



Armenia Renewable Resources
and Energy Efficiency Fund

Annual Report
2019

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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 in the world 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

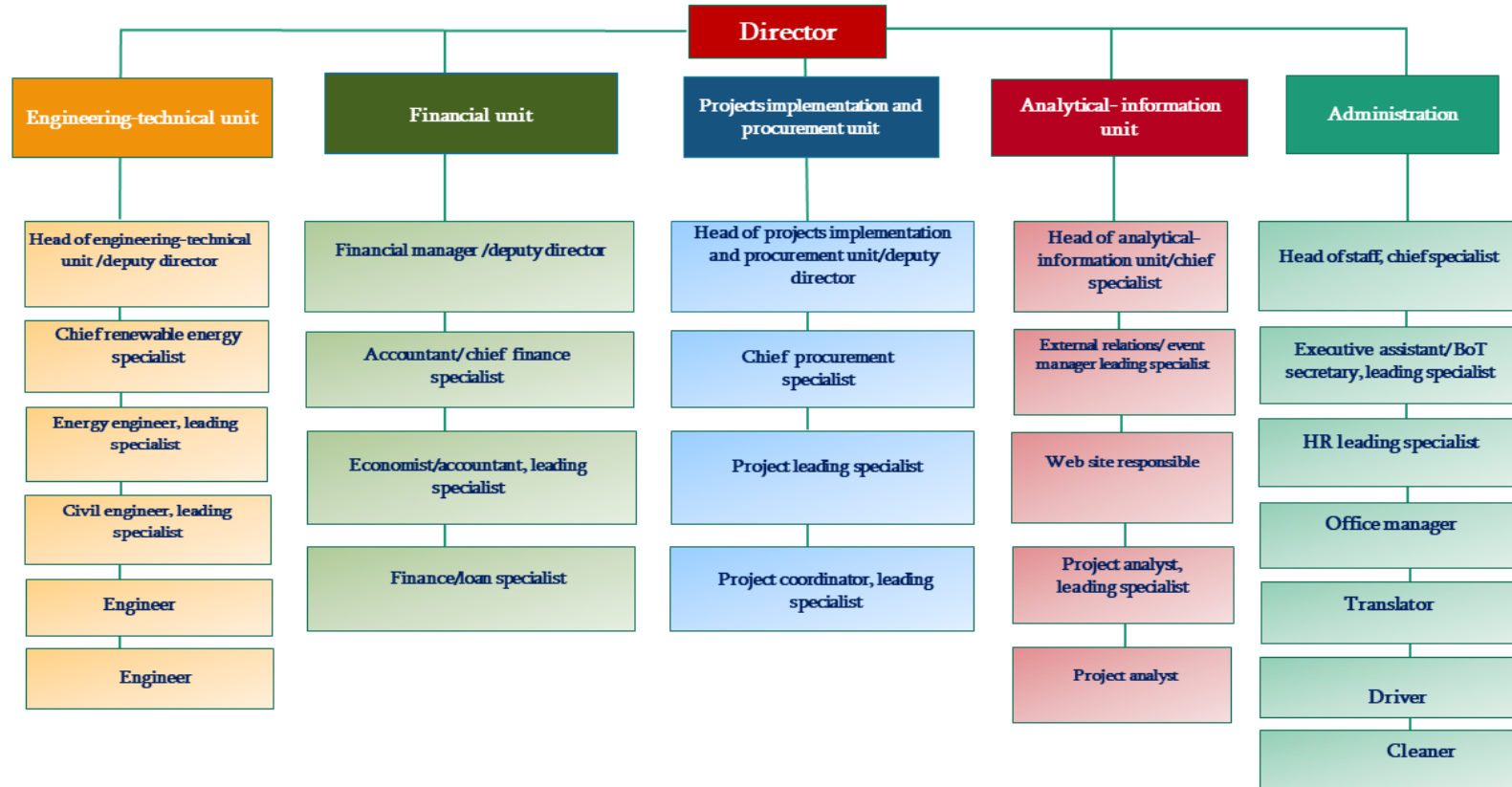
The management bodies of the Fund are the Board of Trustees and the Director of the Fund. The highest management body of the Fund is the Board of Trustees (BoT) that has endowed with the overall strategic management of the Fund in accordance with the established objectives and principles of operation. 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 BoT. Minister of Territorial Administration and Infrastructures of the RA Suren Papikyan is the head of the Board of Trustees of the Fund. The BoT has 9 members and the member list is presented below:

BoT members:

Suren Papikyan	Minister of Territorial Administration and Infrastructures of the RA
Hakob Vardanyan	Deputy Minister of Territorial Administration and Infrastructures of the RA
Oleg Aghasyan	Board Member of Central Bank of the RA
Garegin Baghramyan	President of the Public Services Regulatory Commission of the RA
Varos Simonyan	Deputy Minister of Economy of the RA
Irina Ghaplanyan	Deputy Minister of Environment of the RA
Armen Ghularyan	First Deputy of the State Urban Development Committee Under the Government of RA
Mikhail Martirosyan	President of “Armenia Energy Services Provider Association”
Astghine Pasoyan	“Foundation to Save Energy”(ESF), director

Anna Melik-Israyelyan is the secretary of the Fund's Board of Trustees. In 2019, the Fund has organized 4 meetings of BT, during which issues related to the Fund activities were discussed and approved.

Organizational Structure of the Fund



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 other educational institutions, kindergartens, hospitals, administrative buildings, cultural and residential building, outdoor lighting and others /since 2012. The main objective of the projects was to improve energy efficiency in public buildings and street lighting systems by making investments in ESMs implementation. 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 construction-assembling works were continued through the Revolving Fund until 2018. In 2019, operation and maintenance, measurement and verification measures have been

implemented in 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 /ESMs/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.

Public facilities

- 26 – Educational institutions (schools, kindergarten, university)
- 11 – Penitentiaries
- 9 – Street lighting
- 7 – Administrative (municipal, government)
- 5 – Health (hospitals, clinics)
- 5 – Cultural (theatres)
- 4 – Scientific research institution

Outcomes

- ❑ Buildings involved in the project – 180
- ❑ Total investment - 10.35mln. USD
- ❑ Payback 4-8 years, 6 years in average
- ❑ Energy saving up to 79 %, about 50%
- ❑ CO2 annual reduction- 7223 tons

Table of payments made by beneficiaries under the EE project (see page 25)

UTILITY-SCALE SOLAR POWER PROJECT

Project description

In recent years, significant reduction of the cost of solar photovoltaic (PV) technologies, 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 solar PV plants construction in Armenia with no negative impact on the end-users, 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, assessed the solar potential in the country, conducted feasibility studies for six selected sites, implemented transaction advisory services and relevant capacity building measures in the framework of the Investment Project.

Detailed solar potential assessments were carried out in four potential sites based on the data from the measurement stations installed in the project framework. The first accurate solar atlas was prepared 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 USD.

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 panels 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, 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.



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 period.

Even scrap metal that will arise in the construction stage, will be processed by a specialized company.

The project will also have a great social impact on this community. It is planned to create about 50 temporary and 250 long-term jobs in the community.

Implementation process

Construction of “Masrik-1” PV plant is projected to be completed by 2022. 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 RA granted a license for the solar plant construction.

CONTINUATION OF THE SOLAR PV PROJECT

In 2019, the Fund with the support of the GoA, requested EBRD to assist in the second phase of the Solar Project. After having received a positive response, R2E2 Fund together with the EBRD, conducted an international tender for the transaction advisory services. “Tractebel” was selected in the tender and EBRD provided about 1 million euros. The Transaction Consultant will review the procurement package for the selection of an international investor. In the scope of the GSA / Government Support Agreement/ the Fund will select an international investor for the construction of 5 (or more) solar plants (with a total capacity of 100-120 MW).

In the project framework, the previous potential sites and newly identified areas were measured and investigated (currently about 7 sites, 380 ha in total). The local importance and accessibility of the territories were evaluated in collaboration with the communities and the State Committee of the Cadastre.

Several meetings and discussions were held with the stakeholders of the energy sector: “ENA” CJSC, “HVEN” CJSC, “EPSO” CJSC, PSRC and others. The legislative framework related to the Project implementation, as well as the experience gained during the construction of the “Masrik-1” solar plant were studied in order to contribute to the successful implementation of this project.

The Fund is responsible for the coordination of works and selection of the international investor according to the package developed by the transaction consultant. It is planned to announce an international tender by the end of 2020.

FLOATING SOLAR POWER PLANTS

Armenia Renewable Resources and Energy Efficiency Fund in partnership with TransEnergy (France) has prepared a draft project on the development of floating solar plants and submitted for approval to the Ministry of Economy and Finance (France) in order to receive a Grant. The project aimed to study and identify relevant sites and build a pilot 150 kW floating solar plant. The cost of the floating solar PV plant project is 750,000 Euros (grant). The project was approved in December, 2019.

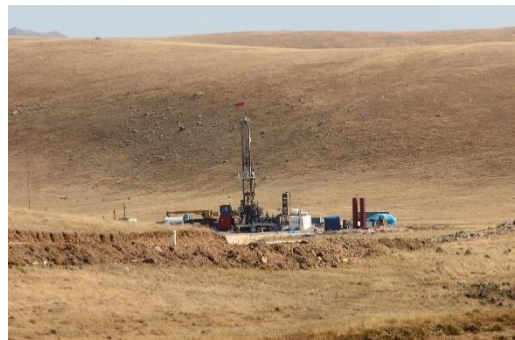
During 2019, the Fund initiated negotiations with the Asian Development Bank (ADB) to discuss the possibility of financing of relevant studies under the project and attract international investors for the plant construction. The ADB has already agreed to provide a grant for the transaction advisory services of the project.

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 the Republic of Armenia for the Geothermal Exploratory Drilling Project. The Government of Armenia financed about 20 percent of project costs.



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

platform, including technical supervision, preparation 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 evaluate the production capacity and the cost of the conceptual 10MV geothermal plant construction.

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 future cooperation opportunities. "SUMEC GEOPower AG" specialists were provided with the results of the tests of two narrow wells of Karkar site.

A joint discussion between the parties was held on march 15. On the part of SUMEC GEOPower AG, a draft Memorandum of understanding was prepared and submitted to the Ministry of energy and natural resources for consideration, to which the specialists of the Ministry gave relevant comments.

On December 12, 2009 the Fund signed a Memorandum of Understanding with **Washington Capital Global Finance Inc.** It was expected to study geothermal plant construction potential in Armenia.

In 2019, the R2E2 Fund and EBRD requested the SREP Commission to allocate the amounts accumulated and saved under the Geothermal Exploratory Drilling Project (US \$ 2.25 million) to the EBRD's Solar heat pump Project. The amounts will be used to soften EBRD loans. The positive decision of the SREP Commission was made at the end of 2019. R2E2 Fund will participate in the project implementation process (direct contract for 75,000 USD).

COMMUNITY ENERGY EFFICIENCY IMPROVEMENT PROJECT

Community Energy Efficiency improvement Project implemented jointly with 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 the reduction of a monetary claim (factoring) to the



communities. The objective of the project is to reduce inefficient energy consumption and increase the use of clean, efficient, safe and affordable power technologies. Energy saving measures implemented in the communities will be recouped with additional funds from 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 completed EE projects.

Energy Efficiency projects have been already implemented in ten communities- Kasakh(2018), Nor Yerznka(2018), Gandzak(2018), Akunk(2018), Amberd(2018), Abovyan(2018), Amasia (2018), Talin(2019), Aramus(2019) and Vanashen(2019). Solar water heaters and solar PV systems were installed and street lighting systems were upgraded in the project framework.

Summary of implemented activities in 2019

Community	Solar PV system, kW	Thermosyfon solar water heater, quantity	LED lamps	Investment, AMD
Talin	15	4	450	21,943,720
Aramus	25	-	-	18,400,000
Vanashen	40	-	187	23,985,000
Total	40	4	450	64,328,720

The investment amount was 64,328,000 AMD, annual energy saving - 444,405 kWh, annual CO2 emission reduction - 196.9 tons.

INNOVATIVE SOLUTIONS FOR SUSTAINABLE DEVELOPMENT GOALS (SDG) IMPLEMENTATION IN ARMENIA

The R2E2 Fund, the National Innovation Centre for the Sustainable Development Goals (SDG LAB), with the UNDP assistance financed implementation of the solar systems installation project in non-gasified communities of Armenia, which was launched in 2019.

It was projected to install solar water heaters and PV systems for about 400 households residing in non-gasified communities of Gegharkunik and Shirak regions of the RA. Loans were provided by the R2E2 Fund's partner commercial banks: ACBA-CREDIT AGRICOLE BANK CJSC and Global Credit UCO CJSC.

For the first 100 families with 3 or more children who applied to the project for the installation of solar water heaters or photovoltaic systems, the Bank loan interest up to



120,000 AMD was reimbursed from the project funds.

187 solar systems were installed (79,736,712 AMD in total) under the 1st stage of the project, (181 - solar water heaters and 6 (19.89 kW) - solar PV systems) , 11,813,725 AMD was reimbursed to families with 3 or more children.

Given the high demand for the project, the Fund has prepared a request to ensure the continuation of the project. Negotiations on possible financial sources are under way.

GREEN ECONOMY FINANCING FACILITY PROJECT

EBRD is launching a new Green Economy Financing Facility project co-funded by the Green Climate Fund.

The objective of the project is to finance "green investments" in businesses. Loans are provided through four project partner financial institutions of the RA.

R2E2 fund is responsible for the energy audit and certification of implemented activities in the scope of the agreement signed with IPC (Internationale Projekt Consult GmgH) in 13.02.2018.

In 2019, specialists from the Fund studied and certified installation of 46 PV plants. Total capacity of solar PV plants is 8.355 kWh, which will save about 13 million kWh of electricity per year. Investments amounted about 3,770,000 USD, while CO emissions will decrease by about 6,000 tons.

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

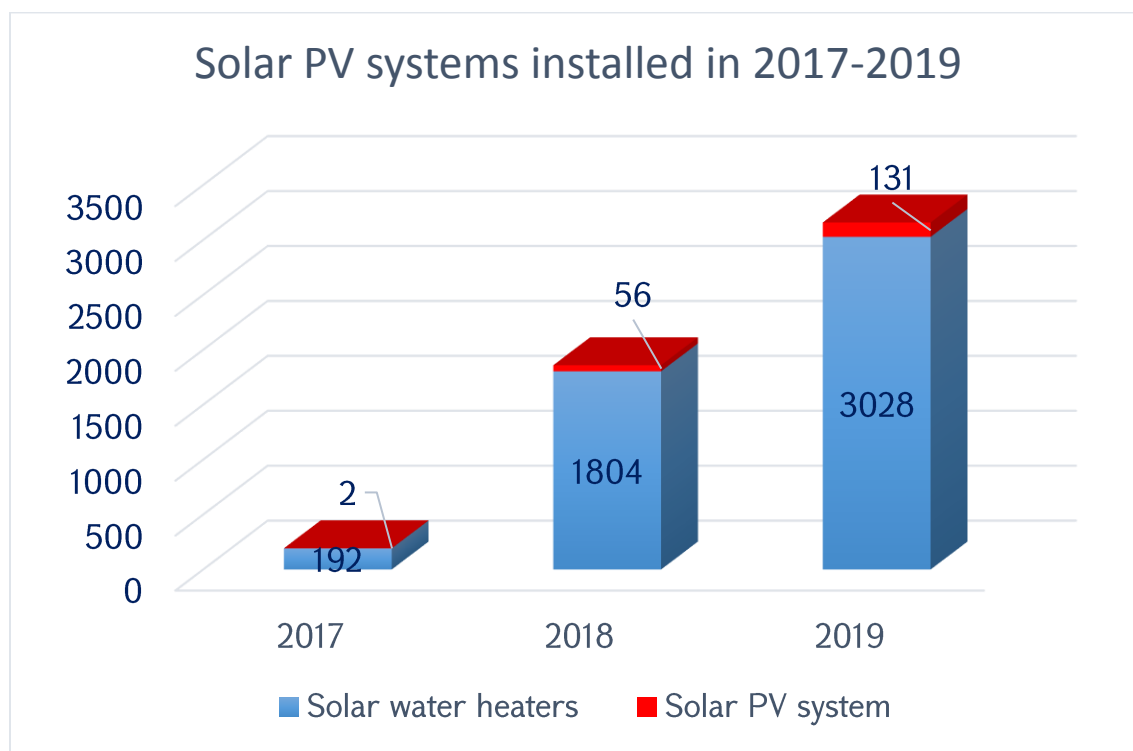
In 2017, R2E2 Fund, "AGBA Leasing" CO CJSC and Global Credit UCO CJSC signed an agreement for the implementation of Energy Efficiency improvement project of legal entities and individuals of non-gasified communities in Armenia.

The objective of the project was to finance investments in clean energy sector through financial institutions. It aimed to improve energy efficiency in nearly 280 communities of Armenia and promoting investments for clean energy development. About 37 thousand households are not gasified in Armenia. They are not included in the gasification projects due to their economic inefficiency.



In 2019, the Fund's specialists gave a positive conclusion for the financial support to install 1299 solar water heaters and 75 solar

photovoltaic systems. CO2 emissions make 1687 tons. The project was implemented jointly with the partner financial institutions through refinancing of targeted loans.



“GREEN ENERGY DEVELOPMENT MECHANISMS AND ENERGY EFFICIENCY IMPROVEMENT IN PUBLIC BUILDINGS” EURASIAN FUND FOR STABILIZATION AND DEVELOPMENT (EFSD)

R2E2 fund had applied for the grant for the implementation of the “Green energy development mechanisms and energy efficiency improvement in public buildings” project.

Project outcomes:

- 50% energy efficiency increase in 20 public buildings (school, kindergarten, hospital), which will result in 3,000 MWh energy savings per year and reduce 700 tons of carbon dioxide emission annually.
- Formation and development of energy services infrastructures .

- Raising awareness on the benefits of energy efficiency and mechanisms to attract EE investments among representatives of administrative bodies of at least 20 regions.

The project cost is \$ 1.7 million USD, which is provided as a grant. Representatives of the Project Steering Committee visited the Fund in 2019 in order to get acquainted with the activities and capacities of the Fund, as well as discuss the project implementation mechanisms. After the visit, the EFSD Board decided to approve the project (2019).The project is scheduled to start in april 2020.

Payback of ESMs investments made from additional funds generated in the result of energy efficiency, which means that the project does not impose an additional burden on the community budget.

EU4ENERGY EFFICIENCY PROJECT

The objective of the project is to improve energy efficiency in residential buildings, in particular in non-gasified communities resided with vulnerable households having low-income, as well as in multi-apartment residential buildings and public facilities. R2E2 Fund will act as a one stop shop and will be responsible for boosting energy efficiency investments in public facilities and multi-apartment buildings:

- ❖ Technical support and de-risk,
- ❖ Technical assistance to project design,
- ❖ Competitive procurement procedures,
- ❖ Construction control,
- ❖ Commissioning,
- ❖ Technical monitoring and control over energy savings and financial proceeds.

The project costs \$ 3.7 million. The project was approved in 2019. The launch is scheduled at the beginning of 2020.

DE-RISKING AND SCALING-UP INVESTMENT IN ENERGY EFFICIENT BUILDING RETROFITS (UNDP PROJECT)

The project envisages implementation of energy-saving measures in 290 multi-apartment buildings in phases until mid-2023.

The Fund is selected as a project implementation agency in accordance with the international agreements, design documents and the Operational Manual of the project.

In 2019, the Fund began negotiations with UNDP to develop and implement project implementation mechanisms.

R2E2 fund shall:

- Attract funding from various sources, including co-financing of beneficiaries,
- Secure funding of local commercial banks with UNDP support,
- Select a beneficiary MAB with the support of UNDP,
- Ensure that mandatory obligations of beneficiaries for the subproject implementation are met.
- Procure: (i) energy saving measures, (ii) Energy audit, (iii) engineering design/planning, (iv) construction and installation, (v) technical supervision and other services to be implemented by the contractor relevant to **OM**.
- Quality control to ensure proper implementation of energy saving measures (ESMs).
- Maintain a proper financial management system, etc.



The project launch is scheduled at the beginning of 2020.

“RENEWABLE ENERGY DEVELOPMENT PROJECT”

The KfW and GAF /German-Armenian Fund/ RE Programme launched in 2018. In order to stimulate the development of RE sources, financial support was provided for the construction of 150-500 kW solar PV plants for their own needs.

In 2019, in the scope of the agreements concluded between the companies under the project (Hrazdan Cement Corporation LLC and Khtchakar-Musa LLC) and R2E2 Fund, the Fund's specialists studied the submitted documents and the site for the solar PV plant construction, and provided reports with relevant conclusions and recommendations.

“EU FOR YEREVAN. SOLAR COMMUNITY”

European Union supports "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.

R2E2 fund joined the project implementation in 2018. 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.

In 2019, energy audit of 50 multi apartment buildings selected under the first stage of the project was conducted in the project framework. Assessment of technical characteristics of lighting systems of inside area and external courtyard was carried out in accordance with the European standards. Estimation and simulation of solar PV plant capacity for each building was carried out. Terms of References were prepared for the solar plant design, external and courtyard area lighting systems, and in case of improvement, verification works and advisory services will be carried out.

R2E2 Fund also assisted Yerevan Municipality in organization of project related procurement procedures and tender design. At least 90 buildings will be selected in the course of the project implementation.

It is expected to install about 350 kW solar PV plants with the estimated cost of 260 million AMD for the selected 50 multi-apartment buildings. The plants will generate about 520,000 kWh electricity per year, which will reduce CO2 emissions by 220 tons.

ACCREDITATION TO THE GREEN CLIMATE FUND

In 2019 the R2E2 fund has developed a funding proposal to be considered by the GCF panel. R2E2 fund has gone the Stage 1 to the Green Climate Fund “accreditation”.

After accreditation completion, the Fund will be able to implement up to 50 million USD projects, as well as provide sub-grants.

Accreditation procedure is expected to be completed by 2020.

In 2019, R2E2 fund has applied to the Ministry of Nature Protection of the RA, which is the National Designated Authority of Green Climate Fund in Armenia, for the technical assistance in the amount of 300,000 USD. Technical assistance is approved and will be provided at the beginning of 2020.

ENERGY AUDIT IN THE MEDICAL FACILITIES OF THE RA MINISTRY OF HEALTH

One of the main missions of the R2E2 Fund is the implementation of ESMs in state and public buildings. Energy audit contracts were signed with 10 major medical institutions of the RA Ministry of Health in 2019.

In 2019, the Fund experts conducted building and area measurements and data collection, evaluation of boiler room and power consumption of main equipment, as well as cost estimate analysis. According to the results of the energy audit, the



volume of proposed energy-saving measures (replacement of external doors and windows, thermal insulation of external walls, installation of LED lamps and bulbs, etc) was estimated at about 1.417 billion AMD, which will save about 5.561 million kWh of energy annually and reduce CO2 emissions by 2.266 tons.

By the request of the Ministry of Health, the Fund engineers prepared preliminary solar plant designs of the selected institutions.

ENERGY AUDIT OF PRE-SCHOOL EDUCATIONAL INSTITUTIONS OF YEREVAN MUNICIPALITY

R2E2 fund conducted energy audit in 6 kindergartens (N 3, N17, N 94, N 128, N 140, N 142) of Yerevan in the scope of the contract signed between the UNDP and R2E2 Fund in 2019. According to the results of energy audit, the volume of proposed energy-saving measures (replacement of external doors and windows, thermal insulation of external walls, solar PV plant installation, renovation of lighting system with LED lamps and bulbs, etc), was about 351 million AMD, which will save about 1,318 million kWh of energy annually and reduce CO2 emissions by 357 tons.



"ENERGY AUDIT FOR 5 MW SOLAR PV PLANT CONSTRUCTION"

Within the framework of the Service Agreement signed between the Fund and “Clean Energy” LLC, an energy audit was conducted for the construction of 5 MW industrial scale “Vayots Arev-1” solar PV plant. It included:

- **Study of documents provided by “Clean Energy” LLC,**
- **Site visit and area assessment,**
- **Solar potential evaluation and estimation of electricity to be produced,**
- **Calculation of reasonable investments,**
- **Estimation of financial and economic indicators,**
- **Preliminary assessment of the expected outcomes of the project**
- **Preparation of relevant reports and submission to the Client.**

About 3.55 million USD is expected to be invested for the construction of “Vayots Arev-1” solar PV plant. Electricity production will be 11.5 million kWh annually, and reduction of CO2 emissions - about 5129 tons.

PRELIMINARY ASSESSMENT OF SUBVENTION PROJECTS FOR 2018-2019 AIMED AT THE DEVELOPMENT OF ECONOMIC AND SOCIAL INFRASTRUCTURES OF THE RA COMMUNITIES

R2E2 Fund experts visited 46 communities of 8 regions of the country to assess the activities performed in the framework of subvention project during 2018, which was aimed at the development of economic and social infrastructures of the RA communities. Based on the outcomes of the studies and on-site measurements, relevant assessments were carried out. Under the preliminary assessment of subvention projects 2019, the Fund specialists studied design and estimate documents of the works carried out in 125 communities of 9 regions of the RA, and submitted relevant recommendations and proposals. The projects include renovation of artificial street lighting systems and installation of solar PV panels.

More than 67 visits were organized in the scope of the project.

EU AND PFI FORMAT HIGH LEVEL ENERGY EFFICIENCY INITIATIVE

In the framework of EU and PFI format high level Energy Efficiency Initiative it is planned to implement improvements and investments in energy efficiency sector, which is also reflected in the five-year program of the Government of Armenia for 2019-2023.

R2E2 Fund participated in the EU High Level Initiative and stressed the need to invest in EE sector.

The Fund also met with the Participating Financial Institutions involved in the EU initiative: the World Bank (WB), the European Investment Bank (EIB), the French Development Agency (FDA), the European Bank for Reconstruction and Development (EBRD) and discussed financial instruments to invest in EE and RE projects, difficulties of implementing projects in multi-apartment buildings, and considered possible mechanisms of projects implementation.

The Fund presented its proposals and supplements to the documents prepared by the EU in the scope of the conference of EU high-level initiative.

It should be noted that all the proposals and recommendations are in line with the mission of the R2E2 Fund, in particular:

- R2E2 Fund has so far implemented dozens of successful projects, which were designed to develop financial instruments for financing ESMs implementation and electricity generation based on RE sources. An important active instrument of the Fund is the Revolving fund through which number of projects have been financed aimed at improving energy efficiency in public and residential buildings and utilization of renewable energy sources.
- The Fund conducted energy audit of typical multi-apartment buildings and proposed possible energy saving measures/ESM/ to be carried out. The Fund intends to allocate EU funds for the implementation of the following EE projects.
- SMs in public facilities: EE project implemented in 2012-2016 and the model applied (payback from reduced power consumption) revealed that the project is functioning, effective and even replicable in different countries. Given the fact that there are many public buildings (schools, kindergartens, hospitals, etc.) in the country that need energy efficiency, it will be possible to carry out ESMs in about 200 public buildings over a five-year period, which will cost about 15 million USD. The expected outcome of the project is about 40-50% energy efficiency, energy saving in about 2.5 million USD.
- Community EE project. The Fund implements EE and RE projects in communities of the RA. The payback is made from the additional funds generated in the result of energy saving, so that the project implementation will not an additional burden on the community budget. **The project financial model is successful and may be expanded with the EU support. The project can be implemented in 100 communities with a cost of about 5 million USD.**

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 Territorial Administration and Infrastructures, 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. Project financial statements include information on the financial aspects of the projects. 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 by 31.12.2019

	Facilities of public importance	Investments /AMD/	Energy service fee	Paid investment amount	Total paid service fee
1	Ararat basic school N4 SNCO, Ararat province of the RA	19,550,000	2,219,740	19,550,000	1,766,709
2	Mets Masrik secondary school SNCO, Gegharkunik province of the RA	23,000,000	2,323,958	17,968,750	2,208,659
3	Masis basic school N2 SNCO, Ararat province of the RA	29,000,000	3,292,708	29,000,000	2,772,094
4	Gavar basic school N5 SNCO, Gegharkunik province of the RA	19,000,000	2,394,792	11,716,667	2,038,212
5	Vayk city street lighting, Vayots Dzor province of the RA	13,000,000	1,313,542	9,750,000	1,228,906
6	Vayk city kindergarten N3 SNCO	10,000,000	1,260,417	6,000,000	1,056,250
7	Masis Medical Center CJSC, Ararat province of the RA	87,164,998	10,291,334	44,588,767	9,108,561

8	Dilijan street lighting, Tavoush province of the RA	15,796,540	1,212,104	15,575,151	1,211,643
9	Ltchashen community secondary school SNCO, Gegharkunik province of the RA	20,800,000	2,361,667	13,674,074	2,079,599
10	Yerevan school N 21 after A. Shirvanzade SNCO	25,700,000	2,918,021	25,700,000	2,492,488
11	Yerevan State Institute of Theatre and Cinema SNCO	48,000,000	5,450,000	31,555,528	4,799,074
12	National Archive of Armenia SNCO	36,500,000	4,144,271	22,981,481	3,566,917
13	Armenia State Economic University SNCO	95,890,080	8,490,268	71,917,560	7,940,897
14	National Polytechnic University of Armenia Foundation	164,243,000	18,648,424	77,559,194	13,411,277
15	Yerevan basic school N 163 SNCO	19,950,000	1,766,406	14,012,232	1,605,599
16	Ararat basic school N1 SNCO	25,000,000	2,526,042	25,000,000	1,809,409
17	Yerevan basic school N 187	30,288,831	2,681,824	20,913,697	2,418,148
18	Dilijan basic school N 2	21,373,800	2,159,644	12,913,338	1,815,938
19	Scientific Center of Zoology and Hydrology of NAS RA	24,687,500	2,526,042	13,489,583	2,012,804
20	Yerevan basic school N61	19,000,000	1,919,792	11,281,250	1,598,177
21	Institute of Molecular Biology of NAS RA	115,000,000	13,865,885	49,659,091	8,897,254
22	Hrazdan city street lighting, Kotayk province of the RA	49,500,000	5,001,563	29,390,625	4,163,672
23	Artashat municipality building, Ararat province of the RA	30,000,000	3,031,250	17,812,503	2,523,438

24	Kapan city street lighting, Syunik province of the RA	27,000,000	2,728,125	15,750,000	2,247,656
25	Echmiadzin city "Vagharshapat Hospital" CJSC, Armavir province of the RA	127,000,000	14,419,792	55,268,519	9,787,133
26	Vagharshapat Regional Pedagogical and Psychological Support Center SNCO	35,800,000	4,064,792	21,268,004	3,001,289
27	“National Centre for Mental Health Care” CJSC, Ministry of Health of the RA	139,000,000	14,044,792	72,100,182	10,783,963
28	Yerevan school N 44 after Hrant Dink	45,000,000	4,546,875	26,250,000	3,746,094
29	Ashtarak city Medical Center, Aragatsotn province of the RA	20,000,000	1,520,833	14,722,222	1,410,880
30	Artik street lighting, Shirak province of the RA	17,800,000	1,798,542	10,925,642	1,337,704
31	Ijevan street lighting, Tavush province of the RA	19,883,000	2,009,011	11,563,117	1,705,675
32	Sisian street lighting, Syunik province of the RA	25,500,000	2,576,563	14,609,375	2,100,098
33	Nigavan secondary school, Aragatsotn province of the RA	13,000,000	1,476,042	5,377,915	1,156,308
34	Yerevan school N 66	16,150,000	1,429,948	10,958,929	1,278,542
35	State Chamber Music Theater	12,259,790	1,555,354	5,164,290	1,037,974
36	Jermuk city street lighting, Vayots Dzor province of the RA	25,700,000	2,275,521	16,215,476	1,959,370

37	"High Voltage Electric Networks" CJSC / Southern Branch / MEINR, RA	23,000,000	2,036,458	13,690,476	1,697,049
38	"High Voltage Electric Networks" CJSC / Goris, Zangezur Branches / MEINR, RA /	27,600,000	3,133,750	13,544,444	2,313,843
39	Akhuryan community/street lighting, Shirak province of the RA	18,040,000	1,597,292	11,167,619	1,361,054
40	Vagharshapat basic school N8 after G. Nzjeh SNCO, Armavir province of the RA	18,524,000	1,408,596	13,121,167	1,284,781
41	"High Voltage Electric Networks" CJSC/Eastern Branch/MEINR, RA	26,900,000	2,045,521	18,306,938	1,830,694
42	"Nubarashen" penitentiary	466,244,100	47,110,081	165,843,800	18,222,277
43	"Abovyan" penitentiary	221,500,000	22,380,729	73,257,813	8,348,512
44	"Artik" penitentiary	74,558,879	7,033,101	22,070,446	2,814,957
45	"Hospital for convicts" penitentiary	229,000,000	20,276,042	83,151,786	8,117,502
46	"Vardashen" penitentiary "Erebuni" branch	190,392,300	15,010,625	54,511,045	5,177,271
47	"Kosh" penitentiary	333,948,000	29,568,313	120,822,104	11,837,658
48	"Vardashen" penitentiary	110,300,000	8,387,396	39,415,625	3,800,663
49	"Hrazdan" penitentiary	47,822,400	5,518,126	18,947,398	2,659,066

50	National Library of Armenia	71,000,000	8,061,458	30,240,741	5,386,632
51	"Yerevan State Olympic College of Olympic Reserve" SNCO	26,973,000	3,065,625	11,223,000	2,015,625
52	"Yerevan State Puppet Theater after H.Tumanyan" SNCO	32,900,000	3,735,521	14,317,593	2,535,407
53	Institute of Physical Researches SNCO of the National Academy of Sciences of the Republic of Armenia	42,800,000	4,859,583	18,229,630	3,247,153
54	"Sevan" penitentiary	316,545,519	24,155,192	108,656,108	9,667,974
55	"The National Academy of Sciences of the Republic of Armenia. Institute of Physiology after Orbeli" SNCO	30,000,000	2,281,250	17,083,333	1,850,694
56	Margahovit secondary school after H. Toumanyant SNCO, Lori province of the RA	25,000,000	2,838,542	9,490,417	1,739,969
57	Spitak municipality, Lori province of the RA	29,900,000	3,021,146	11,835,417	1,910,927
58	"Procurement Support Center" SNCO	13,000,000	988,542	13,000,000	246,797
59	"Vanadzor" penitentiary	88,612,327	8,953,537	27,806,785	3,339,869
60	Hrazdan municipality (Hrazdan municipality building, Hrazdan Preschool N12 and 13 SNCO)	236,600,000	23,906,458	86,260,417	14,197,027
61	"Yerevan State College of Choreography" SNCO	24,000,000	2,725,000	8,000,000	1,508,333

62	"Kanakaner-Zeytun" MC CJSC	148,404,000	16,917,708	35,274,370	7,136,709
63	"Armavir" penitentiary	179,510,000	11,406,365	71,804,000	7,255,196
64	Armenian-Russian University	161,000,000	18,280,208	13,106,099	2,906,944
	Total	4,680,612,064	456,948,049	1,996,361,729	258,488,994

PAYMENTS MADE TO THE MINISTRY OF FINANCE BY THE FUND

According to the Agency agreement signed between the Ministry of Finance of the RA 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, 2019, are as follows:

	Loan amount		Interest	
	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
May, 2019	17,402,579	48,466	6,071,544.6	16,769.2
November, 2019	17,402,579	48,466	6,106,036	16,861
Total	142,684,885	325,380	56,868,638	155,885

The amount of **142,684,885** AMD and principal amount of **325,380** USD was paid by the Fund by December 31, 2019, against which **56,868,638** AMD and **155,885** USD interest rate was calculated and disbursed.

Balance of Funds transferred to the management of the Fund by December 31, 2019, constitutes **4,412,451** USD and **1,597,883,461** AMD.

LOANS PROVIDED TO PFI UNDER THE ENERGY EFFICIENCY IMPROVEMENT PROJECT FOR NON-GASIFIED COMMUNITIES IN ARMENIA AND THE COMMUNITY ENERGY EFFICIENCY PROJECT

PFI	Loan amount /AMD/	Loan interest rate	Loan period (month)
GLOBAL CREDIT UCO CJSC	520,745	3-4 %	96
ACBA LEASING CO CJSC	394,118	3-4 %	24-96
ACBA-CREDIT AGRICOLE BANK CJSC	191,810	4-5%	36-96
TOTAL	1,106,674	-	-

ENERGY EFFICIENCY IMPROVEMENT PROJECT FOR NON-GASIFIED COMMUNITIES OF SHIRAK AND GEGHARKUNIK REGIONS OF THE RA UNDER THE “INNOVATIVE SOLUTIONS FOR THE SDG IMPLEMENTATION” PROJECT

Name	Amount/AMD/
GLOBAL CREDIT UCO CJSC	38,580
ACBA LEASING CO CJSC	6,490
ACBA-CREDIT AGRICOLE BANK CJSC	34,664
SUBSIDIZATION OF INTEREST OF HOUSEHOLDS WITH 3 OR MORE CHILDREN	11,814

PUBLIC AWARENESS CAMPAINS

One of the important factors 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 the 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. 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 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.

EVENTS ORGANIZED BY THE FUND IN 2019

➤ On January 30, R2E2 Fund hosted the stakeholders of “Masrik-1” solar plant and issues relating to the construction of the “Masrik-1” solar plant were discussed in the course of the meeting.

➤ On February 18, the Fund specialists held a public discussion in Eghnik community of Aragatsotnisk region. The aim of the visit was to introduce the local population with the investment project of the construction of "Masrik-1" industrial-scale solar PV plant.

➤ On March 27, R2E2 Fund hosted Uzbek experts, including architects, designers, and engineers specializing in EE sector. Uzbek partners were introduced to the experience of Armenian specialists in the following areas: design of energy efficient buildings, development and application of legislative-regulatory documents related to energy efficiency sector, production of thermal insulation materials.



➤ On April 17, the R2E2 Fund organized a training about the precise arrangements and directions in solar systems installation. The purpose of the training was to help the beneficiaries avoid common mistakes, identify deficiencies frequently encountered in the installation of solar systems, prepare Terms of References/ToR/ correctly, organize and hold tenders and works. International organizations, solar companies and financial institutions took part in the training.



➤ On May 14, the Fund organized a regular course on the purchase arrangements of solar systems. The discussion was attended by representatives of the state administration, local government and non-profit organizations.

➤ On May 31, the R2E2 Fund together with the “Women in climate and energy” organized a seminar for the members of the organization within the framework of "Dialogue on energy and climate change" program. The purpose of the meeting was to introduce the participants with the activities of the Fund, main actors of the energy market, as well as with the use of solar water heaters, photovoltaic systems and thermal insulation materials.



➤ On June 15-16, Armenia Renewable Resources and Energy Efficiency Fund (R2E2) organized an energy efficiency festival called “Together Brighter” in Vanadzor under the auspices of the RA Ministry of Territorial administration and infrastructure jointly with the Regional project “Regulatory Framework to Promote Energy Efficiency in the Countries of Eurasian Economic Union” and the United Nations Development Program (UNDP). “Together Brighter” festival aims to inform,



create and strengthen a knowledge about the need of energy efficiency and renewable energy sources among the population.

➤ On August 5, R2E2 Fund organized a meeting with the representatives of solar systems installation companies in the scope of the Innovative Solutions for SDG implementation project. The purpose of the meeting was to discuss the progress and schedule of the project works with representatives of installation companies.



➤ On August 12, a working meeting was held in Gegharkunik regional administration office in the framework of Innovative solutions of SDG implementation in Armenia project. Deputy Governor Narek Grigoryan, regional administration officers and heads of communities took part at the meeting. Director of the R2E2 fund Karen Asatryan presented the activities of the Fund, in particular the “Innovative solutions for the SDG implementation in Armenia” project and the procedures of providing with concessional loans for the installation of solar water heaters and PV systems to families with three or more children residing in non-gasified communities of Gegharkunik region.

➤ On August 14, a working meeting was held in Shirak regional administration in the framework of Innovative solutions of SDG implementation in Armenia project. The chief of staff of Shirak region administration Karen Badishyan, administration officers and heads of communities took part at the meeting. The purpose of the meeting was to introduce the project in detail and the procedures of providing with concessional loans for the installation of solar water heaters and PV systems to families with three or more children residing in non-gasified communities of Shirak region.



number of countries and expressed their readiness to contribute to the solar power development in Armenia.

➤ On November 22, the Fund organized a seminar in Tsakhkadzor to sum up the SDG implementation project outcomes in Armenia. During the seminar, the participants discussed the works carried out in Shirak and Gegharkunik regions of Armenia, issues related to refinancing through the banks, solar system installations completed by the relevant companies, as well as procedures of interest refinancing of loans provided to families with three or more children, etc.



➤ On December 3, a working discussion was held at the R2E2 Fund office with the heads of "Health PIU" and Medical Centers. Energy audit outcomes and ESMs were presented during the discussion, introducing prevailing ESMs to be implemented and available financial sources.

➤ On December 10, director of the R2E2 Fund Karen Asatryan and CEO of "Armenian Leasing company" UCO CJSC Arsen Bazikyan signed a Memorandum on refinancing of loans. The memorandum envisages implementation of EE and RE projects, which will contribute to the development of energy sector.

➤ On December 12, Karen Asatryan, Director of the R2E2 Fund and Serzh Gharibian, President of the Washington Capital Global Finance, INC. signed a Memorandum of Understanding. The MoU envisages studying a geothermal plant construction potential in Armenia.



Information on the R2E2 Fund's activities is also available on the R2E2 Fund's official pages. (Web site, Facebook).