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USAID ENERGY PROGRAM

DATABASE OF PROPOSED NON-HYDRO VARIABLE RENEWABLE ENERGY PROJECTS IN GEORGIA

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ACRONYMS

GoG	Government of Georgia
MoESD	Ministry of Economy and Sustainable Development of Georgia
MoU	Memorandum of Understanding
MW	Megawatt
NGO	Non-Governmental Organization
PPA	Power Purchase Agreement
PPP	Public Private Partnership
USAID	United States Agency for International Development
GWh	Gigawatt Hour
VRE	Variable Renewable Energy

CONTENTS

INTRODUCTION

USAID Energy Program is a three-year project aimed at facilitating the development of Georgia's electricity and natural gas markets that enhance further expansion of renewable energy projects and improve the security of supply. Task Three supports immediate development of 50 MW of non-hydro renewable energy with the intent of creating an enabling environment for sustainable development of non-hydro renewable energy. USAID Energy Program will support up to ten proposed non-hydro renewable energy projects to reach its target of 50 MW with financial closure and reach commercial operation.

This is the second deliverable for Task Three of the USAID Energy Program. The first activity for USAID Energy Program was to create a set of criteria that would be used to shortlist all the projects down to the best 10 for support. This deliverable provides a list of potential non-hydro variable renewable energy projects identified by USAID Energy Program and offers supplementary info and recap of the project status.

IDENTIFICATION PROCESS

USAID Energy Program reached out to potential stakeholders, considered to be cognizant of non-hydro projects at a different stages of development. Meetings were held with Ministry of Economy and Sustainable Development of Georgia (MoESD), Non-Governmental Organizations (NGOs), financial institutions and project developers. Interactive meetings enabled USAID Energy Program to find answers to specific questions from stakeholders and obtain feedback, comments and recommendations from counterparts.

The information collected is subject to both qualitative and quantitative measurement and gives a sense of Georgia's current stage in terms of Variable Renewable Energy (VRE) development.

USAID Energy Program identified 48 proposed VRE projects by the end of April 2018. 34 of the identified projects have signed Memorandum of Understanding (MoU) on Feasibility Study with Government of Georgia (GoG), one is an operating company, using used rubber tires to produce fuel and the remaining 13 projects have not yet signed MoUs with the government being at a relatively nascent stage of development.

MAIN TAKEAWAYS FROM PROJECT LIST

Interviews with developers and financial institutions have revealed two main obstacles for the progression of projects – grid connection constraints for wind projects and the non-existence of power purchase contracts with long-term fixed tariffs. The government of Georgia has suggested the replacement of long-term Power Purchase Agreements (PPAs) with fixed tariffs with Public Private Partnership (PPP) approach for which the government says will be initiated in a short time.

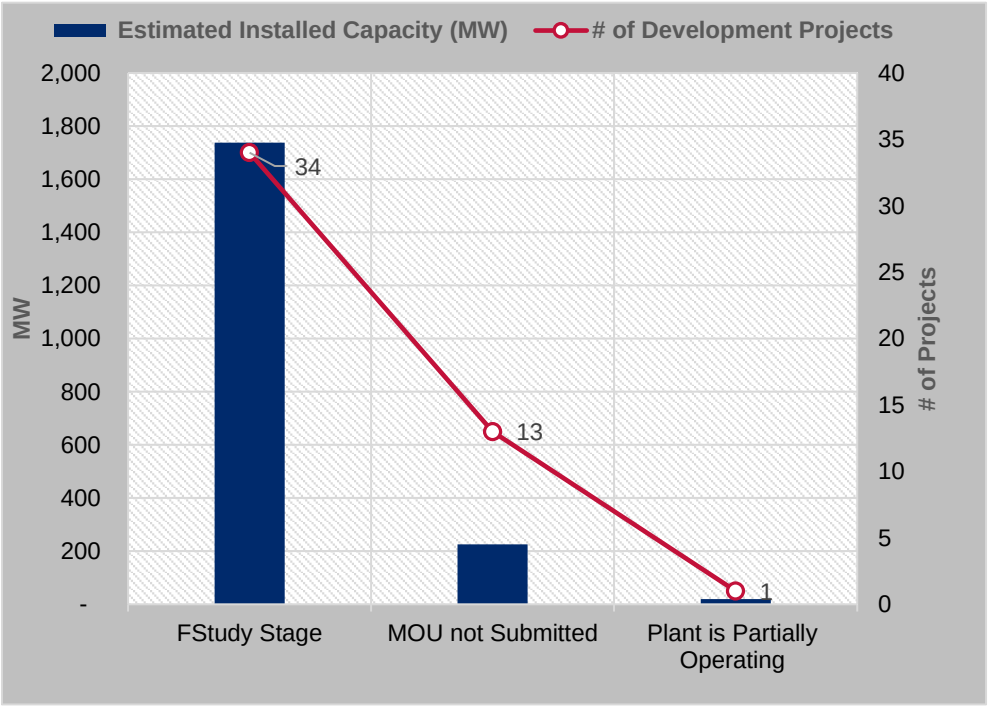
Another substantial challenge for Georgia is a poor infrastructure and the need for creating an enabling environment.

The table 1 shows a breakdown of projects by energy source type and development stage. The 48 listed projects are being advanced by 12 developers. Out of 48 projects, two developers own 20 projects.

All listed projects are not expected to be developed in the nearest future, hence USAID Energy Program has to identify the most feasible and beneficial projects. The following aspects will predominate in the selection process: the most efficient output, economically, socially and environmentally proven projects etc.

Table 1

Development Stage of the Project	Estimated Installed Capacity (MW)	# of Development Projects
FStudy Stage	1,738	34
MOU not Submitted	226	13
Plant is Partially Operating	20	1
Total	**1,984**	**48**



As for alternative sources of energy such as biomass, waste to energy and geothermal - there is one developer aiming to create a 3 MW plant operating on biomass. The developer counts on an easy collection of sufficient input material necessary for generation process. According to other sources, there is no economically proven way of collecting appropriate amount of biomass for electricity production in Georgia since biomass is dispersed on inefficiently long distances. The waste to energy category is also represented by one entity. In addition, there is absence of any geothermal project planning to produce electricity.

The table 2 summarizes projects by renewable type, required investment, planned generation, installed capacity and number of projects in each energy category.

Table 2

Reneweable Type	Projected Investment	Estimated Installed Capacity (MW)	Estimated Annual Generation (GWh)	# of Development Projects
Wind	$ 1,962M	1,423	5,373	30
Solar	$ 528M	538	686	16
Bio Mass	$ 2M	3	26	1
WasteToEnergy		20		1
Total	**$ 2,491M**	**1,984**	**6,085**	**48**

NEXT STEPS

The list in Annex I will be maintained by USAID Energy Program and will be updated on a regular basis until the end of the project.

PROJECTS' LIST

#	Project	Company	Region	Projected CAPEX ($ Mln)	Est Inst Capacity (MW)	Est Annual Gen (GWh	FS MOU Sign Date	FS Subm Date	Type of VRE	Development Stage	Info Source	Contact Person for Energy Program
1	Imereti 1 Wind Power Plant	LLC Usasrulo Energia	Imereti	$ 500M	300	1,100	Nov-15	Nov-17	Wind	FS Stage	MOE	Tornike Bakhturidze
2	Rikoti Wind Power Plnats	LLC Taba	Imereti	$ 103M	65	219	Nov-15	May-17	Wind	FS Stage	MOE	Nodar Kurtanidze
3	Phona Wind Power Plant	LLC Taba	Shida Kartli	$ 41M	25	87	Nov-15	May-17	Wind	FS Stage	MOE	Nodar Kurtanidze
4	Gardabani Bio-Thermal Power Plar	LLC ALT Energy	Kvemo Kartli	$ 2M	3	26	Jan-16	Oct-16	Bio	FS Stage	MOE	Irakli Tavberidze
5	Central Wind Power Plant	JSC Calik Georgia Wind	Imereti	$ 200M	120	560	Mar-16	Jun-17	Wind	FS Stage	MOE	GEDF
6	Nigoza Wind Power Plant	JSC Calik Georgia Wind	Shida Kartli	$ 66M	46	232	Mar-16	Jun-17	Wind	FS Stage	MOE	GEDF
7	Kartli 2 Wind Power Plant	JSC Georgian Energy Developme	Shida Kartli	$ 121M	100	317	May-16	Aug-17	Wind	FS Stage	MOE	GEDF
8	Udabno Solar Power Plant	LLC Georgian Solar Company	Kakheti	$ 6M	5	8	Jun-16	Jun-17	Solar	FS Stage	MOE	GEDF
9	Pirveli Wind Power Plant	LLC Pirveli	Shida Kartli	$ 185M	110	388	Oct-16	Jan-19	Wind	FS Stage	MOE	Volkan Birinci
10	Pirveli Wind Power Plant	LLC Pirveli	Kvemo Kartli	$ 62M	30	114	Oct-16	Jan-19	Wind	FS Stage	MOE	Volkan Birinci
11	Saakadze Wind Power Plant	LLC Energo Kari	Kvemo Kartli	$ 28M	15	56	Nov-17	Nov-18	Wind	FS Stage	MOE	Volkan Birinci
12	Zemo Wind Power Plant	LLC Energo Kari	Shida Kartli	$ 22M	11	39	Nov-17	Nov-18	Wind	FS Stage	MOE	Volkan Birinci
13	Algeta Solar Power Plant	JSC Caucasian Solar Company	Kvemo Kartli	$ 49M	50	67	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
14	Akhaltsikhe Solar Power Plant 1	JSC Caucasian Solar Company	Samtskhe-Javakheti	$ 49M	50	65	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
15	Akhaltsikhe Solar Power Plant 2	JSC Caucasian Solar Company	Samtskhe-Javakheti	$ 49M	50	65	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
16	Gardabani Solar Power Plant 1	JSC Caucasian Solar Company	Samtskhe-Javakheti	$ 49M	50	68	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
17	Gardabani Solar Power Plant 2	JSC Caucasian Solar Company	Samtskhe-Javakheti	$ 49M	50	68	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
18	Gldani Solar Power Plant	JSC Caucasian Solar Company	Tbilisi	$ 49M	50	67	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
19	Kaspi Solar Power Plant	JSC Caucasian Solar Company	Shida Kartli	$ 49M	50	66	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
20	Marneuli Solar Power Plant	JSC Caucasian Solar Company	Kvemo Kartli	$ 49M	50	67	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
21	Saakadze Solar Power Plant	JSC Caucasian Solar Company	Kvemo Kartli	$ 49M	50	67	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
22	Ksani Solar Power Plant	JSC Caucasian Solar Company	Shida Kartli	$ 49M	50	66	Feb-17	Aug-18	Solar	FS Stage	MOE	George Bejhuashvili
23	Tkibuli Wind Power Plant	JSC Caucasian Wind Company	Imereti	$ 70M	50	321	Mar-17	Sep-18	Wind	FS Stage	MOE	George Bejhuashvili
24	Tbilisi Wind Power Plant	JSC Caucasian Wind Company	Tbilisi	$ 81M	50	200	Mar-17	Sep-18	Wind	FS Stage	MOE	George Bejhuashvili
25	Martkopi Wind Power Plant	JSC Caucasian Wind Company	Tbilisi	$ 69M	50	172	Mar-17	Sep-18	Wind	FS Stage	MOE	George Bejhuashvili
26	Kutaisi Wind Power Plant	JSC Caucasian Wind Company	Imereti	$ 77M	50	171	May-17	Nov-18	Wind	FS Stage	MOE	George Bejhuashvili
27	Kaspi Wind Power Plant	JSC Caucasian Wind Company	Shida Kartli	$ 78M	50	205	May-17	Nov-18	Wind	FS Stage	MOE	George Bejhuashvili
28	Didgori Wind Power Plant	JSC Caucasian Wind Company	Kvemo Kartli	$ 78M	50	193	May-17	Nov-18	Wind	FS Stage	MOE	George Bejhuashvili
29	Plevi Wind Power Plant	JSC Caucasian Wind Company	Shida Kartli	$ 47M	35	140	Apr-17	Oct-18	Wind	FS Stage	MOE	George Bejhuashvili
30	Zestaphoni Wind Power Plant	LLC Zestaphoni Wind Power Pla	Imereti	$ 54M	50	165	Dec-17	Mar-18	Wind	FS Stage	MOE	Nodar Kurtanidze
31	Gareji Solar Power Plant	LLC Mzis Sakhli	Kakheti	-	-	-	Nov-17	May-19	Solar	FS Stage	MOE	Kobakhidze
32	Karaleti Solar Power Plant	LLC Gori Solar	Gori	$ 2M	2	2,87	Mar-18	Sep-19	Solar	FS Stage	MOE	Tamaz Kapanadze
33	Plavi Solar Power Plant	LLC Gori Solar	Gori	$ 7M	7	10,36	Mar-18	Sep-19	Solar	FS Stage	MOE	Tamaz Kapanadze
34	Kvernaki Solar Power Plant	LLC Gori Solar	Gori	$ 14M	14	19,84	Mar-18	Sep-19	Solar	FS Stage	MOE	Tamaz Kapanadze
35	Shiraki Solar Power Plant		Kakheti	$ 8M	10	11	-	-	Solar	MOU not Subm.	Developer	Mikheil Antadze
36	Okami 2 Wind Power Plant		Shida Kartli	-	21	73	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
37	Okami 1 Wind Power Plant		Shida Kartli	-	21	85	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
38	Lisi Wind Power Plant		Tbilisi	-	18	49	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
39	Udabno Wind Power Plant		Kakheti	-	15	44	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
40	Senaki Wind Power Plant		Samegrelo	-	9	27	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
41	Tserovani Wind Power Plant		Shida Kartli	-	18	75	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
42	Opurchkheti Wind Power Plant		Imereti	-	9	31	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
43	Bevreti Wind Power Plant		Mtskheta	-	12	47	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
44	Shindisi Wind Power Plant		Tbilisi	-	21	64	-	-	Wind	MOU not Subm.	Developer	Volkan Birinci
45	Waste to Energy	Georgia Synthetic Oil Company	Tskaltubo		20		-	-	WTE	Operating	Developer	Papuna Iosava
46	Khashuri Wind PP	Georgian Wind Energy	Khashuri		12		-	-	Wind	MOU not Subm.	Developer	Tamaz Kapanadze
47	Rustavi Wind Farm Georgia -1	Wind Farm Georgia -1 LLC	Rustavi	$ 50M	40	130	-	-	Wind	MOU not Subm.	Developer	David kobaila
48	Skra-Gori-Wind Project	Georgian Industrial Group	Gori	$ 30M	20	68	-	-	Wind	MOU not Subm.	Developer	Levan Vepkhvadze
Notes	FS - Feasibility Study	Est - Estimated	Gen - Generation	Ins-Installed	MOU - Memorandum of Understandir			Plant is operating currnetly and produces various type of fuel				
	Subm. - Submitted	WTE-Waste to Energy										

USAID Energy Program

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