry-Exit Tariffs)	MoESD, GNERC	December 31, 2018	Deferred in Year 2
29	Natural Gas Storage for Georgia: Access Regime and Remuneration Services	MoESD, GNERC	October 31, 2018	Approved
30	Supplier of Last Resort Tariff Methodology (Gas)	MoESD, GNERC	October 15, 2018	Ongoing
31	Legal Act (draft) (on decision on Authorization for Construction of Direct Natural Gas Pipelines)	MoESD, GNERC	December 31, 2018	Deferred in Year 2
32	Comments on the legislation (on Transmission Network Code)	MoESD, GNERC	TBD	TBD
33	Comments on the legislation (Distribution Network Code)	MoESD, GNERC	TBD	TBD
Institutional Strengthening and Capacity Building (Task 2)				
	Name of Deliverable	Counterpart	Expected Completion Date	Status
1	Report on selection of institutions to receive RIA support	MoESD, GNERC, others	May 2018	Approved
2	RIA Training Plan	MoESD, GNERC, others	May 2018	Approved



3	RIA Training minutes	MoESD, GNERC, others	10 days after training	Deferred in Year 2
4	Capacity building plan for energy sector	MoESD, GNERC, TSO, MO, GOGC, large consumers, generators	April 2018	Ongoing
5	Training minutes	Relevant stakeholders	10 days after training	Complete
6	Study Tours for RIA	MoESD, GNERC, others	September 2018	Deferred in Year 2
<b>Energy Investment Optimization (Task 3)</b>				
	<b>Name of Deliverable</b>	<b>Counterpart</b>	<b>Expected Completion Date</b>	<b>Status</b>
1	Advisory Group Charter	MoESD, IFIs, donors	March 2018	Complete
2	Advisory Group Minutes	MoESD, IFIs, donors	10 days after each meeting	Complete
3	Proposed changes to legislation to promote investment	MoESD, GNERC	July 2018	Approved
4	Training Minutes – Enabling investment in Renewable Energy	MoESD GNERC, investors	10 days after each training	Complete
5	Draft standard form PPA for Renewable Energy plants	MoESD, GNERC, investors	September 2018	Approved
6	international best practices on support for Renewable Energy schemes	MoESD, other GoG Ministries, GNERC	May 2018	Approved
7	Renewable Energy support scheme analytic framework (Renewable Energy Support Scheme)	MoESD, other GoG Ministries, GNERC	July 2018	Approved
8	Minutes of training events on Renewable Energy support schemes	MoESD, other GoG Ministries, GNERC	10 days after each training	Complete
9	Non-hydro RE Selection Process (Selection Criteria for USAID Energy Program Support of Proposed Non-Hydro Renewable Projects)	MoESD	April 2018	Approved
10	Database of Proposed Non-Hydro Variable Renewable Energy Projects in Georgia	MoESD, GSE	April 2018	Approved
11	MoUs with prioritized projects (Final Selection of Ten Renewable Energy Businesses to Receive USAID Energy Program Technical Assistance)	MoESD	August 2018	Approved
14	Roster of investors, other sources of financing	MoESD	Continuously updated throughout the project	Ongoing
15	Developer's Guidebook for VRE plants	Developers	To be completed in Year 2	Ongoing
<b>Grid Integration of Variable Energy Resources (Task 4)</b>				
	<b>Name of Deliverable</b>	<b>Counterpart</b>	<b>Expected Completion Date</b>	<b>Status</b>
1	Available VRE forecasting tools and methodologies	MoESD, GSE, distribution companies	May 2018	Approved
2	Initial Assessment of Variable Renewable Energy Forecasting Infrastructure, Legislation Assessment for VRE Forecasting	MoESD, GSE, distribution companies	July 2018	Approved
3	Report on best solutions for short-term and long-term planning tools and methodologies	MoESD, GSE, distribution companies	July 2018	TBD
4	VRE Forecasting System Design and Implementation Plan	MoESD, GSE, distribution companies	September 2018	Ongoing
5	Draft recommendations on changes to legislation	MoESD, GSE, distribution companies	To be completed in year 2	Ongoing
6	Training minutes for model usage	MoESD, GSE, distribution companies	To be completed in Year 2	Ongoing
<b>Strategic Advisory Assistance to the GoG to Increase Energy Security (Task 5)</b>				
	<b>Name of Deliverable</b>	<b>Counterpart</b>	<b>Expected Completion Date</b>	<b>Status</b>
1	Three-Year Energy Security Roadmap Matrix for Georgia	MoESD, GNERC, GSE, GOGC	April 2018	Approved
2	Review of Energy Security Legislation and new regulations	MoESD, GNERC, GSE, GOGC	April 2018	Completed
3	Report summarizing critical and timely issues for Georgia's Energy Security	MoESD, GNERC, GSE, GOGC	June 2018	Approved
5	Workshop on Identified Energy Security issues	MoESD, GNERC, GSE, GOGC	September 2018	Completed
6	Study Tour to US for Enguri Dam Personnel	MoESD, GNERC, GSE, GOGC	September 2018	Completed

**Note 1:** Some of the activities have been deferred and/or remain ongoing due to changes in the main counterpart. Among the activities are also those, which have initially been designed in a way to remain in progress.

**Note 2:** Certain titles of deliverables do not exactly coincide with the titles provided in the work plan, since the content of deliverable enabled to specify the title.

## ANNEX 2: ANNUAL PMP INDICATOR RESULTS

Indicator	Y1, Annual Cumulative Results	2018 Target	3-year Cumulative Target
<p><b>1. Generation capacity supported by United States Government (USG) assistance that has achieved financial closure</b></p> <p><i>Short Clarification:</i> This indicator measures the quantity of GHG emissions reduced or sequestered as a result of Energy Efficiency (EE), Renewable Energy and climate change projects and policies facilitated by USAID Energy Program</p>	N/A	0 Capacity (MW)	50
<p><b>2. Energy generation capacity installed or rehabilitated as a result of USG assistance</b></p> <p><i>Short Clarification:</i> This indicator measures the quantity of clean energy generation capacity that will added to the Georgian power system as a result of USAID Energy Program assistance.</p>	N/A	0 (MW)	50
<p><b>3. Projected GHG emissions reduced or avoided through 2030 from adopted laws, policies, regulations, or technologies related to clean energy as supported by USG assistance</b></p> <p><i>Short Clarification:</i> This indicator measures the quantity of GHG emissions reduced or sequestered as a result of laws, regulation and policies facilitated by USAID Energy Program over the 3 years of the project.</p>	Regulations related to Clean Energy has been drafted – no calculations has been made <b>Annual Result: N/A</b>	Metric Tons CO <sub>2</sub> e 60,000	190 000
<p><b>4. GHG emissions, estimated in metric tons of CO<sub>2</sub> equivalent reduced, sequestered, or avoided through clean energy activities supported by USG assistance</b></p> <p><i>Short Clarification:</i> This indicator measures the quantity of GHG emissions reduced or sequestered as a result of clean energy projects and policies facilitated by USAID Energy Program.</p>	N/A	Metric Tons CO <sub>2</sub> e 0	3100
<p><b>5. Amount of investment mobilized (in USD) for clean energy as supported by USG assistance</b></p> <p><i>Short Clarification:</i> This indicator measures the amount of funds in USD that are forecasted to be invested in new clean energy projects such as in new wind and solar PV farms.</p>	N/A	USD 0	80,000,000
<p><b>6. Number of individuals reached through outreach campaigns</b></p> <p><i>Short Clarification:</i></p>	Project Launch - Social Media – 7000 persons (MoESD Facebook page) Mass Media – 450 000 persons Open House – 108 persons	Number of People 2500	10 000

Indicator	Y1, Annual Cumulative Results	2018 Target	3-year Cumulative Target
<p><i>This indicator measures the number of people that will be reached several avenues employed by USAID Energy Program, including through mass media, social media, and events.</i></p>	<p>Training on importance of strategic communication – Participant - 6 (Male - 2, Female - 4) May 11, 2018</p> <p><b>Annual result: 457 114 persons</b></p>		
<p><b>7. Number of people receiving USG supported training in technical energy fields</b></p> <p><i>Short Clarification: This indicator measures the number of people within an organization by topic (energy security, energy markets, energy forecasting, etc.) and by gender.</i></p>	<ol style="list-style-type: none"> <li>1. Training on the Development of the Gas Storage Regulation Scenarios – Participant 3 (Male – 1, Female - 2) - February 11, 2018</li> <li>2. Training on Gas Market Concept design for Georgia – Participant 8 (Male-3. Female-5) - March 21, 2018</li> <li>3. Training on VRE forecasting - Participant 9 (Male 7, Female 2)- March 29, 2018</li> <li>4. Training on OTC broker – Participant - 20 (Male - 16; Female - 4) - May 29, 2018</li> <li>5. Training on the Energy Trading Strategy Development – participant 20 (Male – 16, Female - 4) May 29, 2018</li> <li>6. Training on the electricity Connection Fee Methodologies Participant 11 (Male -7, Female – 4) – June 7, 2018</li> <li>7. Training on Calculation of Market Operator Service Fees – Participant 10 (Male -7, Female 3) – June 22, 2018</li> <li>8. Training on Electricity Connection fee Methodology- 1st part – Participant 11 (Male -7, Female – 4) – June 22, 2018</li> <li>9. Training on Electricity Connection fee Methodology- 2nd part Participant 10 (Male – 7, Female – 3)-June 22, 2018</li> <li>10. Training on Wind and Solar Forecasting for Power System Operations – Participant 7, (Male –7, Female – 0) – July 2, 2018</li> <li>11. CYPRESS Maturity Model Benchmarking workshop for GGTC – Participant 10 (Male - 7, Female – 3) – July 24, 2018</li> <li>12. CYPRESS Maturity Model Benchmarking workshop for GGTC- Participant 11 (Male - 8, Female – 3) – July 25, 2018</li> <li>13. Training on USoA General Approaches for Gas Distribution Companies – Participant 14 (Male - 8, Female – 6) – July 31, 2018</li> <li>14. Georgian Energy Security Workshop – Participant 31 (Male - 7, Female – 24) – August 14, 2018</li> <li>15. Training on Electricity Connection fee Methodology – Participant 13 (Male - 11, Female – 2) (follow up training) - September 7, 2018</li> </ol> <p><b>Annual result: 188 participants (Male - 119, Female -69)</b></p>	<p>Number of People 10</p>	<p>40</p>
<p><b>8. Number of promotional plans, campaigns and materials developed and implemented to electricity and gas sectors reforms, and optimize energy investments</b></p> <p><i>Short Clarification: This indicator measures the outreach material developed by USAID Energy Program the support the program tasks including energy market development, promotion of new RE investment and energy security improvement for Georgia.</i></p>	<p>Press release - 3, banner, one pager, folder, notebook, pencil, signs, printed energy map, success story, branded table name tags, branded stickers, updated one pager, updated folder.</p> <p><b>Annual result: Printed Promotional materials- 15</b></p>	<p>Number 18</p>	<p>24</p>
<p><b>9. Number of institutions with increased capacity to implement regulatory impact assessments and/or other analysis</b></p> <p><i>Short Clarification:</i></p>	<p>N/A</p>	<p>Number 0</p>	<p>2</p>

Indicator	Y1, Annual Cumulative Results	2018 Target	3-year Cumulative Target
<p><i>This indicator measures the number of institutions that USAID Energy Program has trained and have the capability to develop RIAs for new legislation.</i></p>			
<p><b>10. Number of laws, policies, regulations, or standards addressing clean energy formally proposed, adopted, or implemented as supported by USG assistance</b></p> <p><i>Short Clarification: This indicator measures the number of legislative acts supported by USAID Energy Program and adopted by the GoG, GNERC or other relevant institution that support clean energy development</i></p>	<ol style="list-style-type: none"> <li>1. White Paper on Electricity Market Concept design - developed - Support to Energy law;</li> <li>2. Electricity Market Concept design (developing process) - Support to Energy law;</li> <li>3. Support to Renewable Energy law – Developed proposal for renewable energy support schemes;</li> <li>4. Transmission Connection fee Methodology (Electricity);</li> <li>5. Distribution connection fee Methodology (Electricity);</li> <li>6. Comments on draft law of Georgia on promoting the production and use of Energy from Renewable Sources;</li> <li>7. Comments on Grid code;</li> <li>8. Comments on NREAP;</li> <li>9. Comments on the Law of Georgia on Energy;</li> <li>10. Supplier of last Resort Tariff Methodology for Electricity;</li> <li>11. Universal Service Supplier Tariff Methodology;</li> <li>12. SoLR Tariff Methodology for Gas.</li> </ol> <p><b>Annual Result: 12</b></p>	<p>Number of legislative acts 2</p>	<p>10</p>
<p><b>11. Number of financial institutions, investment companies and/or private investors exposed to non-hydro RE opportunities as supported by USG assistance</b></p> <p><i>Short Clarification: This indicator measures the number of financial institutions contacted by USAID Energy Program where the non-hydro Georgian Renewable Energy plants are promoted.</i></p>	<p>WB, IFC, TBC Bank, ADB, KfW, UNIDO, AFD, Downings LLP (London), Finergreen (Paris), Armstrong Energy Capital (London), Low Carbon (London), RoAlid, Swedish International Development Cooperation Agency (SIDA)</p> <p><b>Annual result: Financial Institutions - 13</b></p>	<p>Number 7</p>	<p>10</p>
<p><b>12. Number of research, analytical and white papers conducted including modern modelling and planning tools, among others</b></p> <p><i>Short Clarification: This indicator measures the research, analytical and white papers developed by USAID Energy Program relating to variable renewable energy development in Georgia.</i></p>	<ol style="list-style-type: none"> <li>1. Training on VRE forecasting (Presentation)</li> <li>2. Report on Available Variable Renewable Energy Forecasting tools and methodologies</li> <li>3. Report - Preliminary review and analysis of gori substation and ability to connect the proposed GEDF Calik Wind Farm</li> <li>4. Report on Renewable Energy Support Scheme</li> <li>5. Report on International best practices on support for renewable energy schemes</li> <li>6. Workshop on Renewable Energy support Scheme (presentation)</li> <li>7. Report on Initial Assessment of Variable Renewable Energy Forecasting Infrastructure</li> <li>8. Report on Assessment for VRE Forecasting</li> <li>9. Training on Public Private Partnership in VRE (Presentation)</li> <li>10. Training on Financing of VRE (Presentation)</li> <li>11. Report on preliminary review and analysis of TPP in region of Gardabani: TPP Mtkvari Energy, TPP Tbilisresi and Combined Cycle Power Plant (CCPP) gPower</li> </ol> <p><b>Annual result 11 (Report - 7, Presentation- 4)</b></p>	<p>Number of documents 4</p>	<p>10</p>
<p><b>13. Number of critical energy security issues identified and addressed</b></p> <p><i>Short Clarification:</i></p>	<p>38 critical energy security issues/questions - identified and reviewed with USAID. Corresponding report "Critical and Timely issues for Georgia's Energy Security – Complete.</p> <p>Energy Security Roadmap matrix for Georgia -Complete</p>	<p>Number of Energy Security Issues 1</p>	<p>5</p>

Indicator	Y1, Annual Cumulative Results	2018 Target	3-year Cumulative Target
<p><i>This indicator measures the number of critical energy security issues approved by USAID and addressed by USAID Energy Program</i></p>	<p>Analysis and Presentation on CMM and CBM perspectives for Georgia - developed. Site visit on Tkibuli-Shaori, coal mine territory was organized and discussion on CMM and CBM issues were facilitated.</p> <p><b>Annual result: Totally 38 issues have been identified: 23 Electricity issue, 11 gas issue, 4 power to gas issue</b></p>		
<p><b>14. Percentage of energy traded on the competitive market by 2020</b></p> <p><i>Short Clarification: This indicator measures the amount of competitive trading in the electricity sector as indicated as the average monthly percent of competitive sales versus total retail sales in the sector.</i></p>	<p><b>15.07594132 %</b></p>	<p>Percent of total market 0</p>	<p>10</p>
<p><b>15. Number of people trained in clean energy supported by USG assistance</b></p> <p><i>Short Clarification: This indicator measures the number of attendees of training events held by USAID Energy Program, are members of working groups supported by USAID Energy Program or are counterpart staff seconded to USAID Energy Program.</i></p>	<ol style="list-style-type: none"> <li>1. Training on VRE forecasting – participant - 9, (Male- 7, Female -2) – March 29, 2018</li> <li>2. Workshop on renewable energy support scheme – Participant - 20, (Male 16, female-4,) - May 29, 2018</li> <li>3. Vocational Training on off-grid solar systems – Participant 8 (Male 7, Female 1)</li> <li>4. Training on Wind and Solar Forecasting for Power System Operations – Participant 7 (Male-7, Female 0) – July 2, 2018</li> <li>5. Training on Public Private Partnership in VRE – Participant 17 (Male - 15, Female - 2) September 14, 2018</li> <li>6. Training on Financing of VRE – Participant 17 (Male - 15, Female - 2) September 14, 2018</li> </ol> <p><b>Annual result: Number of attendees – 78 (Male 67, Female 11)</b></p>	<p>Number of attendees 25</p>	<p>40</p>
<p><b>16. Number of institutions with improved capacity to address clean energy issues as supported by USG assistance</b></p> <p><i>Short Clarification: This indicator measures the number of institutions with increased capacity to address clean energy issues as a result of USAID Energy Program assistance.</i></p>	<ol style="list-style-type: none"> <li>1. Institutions: NEA, GSE, QWF - Training on VRE forecasting March 29, 2018</li> <li>2. Institutions: GREDA, MoESD, GWP - Workshop on Renewable Energy support scheme – May 29, 2018</li> <li>3. Institutions: EECG, Dusheti Municipality - Capacity building on obtaining needed financing for Solar PV project in off grid areas</li> <li>4. Institutions: GSE -Training on Wind and Solar Forecasting for Power System Operations – July 2, 2018</li> <li>5. Institutions: GSE, ESCO, Infinite Energy, GIEC, GIG, GNERC, Sun House, Green Energy, GEDF- September 14, 2018; Training on PPP in VRE; Training on Financing of VRE - September 14, 2018</li> <li>6. Institutions: GNERC - Transmission Connection Fee Methodology, Distribution Connection fee Methodology</li> <li>7. Institutions: Investors / Developers of VRE, GREDA, ESCO, GEDF, MoESD –Investor Advisory Group Meeting (Presentations on: Net Metering; Issues and solutions for connecting VRE to the grid; Renewable Energy Support Schemes; Trends on financing of VRE) – September 6, 2018</li> </ol> <p><b>Annual result: Number of Institutions - 16</b></p>	<p>Number of Institutions 3</p>	<p>6</p>

## ANNEX 3: DONOR COORDINATION MATRIX

#	Donor	Donor Project Title/Implementer	Time Frame	Contact Person/Role	Contact Information	Donor Funding	USAID Energy Program Supported Area
1	EU	EU4Energy Governance, IEA	2017-2021	Murman Margvelashvili, Senior Adviser	<a href="mailto:m.margvelashvili@weg.ge">m.margvelashvili@weg.ge</a>	USD 100 K	Energy Strategy Development
2	EU	EU4Energy Governance	2017-2021	Svitlana Karpysyhyna, Deputy Head of Unit/Renewables and Energy Efficiency Expert; Kati Sandroshvili, Regional Coordinator	<a href="mailto:Svitlana.Karpysyhyna@energy-community.org">Svitlana.Karpysyhyna@energy-community.org</a> ; <a href="mailto:keti.sandroshvili@energy-community.org">keti.sandroshvili@energy-community.org</a>	N/A	Supporting GoG in accomplishment of the obligations under the EU - AA
3	EU	East Invest 2 Project	2015-2018	Christian Gessl, Key Expert on Policy	<a href="mailto:c.gessl@ueapme.com">c.gessl@ueapme.com</a>	USD 500 K	ETM Development
4	EU	Legislative Impact Assessment, Drafting and Representation Location	2015-2018	Katerina Velichkova, RIA Expert	<a href="mailto:katerina.velichkova@gmail.com">katerina.velichkova@gmail.com</a>	EUR 175 K	Market Reform. ETM Development
5	EU	Technical Assistance to the GoG for drafting Law on Energy Efficiency	2015-2018	David Managadze	<a href="mailto:managadD@ebrd.com">managadD@ebrd.com</a>	N/A	Draft Law on Energy Efficiency
6	EBRD	Development of a sustainable and green hydropower sector in Georgia	2018 -	Manuel Antunes-Vallerey, Renewable Energies, Senior Engineer	<a href="mailto:manuel.antunes@edf.fr">manuel.antunes@edf.fr</a>	N/A	Provide assistance through Policy Dialogue and Capacity Building
7	KfW	Construction of the Natural Gas Storage	2019 -	Hans Rieck	<a href="mailto:Hans.rieck@kfw.de">Hans.rieck@kfw.de</a>	EUR 150 M	Energy Security
8	KfW	Fiscal Policy adjustment loan	2018-2021	Hans Rieck	<a href="mailto:Hans.rieck@kfw.de">Hans.rieck@kfw.de</a>	EUR 200 M	Energy sector policy measures
9	KfW	Construction of UGS Gas; Policy measures	2018 -	Nino Shanidze, Senior Project Coordinator	<a href="mailto:nino.shanidze@kfw.de">nino.shanidze@kfw.de</a>	N/A	Energy Security
10	GIZ (German Development Agency)	GIZ Legal Program	2017-2018	Lika Akhobadze	<a href="mailto:liana.akhobadze@giz.de">liana.akhobadze@giz.de</a>	N/A	RIA National Framework
11	EBRD	Nenskra Hydropower Project Implementer-Co Investment Fund	2017 -	Choi Byoung-Seub, CEO & President	<a href="mailto:bschoi2004@gmail.com">bschoi2004@gmail.com</a>	USD 230 M	ETM Development
12	EBRD	TA to the MoESD for drafting Energy Efficiency Law	2017 - 2018 -	Marita Arabidze, Deputy Head of Energy Dep. MoESD	<a href="mailto:M.Arabidze@energy.gov.ge">M.Arabidze@energy.gov.ge</a>	EUR 60 K	Supporting GoG in accomplishment of the obligations under the EU - AA
13	EBRD	Rehabilitation of Inguri Hydro Power Plant	2018 -	David Managadze	<a href="mailto:managadD@ebrd.com">managadD@ebrd.com</a>	EUR 28 M	Energy Security, ETM Development
14	KfW	Extension Transmission Network Georgia II	2016-2019	Nino Shanidze, Senior Project Coordinator	<a href="mailto:nsharashidze@imf.org">nsharashidze@imf.org</a>	EUR 420 K	Encourages competitive energy trade and private sector investments
15	USAID	G4G	2014-2019	Natalia Beruashvili CoP	<a href="mailto:nberuashvili@g4g.ge">nberuashvili@g4g.ge</a>	USD 19.3 M	Supporting reforms in the energy sector of Georgia
16	USAID	HICD 2020	2015-2020	Eka Leonidze	<a href="mailto:eleonidze@ingl.com">eleonidze@ingl.com</a>	USD 7.5 M	Human and Institutional Capacity Building
17	USAID	ZRDA Activity in Georgia	2017-2020	Brian King, CoP, Katy Chumburidze, DCoP	<a href="mailto:bking@zrda.ge">bking@zrda.ge</a> ; <a href="mailto:zrda@zrda.ge">zrda@zrda.ge</a>	USD 20 M	Promotion of inclusive and sustainable economic growth in target regions

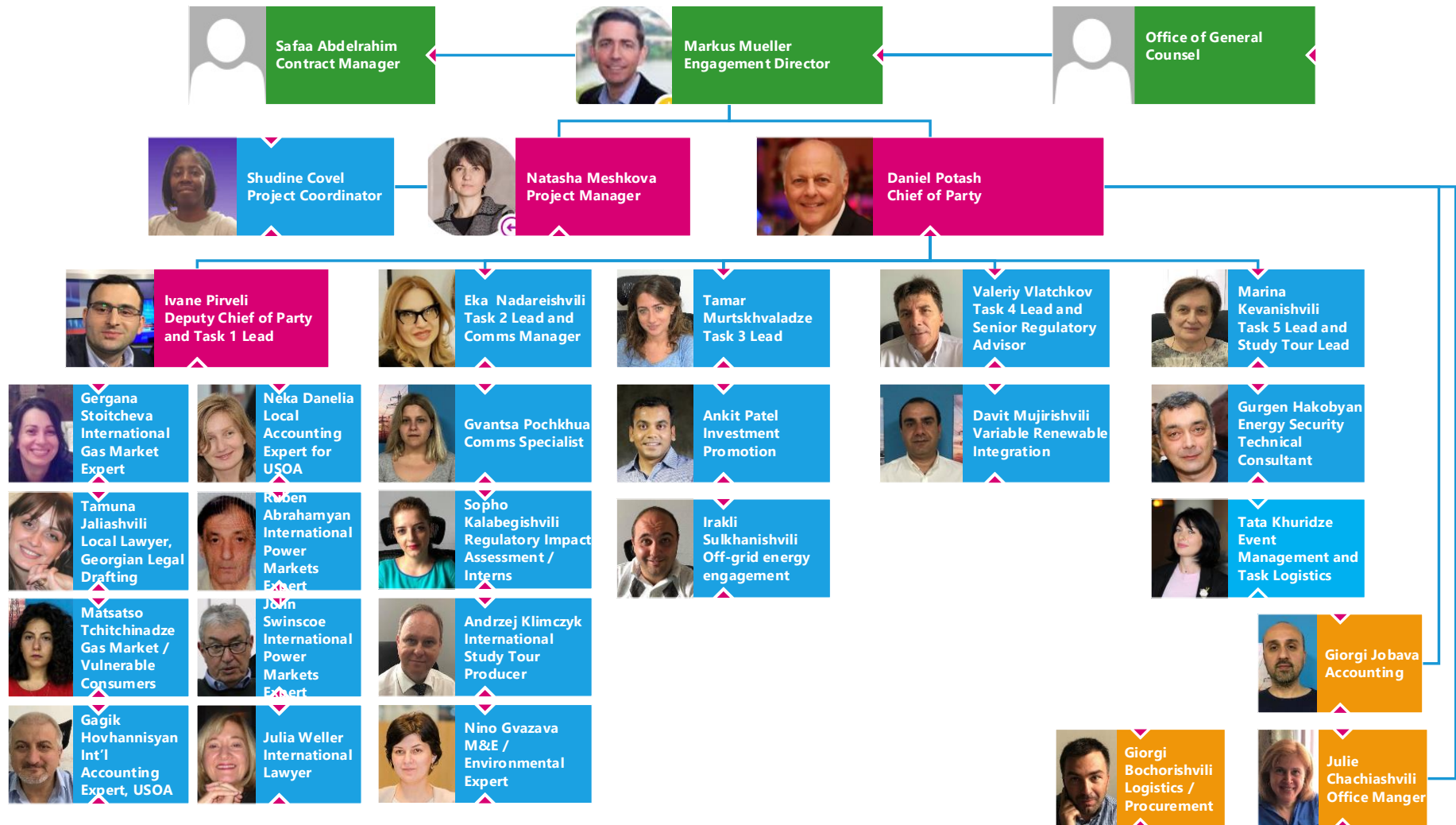
#	Donor	Donor Project Title/Implementer	Time Frame	Contact Person/Role	Contact Information	Donor Funding	USAID Energy Program Supported Area
18	USAID	NARUC-BSRI Integration of the Electricity Balancing Market	2018-2020	Grizelle Wray, Senior Program Manager; Emiliya Bagirova, Program Officer	<a href="mailto:gwrays@naruc.org">gwrays@naruc.org</a> <a href="mailto:ebagirova@naruc.org">ebagirova@naruc.org</a>	N/A	Development of the electricity trading platform, regulation of renewable energies and quality of service
19	USAID	NARUC-BSRI TYNDP	2018-2020	Ben Morano, Program Officer	<a href="mailto:bmorano@naruc.org">bmorano@naruc.org</a>	N/A	TYNDP
20	USAID	Good Governance Initiative in Georgia (GGI)	2015-2020	David Smith, CoP	<a href="mailto:DvdbrSmith@aol.com">DvdbrSmith@aol.com</a> Tel: +(995) 598 24 77 47	EUR 16.6 M	Development of the electricity trading platform
21	ADB	Georgian State Electrosystem Corporatization and Electricity Market Reforms Program	2018 - 2019	Adnan Tareen, Team Leader; Inga Pkhaladze, Program Coordinator	<a href="mailto:atareen@adb.org">atareen@adb.org</a> <a href="mailto:ipkhaladze@yahoo.com">ipkhaladze@yahoo.com</a>	N/A	Electricity Market Reforms
22	IFC Infra Ventures	Clean Energy Invest Namakhvani HPP	2018 - 2021	Elene Ghubianuri	<a href="mailto:nana.gurgenidze@namakhvani.com">nana.gurgenidze@namakhvani.com</a>	USD 700 M	Development of the electricity trading platform
23	Norwegian Government	Market Coupling with Turkey	2017 - 2022	Westgaard Kirsten Winther	<a href="mailto:Kwe@nve.no">Kwe@nve.no</a>	USD 3,863 M	Support in Electricity Trading
24	Consortium of NVE - NIRAS	Institutional Cooperation	2017 - 2022	Westgaard Kirsten Winther; Fonnelop Jon Erling	<a href="mailto:Kwe@nve.no">Kwe@nve.no</a> ; <a href="mailto:Jef@nve.no">Jef@nve.no</a>	USD 4 M	Drafting Renewable Energy Law, Capacity Building
25	Danish Internat. Dev. Agency DANIDA	Sustainable and Inclusive Energy Growth	2016 2020	Bidzina Chkonia CoP	<a href="mailto:biz@niras.dk">biz@niras.dk</a>	EUR 2.13 M	Supporting GoG in accomplishment of the EU - AA obligations
26	WB	SESA of Development Scenarios for El. Sector Implementer Stucky, SEEC	2016 - 2018	Tea Avazashvili	<a href="mailto:tavazashvili@moesd.gov.ge">tavazashvili@moesd.gov.ge</a>	USD 750 K	Environmental and Social Assessment
27	WB	Transmission Grid Strengthening Project	2014-2020	Joseph Melitauri, Senior Operations Officer	<a href="mailto:jmelitauri@worldbank.org">jmelitauri@worldbank.org</a>	USD 61.88 M	Development of the electricity trading platform
28	NEFCO	EU Twinning Project for GNERC	2018	Bo Nyhus, Senior Investment Manager	<a href="mailto:bo.nyhus@nefco.fi">bo.nyhus@nefco.fi</a> tel. +358 10 6180 665	EUR 5.14 M	Introducing renewables and alternative sources of energy supply in public buildings in Georgia
29	UNIDO	Reducing Greenhouse Gas (GHG) Emissions through Improved Energy Efficiency in the Industrial Sector in Georgia	2016 - 2019	Marco MATTEINI, Industrial Development Officer; Nino Lazashvili, National Project Manager	<a href="mailto:M.Matteini@unido.org">M.Matteini@unido.org</a>	EUR 800 K	Supporting GoG in accomplishment of the obligations under the EU - AA
30	EU	EU Twinning Project for GNERC	Planned in 2018	N/A	N/A	N/A	Development of smart metering regulatory framework

## ANNEX 4: ADVISORS UTILIZED IN GOG INSTITUTIONS

#	Name of Expat	Area(s) of focus	GoG Institutions
1	Abrahamyan Ruben	Energy Market Development (Task 1)	MoESD, GNERC, GSE, ESCO
2	Hakobyan Gurgan	Strategic Advisory Assistance to the GoG to Increase Energy Security (Task 5)	MoESD, GSE, ESCO, GGTC, GOGC, Parliament
3	Khujadze Sophie	Energy Market Development (Task 1)	ESCO, MoESD
4	Patel Ankit	Energy Investment Optimization (Task 3)	MoESD, GEDF, VRE Developers, Renewable Energy Investors
5	Stoitcheva Gergana	Energy Market Development (Task 1) & Strategic Advisory Assistance to the GoG to Increase Energy Security (Task 5)	GNERC, MoESD, GOGC, GGTC, Gas Market Players (MPs)
6	Swinscoe John	Energy Market Development (Task 1) & Strategic Advisory Assistance to the GoG to Increase Energy Security (Task 5)	MoESD, GNERC, ESCO, GSE
7	Weller Julia	Energy Market Development (Task 1) & Energy Investment Optimization (Task 3)	MoESD, GNERC, GOGC
8	Gagik Hovhannisyan	Energy Market Development (Task 1)	GNERC, Regulated Enterprises
9	Mazanec Lee	Institutional Strengthening and Capacity Building (Task 2)	GGTC
10	Jake Delphia	Energy Market Development (Task 1)	MoESD, GNERC, GOGC, ESCO, GSE, GGTC
11	Klimczyk Andrzej	Institutional Strengthening and Capacity Building (Task 2) & Energy Market Development (Task 1)	Embassies, MoESD, IFIs
12	Clark Paul	Energy Investment Optimization (Task 3)	MoESD, GEDF, VRE Developers, Renewable Energy Investors
13	Vlatchkov Valeriy	Grid Integration of Variable Renewable Energy Resources (Task 4), Energy Investment Optimization (Task 3) & Energy Market Development (Task 1)	GNERC, GSE, MoESD



# ANNEX 5: USAID ENERGY PROGRAM ORGANIZATIONAL CHART



**USAID Energy Program**

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