



Armenia Renewable Resources and
Energy Efficiency Fund

ANNUAL REPORT
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INTRODUCTORY SPEECH

It is a great honor for me to speak on behalf of the Armenia Renewable Resources and Energy Efficiency Fund, which has successfully accomplishing its mission to promote the development of energy efficiency and renewable energy sectors and attracting numerous investments in the county.



The reporting period is significant for the Armenia Renewable Resources and Energy Efficiency Fund, as an agreement on the construction of the first “Masrik-1” Utility-scale solar PV plant was signed in Armenia.

Several events were organized by the Fund in 2018, during which the achievements and successes of the recent years, financing opportunities and sources, existing problems and energy sector development prospects were brought together and discussed.

Let me thank the Ministry of Energy Infrastructures and Natural Resources of the Republic of Armenia and the members of the Board of Trustees of the R2E2 fund for their continuous assistance to the Fund.

With respect,

Director of Armenia Renewable Resources and Energy Efficiency Fund
Karen Asatryan

ABOUT US

Mission and Vision

Armenia Renewable Resources and Energy Efficiency Fund is an entity creating favourable environment for the development of renewable energy and energy efficiency sectors by introducing the best practices of sustainable energy aimed at ensuring energy security, independence and economic growth in Armenia. One of the part of the R2E2 Fund's activities is to contribute to the policy of improving energy efficiency and increasing the share of renewables in energy balance of the country. Renewable energy investment projects have a great development potential in Armenia.

Organizational Structure of the Fund

The management bodies of the Fund are the Board of Trustees and the Director of the Fund. The highest management body of the Fund is the Board of Trustees (BT) that has endowed with the overall strategic management of the Fund in accordance with the established objectives and principles of operation. The Board is comprised of the representatives from public administration bodies, representatives from state and civil sectors, whose knowledge and experience meet the requirements. The Charter of the Fund defines the representative composition of the BT. Minister of Energy Infrastructures and Natural Resources of the RoA Garegin Baghramyan is the head of the Board of Trustees of the Fund. The BOT has 11 members and the structure is presented below:

Garegin Baghramyan	Head of BoT, Minister of Energy Infrastructures and Natural Resources of RA
Hakob Vardanyan	Deputy Minister of Energy Infrastructures and Natural Resources of RA
Masis Baghdasaryan	Head of Staff of Ministry of Territorial Administration and Development of RA
Armen Ghularyan	Deputy Minister of State Urban Development Committee Under the Government of RA

Albert Babayan	Deputy Minister of Economic Developments and Investments of RA
Arthur Vardanyan	Member of Public Services Regulatory Commission of RA
Ashot Mkrtchyan	Board Member of Central Bank of RA
Rubik Davtyan	Adviser of Head of Department of financial planning of budget expenditures of Ministry of Finance of RA
Asya Muradyan	Head of Department of the Protection division of the climate change and atmospheric air of the Ministry of Nature Protection of RA
Mikhail Martirosyan	President of “Armenia Energy Services Provider Association”
Astghine Pasoyan	Director of “Alliance to Save Energy” Armenia Branch

Anna Melik-Israyelyan is the secretary of the Fund's Board of Trustees. During 2018, the Fund has organized 13 meetings of BT, during which issues related to the activities of the Fund were discussed and approved.

PROJECTS

ENERGY EFFICIENCY PROJECT

The Government of the Republic of Armenia had undertaken to carry out the World Bank supported EE projects in public facilities/schools and many other educational institutions, kindergartens, hospitals, administrative buildings, cultural and residential building, outdoor lighting and others/since 2012. The main objective of the project was to improve energy efficiency in public buildings and street lighting systems by making investments in the implementation of energy saving measures. The project was financed by the World Bank grant of \$ 2.12 million USD and 8.5 million USD from the Revolving Fund administered by Armenia Renewable Resources and Energy Efficiency Fund. Revolving Funds are the funds allocated under the Agency agreement



signed between the R2E2 Fund and the Ministry of Finance of the Republic of Armenia on July 30, 2012. The Grant project has been completed on June 30, 2016, but the project implementation continued with the financing of the revolving Fund. In particular, during 2018 energy saving measures had been implemented in Erebuni and Armavir penitentiary institutions of the Ministry of Justice of the Republic of Armenia, Kanaker-Zeytun Medical Center, Armenian-Russian (Slavonic) University.

In the framework of the Energy Efficiency Project, energy saving measures were carried out in 64 public facilities (about 188 buildings and 9 street lighting systems) in total. The total investment amount was 4693 mln. AMD (\$ 10.35 million), annual energy saving was 28 thousand kWh, annual reduction of CO2 emission - 7,223 tons.

The following energy-saving measures have been implemented:

- replacement of external windows and doors,
- insulation of external walls and roof,
- installation of modern heating, hot water supply and air conditioning systems,
- renovation of artificial lighting system,
- installation of heat pump, solar water heaters and photovoltaic systems.

The interest in the project continues to remain high, and it is proved by more than 20 requests for interests expressed from the public facilities which were studied and reviewed by the Fund's specialists.

UTILITY-SCALE SOLAR POWER PROJECT

Overall project description

In recent years, significant reduction of the cost of solar photovoltaic (PV) technology, and consequently, decrease in the volume of capital investments required for the construction of solar



power plants made the PV technology based power generation more competitive towards the other technologies available in the world.

Today it is possible to get a competitive price for the construction of PV solar plants in Armenia having no negative impact on the end-users and in its turn creating an opportunity for the construction of utility scale solar PV plants, thus attracting world-famous solar energy leading companies to the energy market

of the country.

Considering the importance of various renewable energy technologies and the proper legal and regulatory framework, the Government of Armenia has applied and received Grant from the Climate Investment Funds Scaling-up Renewable Energy Program (SREP) in low income countries administered by International Bank for Reconstruction and Development (IBRD), toward the cost of preparation of Utility-Scale Solar Power Project.

Armenia Renewable Resources and Energy Efficiency Fund as a Grant implementation agency



with the assistance of the WB grant in the amount of 2 million USD and \$ 0.5 million USD co-financing of the Government of Armenia, implemented solar energy potential assessment of Armenia, feasibility studies for selected six sites, transaction advisory services, relevant capacity building and other related measures in the Investment Project framework. Detailed solar potential assessments were carried out in five potential

sites based on the data from the measurement stations installed in the project framework. The

first accurate solar atlas was prepared in Armenia based on the available information and data from the measuring stations. Accurate data allows investors to make correct calculations.

The selected sites were presented during the conference “Energy Week 2018”, in November 2018.

“MASRIK-1” SOLAR PV PROJECT

“Masrik-1” solar PV plant will be built in Mets Masrik community of Gegharkunik region of the Republic of Armenia. The project is estimated to have 62 MW installed capacity, and an annual production of 100 million kWh.

The total cost of “Masrik-1” project is about \$ 60 million.

According to the technical proposal submitted by FRV, “Masrik-1” PV plant will have a single-axis solar tracking system, which means that Armenia will have not only a 62 MW solar PV plant, but also a solar plant with innovative solutions.

More than 170,000 photovoltaic panels and over 3,000 Monoline 3H solar tracking systems will be used for the solar plant construction. Solar modules will have high corrosion reliability and can be used even in severe climatic conditions (wind, snow, sand). Solar panel performance guarantee/lifespan/ is over 30 year/.



It is expected that after 30 years of operation, the solar panel performance should not be reduced more than 82%. In addition, the panels are protected from degradation for many years and will have all the necessary international quality certificates.

The selected tracking system has a number of advantages, such as reliability, performance efficiency, minimal operating costs, automatic management and long-term operation experience in the international market.

“Masrik-1” PV plant will be up-to-date in all respects. For example, the plant will have the latest security system that will not only track and record, but also monitor thermal images. The plant will be equipped with the most modern automatic control system, which will allow integration with the SCADA system operator.

It should be noted that the plant will be constructed in accordance with international standards, including environmental standards. For example, the surface layer of the soil will be

removed and retained so that it is not contaminated during the construction phase. Even scrap metal that will arise in the construction stage, will be processed by a specialized company.

IMPLEMENTATION PROCESS

Construction of “Masrik-1” PV plant is projected to be completed in 2021. The Government of the Republic of Armenia has signed a Government Support Agreement with a consortium composed of “Fotowatio Renewable Ventures” Dutch and “FSL” Spain companies. Public Services Regulatory Commission of the RoA approved the solar plant construction license. It is expected to sign a Power Purchase Agreement with ENA in the near future.

CONTINUATION OF THE SOLAR PV PROJECT

Currently, land allocation procedures for the construction of plants, and negotiations with the international financial institutions are continuing, which are aimed at providing grant funds for the Transaction Advisory services and tendering procedures. During the previous stage of the project implementation, feasibility studies for 5 selected sites were conducted. The sites are located not far from the solar potential measuring stations installed in the project framework. Estimations were performed on the example of the “Masrik-1” solar power plant.

GEOHERMAL PROJECT

Overall project description

Armenia has received a Grant from the Climate Investment Funds Scaling-up Renewable Energy Program in Low Income Countries (SREP) (administered by the International Bank for Reconstruction and Development (IBRD) towards the cost of the preparation of **Geothermal Exploratory Drilling Project**.



The project design and preparation outcomes are approved by the SREP board. Grant Agreement for the implementation of Geothermal Exploratory Drilling Project / P152039/ was signed on 16 June, 2015. It was approved to provide 8,550,000 USD to Armenia for Geothermal Exploratory Drilling Project on February 22, 2015. The Government of Armenia finances about 20

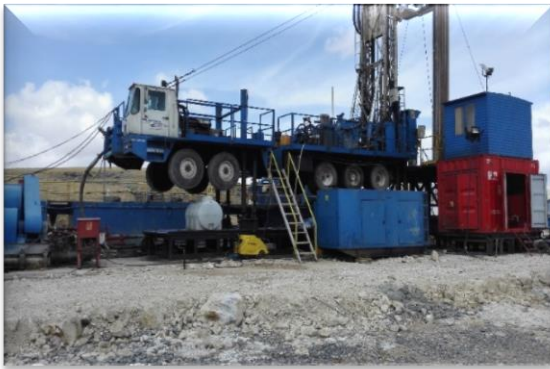
percent of expenses.

The first phase of the project envisages preparation and implementation of bidding documents for the construction of access road, water supply system and drilling platform,

including technical supervision, preparation and implementation of bidding documents for drilling of two slim wells, including technical supervision, logging and testing, audit.

The second phase involves preparation and implementation of bidding documents for the construction of a water supply system and a drilling platform for the production well, preparation and implementation of bidding documents for the drilling of production well, including technical supervision, logging and testing. In addition, it is also envisaged to carry out feasibility study, transaction advisory services and audit of the geothermal power plant.

The data obtained was used to calculate the production capacity and cost of the conceptual 10MV geothermal plant. In case of the high temperature in the hole, energy cost will deviate from 9 to 10 cents, which is a competitive cost and can be inflated in future to get a lower rate.



The first well is located at an altitude of 1500 meters above sea level. The drilling works started on 7/15/2016 and were completed on 9/29/2016. The highest temperature in the hole was 110° C.

The second well is located at an altitude of 1650 meters above sea level. The drilling works started on 10/8/2016 and ended on 12/1/2016, with a highest temperature of 130 ° C.

On February 19, 2018, a Czech representative of the swiss-chinese SUMEC Group Corporation of “SUMEC GEOPOWER AG”, which is widely known in the geothermal and solar spheres, had expressed a desire to discuss options for the further cooperation.”SUMEC GEOPOWER AG” specialists were provided with the results of the tests of two narrow wells of Karkar site and the final reports.

On the part of “SUMEC GEOPOWER AG”, a draft Memorandum of Understanding was submitted to the Ministry of energy and natural resources for consideration. Relevant specialists from the ministry provided recommendations on the outcomes of the drilling works.

COMMUNITY ENERGY EFFICIENCY IMPROVEMENT PROJECT FOR NON-GASIFIED COMMUNITIES IN ARMENIA

Armenia Renewable Resources and Energy Efficiency Fund signed a contract with “ACBA Leasing” CO and “Global Credit UCO” CJSC for the implementation of “Energy Efficiency Improvement Project for non-gasified communities in Armenia” The objective of the project was to finance investments in clean energy sector through financial institutions. It aims at improving energy efficiency in nearly 280 communities of Armenia and promoting investments for the development of clean energy. About 37 thousand households are not gasified in Armenia.



They are not included in the gasification projects due to their economic inefficiency. Targeted measures aimed at solving the problem have been developed for non-gasified communities, on the basis of which the contracts will be signed.



In 2018,
the

Fund's specialists gave a positive conclusion for crediting installation of 1612 solar water heaters and 54 photovoltaic systems (with a total installed capacity of 190 kW). Annual energy saving of the solar systems is estimated to be about 4,748,865 kWh, CO2 emissions will be 2109 tons.



The project is implemented jointly with the partner financial institutions through refinancing of targeted loans.

COMMUNITY ENERGY EFFICIENCY PROJECT

Community Energy Efficiency Project implemented jointly by Armenia Renewable Resources and Energy Efficiency Fund and ACBA-CREDIT AGRICOLE BANK CJSC aimed to make investments for energy efficiency improvements in the communities of the Republic of Armenia by means of financing the monetary claim (factoring) concerning communities. Moreover, the objective of the

project is also to reduce inefficient energy consumption and increase the use of clean, efficient, safe and affordable energy technologies. The payback of energy saving measures carried out in the communities will be made from the additional amounts received from the implementation of the project, so the project will not be an additional burden on the community budget.

More than 30 communities submitted applications to the Banks in the project framework. The fund experts conducted energy audit of the implemented EE projects.

Energy Efficiency projects have been already implemented in eight communities-Kasakh, Nor Yerznka, Gandzak, Akunk, Amberd, Abovyan, Amasia and Talin: installation of solar water heaters and solar PV systems, renovation of external artificial lighting system.

Summary of implemented activities

Community	Solar PV system, kW	Thermosyfon solar water heater, quantity	LED lamps	Investment, AMD
Kasakh	10	25	438	55,815,400
Nor Erznka			134	11,857,420
Gandzak	10,35	1	60	9,800,000
Abovyan	20			8,850,000
Akunk			600	26,400,000
Amberd			140	10,399,990
Amasia	25			12,580,000
Talin	15	4		7,185,720
Total	70	30	1372	142,888,530

The investment amount was 142.9 million AMD, annual energy saving - 735,418 kWh, annual CO2 emission reduction - 327 tons.

Information on the loans provided to IFC in the framework of the Energy efficiency improvement project in non-gasified communities of Armenia and Community Energy Efficiency project, is presented below:

PFI name	Loan amount	Loan interest rate	Loan term (month)
Global Credit UCO CJSC	330,275,000	3-4 %	96
ACBA Leasing CO CJSC	184,165,800	3-4 %	60
ACBA CREDIT AGRICOL BANK	108,257,420	5%	60
Total	622,698,220	-	-

PROVISION OF ENGINEERING ADVISORY SERVICES IN THE FRAMEWORK OF GERMAN-ARMENIAN FUND PROJECT “ENERGY EFFICIENCY FOR MSMEs”

The objective of the project was to support financing of energy saving measures in micro, small and medium enterprises (MSMEs) in Armenia. About 101 energy audits were conducted by the Fund’s experts in 2018 in the project framework. The loan was provided through 9 financial institutions and included the following sectors: industry, food production, heating, ventilation, air conditioning systems, healthcare, printing and information equipment, refrigeration, artificial lighting, energy saving measures of buildings/ structures external constructs, transport, solar water heaters and photovoltaic systems, etc.

The main indicators of the project are presented in the table below:

Name	2016	2017	2018	Total
Number of bids with a positive conclusion,	52	122	101	275
Credit amount, mln. dram	1,800	4,084	4,790	10,674
Investments in ESMs, mln. dram	2,045	3,707	5,441	11,194
Estimated energy saving, mln. kWh	125	320	111	556
Energy efficiency %	26.4	43.5	26.8	34.2
CO2 emission reduction, ton	35,517,965	127,916,376	43,990,551	207,424,892

The project was completed in September 2018.

FINANCIAL STATEMENTS

Information on the activities carried out by the Fund is reflected in the financial statements of the Fund, which were submitted to the Ministry of Energy Infrastructures and Natural Resources, the Ministry of Finance, the Board of Trustees and donor organizations. Financial statements of the projects implemented by the Fund are subject to mandatory annual audit. R2E2 Fund covers the expenditures for the implementation of activities, as well as its functions stipulated under the Charter from the consolidated annual budget and annual budgets of the implemented projects approved by the Fund’s Board of Trustees.

Information on the payments made by the beneficiaries in the scope of the EE project

Facilities of public importance	Investments	Service fee	Total paid amount	Total paid investment amount	Total paid service fee
Ararat basic school N4 SNCO, Ararat province of the RoA	19,550,000	2,219,740	21,317,505	19,550,000	1,766,709
Mets Masrik secondary school SNCO, Gegharkunik province of the RoA	23,000,000	2,323,958	17,594,881	15,093,750	2,043,945
Masis basic school N2 SNCO, Ararat province of the RoA	29,000,000	3,292,708	28,238,935	16,916,667	2,713,715
Gavar basic school N5 SNCO, Gegharkunik province of the RoA	19,000,000	2,394,792	12,177,259	9,816,667	1,830,399
Vayk city street lighting, Vayots Dzor province of the RoA	13,000,000	1,313,542	9,936,654	8,125,000	1,125,651
Vayk city Preschool N3 SNCO	10,000,000	1,260,417	5,848,786	5,000,000	942,708
Masis Medical Center CJSC, Ararat province of the RoA	87,164,998	10,291,334	40,053,248	31,481,161	8,216,168
Dilijan street lighting, Tavoush province of the RoA	15,796,540	1,212,104	14,608,605	12,918,485	1,170,132
Ltchashen community secondary school SNCO, Gegharkunik province of the RoA	20,800,000	2,361,667	13,265,328	11,362,963	1,870,154
Yerevan school N 21 after A. Shirvanzade SNCO	25,700,000	2,918,021	25,327,741	13,563,889	2,260,648
Yerevan State Institute of Theater and Cinema SNCO	48,000,000	5,450,000	30,539,571	26,222,198	4,315,741
National Archive of Armenia SNCO	36,500,000	4,144,271	22,645,746	18,925,926	3,174,035
Armenia State Economic University SNCO	95,890,080	8,490,268	65,375,085	58,218,977	7,156,083
Armenia State Engineering University SNCO	164,243,000	18,648,424	72,101,034	59,309,972	10,997,057
Yerevan basic school N 163 SNCO	19,950,000	1,766,406	12,582,160	11,162,590	1,418,568
Ararat basic school N1 SNCO	25,000,000	2,526,042	26,817,407	25,000,000	1,809,409
Yerevan basic school N 187	30,288,831	2,681,824	18,711,902	16,586,726	2,125,176
Dilijan basic school N 2	21,373,800	2,159,644	11,825,209	10,241,613	1,568,247
Scientific Center of Zoology and Hydrology of NAS RA	24,687,500	2,526,042	12,094,720	10,365,086	1,690,538
Yerevan basic school N61	19,000,000	1,919,792	10,292,012	8,903,738	1,373,047
Institute of Molecular Biology of NAS RA	115,000,000	13,865,885	46,951,481	38,768,939	7,116,260
Hrazdan city street lighting, Kotayk province of the RoA	49,500,000	5,001,563	27,213,268	23,231,641	3,577,148
Artashat municipality building, Ararat province of the RoA	30,000,000	3,031,250	16,245,086	14,062,501	2,167,969

Kapan city street lighting, Syunik province of the RoA	27,000,000	2,728,125	14,329,635	12,375,000	1,920,703
Echmiadzin city “Vagharshapat Hospital” CJSC, Armavir province of the RoA	127,000,000	14,419,792	49,341,121	41,157,407	7,802,758
“Vagharshapat Special School N2 for Children with Intellectual Disorders SNPO”, Armavir province of the RA	35,800,000	4,064,792	19,789,551	17,290,232	2,491,636
“Nubarashen” Psychiatric Center SNCO	139,000,000	14,044,792	62,612,059	53,277,256	8,883,572
Yerevan school N 44 after Hrant Dink	45,000,000	4,546,875	29,056,642	20,625,000	3,201,172
Ashtarak city Medical Center, Aragatsotn province of the RoA	20,000,000	1,520,833	12,938,083	11,388,889	1,233,796
Artik street lighting, Shirak province of the RoA	17,800,000	1,798,542	9,835,194	8,697,166	1,136,063
Ijevan street lighting, Tavush province of the RoA	19,883,000	2,009,011	11,003,555	9,470,400	1,480,438
Sisian street lighting, Syunik province of the RoA	25,500,000	2,576,563	13,214,951	11,421,875	1,784,668
Nigavan secondary school, Aragatsotn province of the RoA	13,000,000	1,476,042	4,974,331	3,986,423	986,285
Yerevan school N 66	16,150,000	1,429,948	9,772,812	8,651,786	1,117,522
State Chamber Music Theater	12,259,790	1,555,354	4,874,359	3,930,290	843,876
Jermuk city street lighting, Vayots Dzor province of the RoA	25,700,000	2,275,521	14,864,042	12,544,048	1,672,540
“High Voltage Electric Networks” CJSC / Southern Branch / MEINR, RA	23,000,000	2,036,458	11,831,784	10,404,762	1,419,816
“High Voltage Electric Networks” CJSC / Goris, Zangezur Branches / MEINR, RA /	27,600,000	3,133,750	12,409,427	10,477,778	1,920,926
Akhuryan community/street lighting, Shirak province of the RA	18,040,000	1,597,292	9,792,912	8,590,476	1,154,345
Vagharshapat basic school N8 after G. Nzjeh SNCO, Armavir province of the RoA	18,524,000	1,408,596	11,429,036	10,033,833	1,107,902
“High Voltage Electric Networks” CJSC / Eastern Branch / MEINR, RA	26,900,000	2,045,521	15,387,673	13,823,607	1,555,156
“Nubarashen” penitentiary	466,244,100	47,110,081	131,671,597	115,777,087	13,407,644
“Abovyan” penitentiary	221,500,000	22,380,729	54,988,643	48,550,781	6,009,809
“Artik” penitentiary	87,356,899	7,033,101	15,501,665	13,322,374	2,111,934
“Hospital for convicts” penitentiary	229,000,000	20,276,042	66,441,503	58,843,750	6,091,079
“Vardashen” penitentiary “Erebuni” branch	190,392,300	15,010,625	35,483,545	31,864,170	3,538,379
“Kosh” penitentiary	333,948,000	29,568,313	96,196,902	85,301,124	8,882,548

“Vardashen” penitentiary	110,300,000	8,387,396	31,289,206	27,601,563	3,036,208
“Hrazdan” penitentiary	47,822,400	5,518,126	16,937,772	14,134,899	2,182,556
National Library of Armenia	71,000,000	8,061,458	43,956,719	22,351,852	4,260,822
“Yerevan State Olympic College of Olympic Reserve” SNCO	26,973,000	3,065,625	16,033,798	8,223,000	1,581,250
“Yerevan State Puppet Theater after H.Tumanyan” SNCO	32,900,000	3,735,521	12,996,430	10,662,037	2,021,345
Institute of Physical Researches SNCO of the National Academy of Sciences of the Republic of Armenia	42,800,000	4,859,583	16,441,855	13,474,074	2,568,495
“Sevan” penitentiary	316,545,519	24,155,192	82,017,369	74,007,873	7,253,438
“The National Academy of Sciences of the Republic of Armenia. Institute of Physiology after Orbeli” SNCO	30,000,000	2,281,250	13,995,137	12,083,333	1,460,069
Margahovit secondary school after H. Toumanyany SNCO, Lori province of the RoA	25,000,000	2,838,542	8,299,094	6,712,963	1,314,622
Spitak municipality, Lori province of the RoA	29,900,000	3,021,146	9,518,507	8,097,917	1,408,700
“Procurement Support Center” SNCO	13,000,000	988,542	13,246,797	13,000,000	246,797
“Vanadzor” penitentiary	88,612,327	8,953,537	20,288,653	17,672,528	2,404,258
Hrazdan municipality (Hrazdan municipality building, Hrazdan Preschool N2 SNCO)	236,600,000	23,906,458	70,314,182	56,685,417	10,038,043
“Yerevan State College of Choreography” SNCO	24,000,000	2,725,000	6,927,315	5,333,333	1,072,222
“Kanaker-Zeytun” MC CJSC	148,404,000	16,917,708	22,809,699	18,710,502	4,084,279
“Armavir” penitentiary	179,510,000	11,406,365	39,978,370	35,901,997	4,076,373
Armenian Russian (slavonik) University	161,000,000	18,280,208			
Total	4,680,612,064	456,948,049	1,704,555,548	1,431,287,290	203,193,553

PAYMENTS MADE TO THE MINISTRY OF FINANCE BY THE FUND

According to the Agency agreement signed between the Ministry of Finance of the RoA and Armenia Renewable Resources and Energy Efficiency Fund on July 30, 2012, the amounts returned to the Ministry of Finance by the Fund, by December 31, 2018, are as follows:

	Loan amount		Interest amount	
	AMD	USD	AMD	USD
November, 2015	3,464,253	46,463	6,551,742	17,913
May, 2016	17,402,579	18,466	6,496,293	17,544
November, 2016	17,402,579	23,466	6,501,885	17,667
May, 2017	17,402,579	23,466	6,331,510	17,293
November, 2017	17,402,579	23,466	6,370,293	17,490
May, 2018	17,402,579	44,655.1	6,201,348.8	17,117
November, 2018	17,402,579	48,466	6,237,985.7	17,230.6
Total	107,879,727	228,448.1	44,691,057.5	122,254.6

The amount of 107,879,727AMD and principal amount of 228,448.1 USD was paid by the Fund by December 31, 2018, against which 44,691,057.5 AMD and 122,254.6 USD interest rate was calculated and disbursed.

Balance of funds transferred to the management of the Fund by December 31, 2018, constitutes 4,602,504.22 USD and 1,667,493,776.9 AMD.

OTHER PROJECTS

EU FOR YEREVAN. SOLAR COMMUNITY

European Union supports the implementation of “EU for Yerevan. Solar community” project implemented by Yerevan municipality.

Armenia Renewable Resources and Energy Efficiency Fund, together with the “Scientific Research Institute of Energy” CJSC, as a consortium implements the “EU for Yerevan. Solar community” project.

The objective of this project is to reduce energy consumption and associated emissions of greenhouse gases (GHGs) by implementing energy efficiency measures and using renewable energy sources in multi-apartment buildings of Yerevan.

The R2E2 fund experts conducted energy audit of the buildings, carried out evaluation and simulation/modeling of solar plants and new lighting systems in the project framework. Development and approbation of multi-apartment building selection criteria in the project scope, more than 300 site visits and selection of 50 multi apartment buildings had been performed under the first stage of the project.

Currently energy audit of the selected buildings, evaluation of technical data of common spaces and external courtyard lighting is carried out in accordance with European standards. Evaluation and simulation of the solar PV plant for each building is carried out. R2E2 Fund experts assisted Yerevan Municipality in procurement, elaboration of ToRs for PV systems and in tender design. At least 90 buildings will be selected in the course of the project implementation.

COVENANT OF MAYORS

The Director of Armenia Renewable Resources and Energy Efficiency Fund Karen Asatryan signed a Commitment Statement to join the “Covenant of Mayors in Armenia” funded by the European Union in November 23, 2018. The Commitment Statement emphasizes compliance with the principles of the Statement and provides support the sharing of knowledge and experience to Covenant signatories.



Local and regional authorities, representatives of NGOs and other organizations are Covenant signatories, that are committed to support “Covenant of Mayors” in their countries and assist the Commitment Statement signatory cities in the development, implementation and monitoring of sustainable energy and climate change mitigation initiatives. Armenia Renewable Resources and Energy Efficiency Fund is the first in the region to join the “Covenant of Mayors” initiative as an energy sector entity. Currently, there are eleven “Covenant of Mayors” signatories in six Eastern Partnership countries, including three from Armenia.



FLOATING SOLAR POWER PLANTS

Armenia Renewable Resources and Energy Efficiency Fund in partnership with TransEnergy (France) had elaborated a project on the development of floating photovoltaic plants in Armenia. The project aimed to explore the possibility of construction of floating PV plants, identify relevant sites and build an experimental floating PV plant in the country.

The project will be financed from the grant funds provided by the Ministry of Economy and Finance(France). To this end TransEnergy has already started negotiations with the Ministry of Economy and Finance of France and the Consul General of Armenia in Lyon.



GYUMRI URBAN ROADS PROJECT – FEASIBILITY STUDY FOR THE URBAN STREET LIGHTING COMPONENT OF THE PROJECT

**Envidatec GmbH– Armenia Renewable Resources and Energy Efficiency Fund
Client. European Bank for Reconstruction and Development**

The objective of this assignment was to undertake analysis and provide recommendations concerning the Project from the technical, engineering and institutional perspective, with a view towards financing the Project to produce a modern energy efficient street lighting system for the City while also achieving improved efficiencies.



R2E2 fund's contribution to the project

- Analyse institutional and economic aspects of the Project to establish the institutional feasibility and basic economic justification;
- Assess environmental and social impact of the Project.

FORTHCOMING PROJECTS

The R2E2 Fund has applied for a number of projects during 2018.

- ✓ **“Energy-efficient areas”**. Mechanisms to improve energy efficiency in public buildings and develop “Green Energy». The Eurasian Fund for Stabilization and Development is the financing institution of the project. As part of the project, it is planned to carry out energy efficiency measures in public buildings.
- ✓ **“Innovative solutions** for sustainable development goals implementation in Armenia” (SDG Lab, Phase II). The project envisaged installation of solar water heaters and PV systems for about 400 households. More than 200 households residing in non-gasified communities and having 3 or more children will be financed for the installation of solar water heaters and photovoltaic panels (0% for 8 years).
- ✓ Preliminary feasibility study in **Pushkin pass**.

Objectives:

- Increase economic attractiveness of wind energy development in Armenia,
- Reinforce export of electricity, which will contribute to the economic growth of Armenia;
- Promote the use of renewable energy sources;
- Reduce CO₂ and other harmful emissions.

PUBLIC AWARENESS CAMPAINS

One of the most important features of the Fund's activities and successes was the implementation of public awareness campaigns, through which the Fund guided its beneficiaries in a reasonable and effective manner.

In the scope of Public Awareness campaigns, the Fund had initiated and implemented various activities and events aimed at creating and strengthening public awareness towards the necessity of energy efficient improvements. For this purpose conferences, seminars and trainings were organized and held by the Fund. Representatives from the state and local government bodies, public and private organizations, financial institutions, international organizations, students, experts and other stakeholders took part in the events.

Meetings were organized for the students of universities and high schools by the Fund together with the heads of communities, non-governmental organizations. The Fund experts took part in various events organized by the entities and organizations acting in the sector, introducing EE and RE projects implemented by the Fund.

The following conferences/events were organized by the Fund in 2018

- ✓ Pre-bid conference on “Masrik-1” Solar PV plant construction was organized by the Fund on January 31. Tender procedures and schedule, main provisions of the contract to be signed between the parties, project impact mitigation mechanisms were discussed during the meeting. Representatives of the pre-qualified companies were given the opportunity to ask questions and get explanations.
- ✓ An article “Solar map of Armenia” outlined the prospects of the country's energy independence” was published in “De facto” magazine on March 3.
- ✓ In the framework of the “Bright Border” project, a charity dinner was held on March 24. The objective of the project was to install energy-efficient lamps(LED) in the houses of frontier villages.



- ✓ On May 14, with the support of the Armenia Renewable Resources and Energy Efficiency Fund



and with the financing of the United Nations Development Program, within the framework of the “Light Border” charitable project, the Fund specialists visited three border villages of Tavush Marz of the Republic of Armenia: Nerkin Tsaghkavan, Voskevan, Sarigyugh. About 672 families of three border villages were provided by 5 LED lamps. “Light Border” is a voluntary

initiative aimed at informing the population of the country about the possibility of saving through affordable and energy-efficient technologies (LED lamps) in border regions of Armenia and Artsakh in the scope of the charitable campaign. Thanks to the initiative launched in November 2016, 4343 families from 22 communities were provided with 5 LED lamps for each, 21,000 LED lamps in total.



- ✓ On may 29, R2E2 fund organaized a working discussion on the progress of the “Energy efficiency improvement project in non-gasified communities of Armenia”. Representatives of solar installer companies took part in the meeting. The purpose of the meeting was to organize the works more effectively.

- ✓ On June 20, R2E2 Fund held a seminar on the implementation of the Energy efficiency Project in non- gasified communities. During the meeting number of issues related to installation of solar photovoltaic systems, solar water heaters, as well as renovation of external lighting systems, energy-efficient heating options and overall project prospects were discussed.



- ✓ Public awareness campaigns were initiated and held by the R2E2 fund under the “EE improvement project of non-gasified communities in Armenia”. Articles on the project launch were published in electronic platforms, on the Fund’s official website, as well as on Facebook.

- ✓ On November 14-16, “Energy Week 2018 Investment Forum” was organized by Armenia Renewable Resources and Energy Efficiency Fund and British “Invest In Network”.



Representatives of more than 15 countries applied for the participation in the conference. They were interested in developing solar PV plants in Armenia.

Investors represented different

countries: USA, UK, Germany, Switzerland, Italy, Spain, Austria, China, Lebanon, UAE, Russia, Kazakhstan.

Around 300 participants, 60 foreign investors from the 32 organizations took part in the event.



- ✓ On November 28-29, the Fund organized a two-day workshop, where specialists from “AVAG Solutions” consulting firm presented tender preparation activities for the “Masrik-1” Utility-scale solar photovoltaic plant project. “AVAG Solutions” LTD is the R2E2 fund’s consulting firm assisting in tender design for the construction of “Masrik-1” utility scale solar PV plant.



- ✓ Information on the R2E2 Fund's activities is also available online on the R2E2 Fund's official pages. (Web

site, Facebook).