

Appendix

RoA Government Decree N 2020

# **The RoA Energy Sector Development Strategic Program to 2040**

**YEREVAN 2020**

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**VISION OF THE  
ROA  
GOVERNMENT  
FOR ENERGY  
SECTOR  
DEVELOPMENT**

- Free, competitive and non-discriminatory,
- Inclusive and diversified, energy independence at the possibly highest level,
- Clean and energy efficient: sustainable developing,
- Of regional significance,
- Reliable and safe,
- Digitized and Innovated, science-based, high technological,
- Foreseeable and transparent,
- Accessible and fair to everyone, sufficiently available to the vulnerable group, as well as attractive to investors

This is the RoA Government's vision of the Energy Sector development.

This vision will be a basis for making all energy-related decisions, building relationships with neighboring countries regarding the energy sector, integrating into more global electricity markets and for further developing relationships with key partners.

The RoA Government shall implement the balanced social, environmental and economic policy in the energy sector, involving all the stakeholders to the most extent for achieving the objectives of this Strategic Program.

This Program has served as a basis for the development of the Action Plan that ensures the implementation of the energy sector development strategic program, wherein a set of separated target indicators and list of actions have been determined for the period until 2040 to ensure the implementation of this Strategic Program (Appendix).

**MAIN  
PRIORITIES FOR  
THE ENERGY  
SECTOR  
DEVELOPMENT**

**Maximum use of renewable energy potential**

The maximum use of renewable energy potential, considering it as a part of the Least Cost Energy Development Plan, is one of the key priorities of the Energy Sector development.

Considering the available domestic resources and development tendencies of this technology throughout the world, the construction of solar power plants, will prevail over the rest of types, given the limitations of the system reliability and safety indicators.

**Possible realization of energy- efficiency potential**

All the sectors of the economy of Armenia have great potential in the energy efficiency including transport, industry, multi-apartment buildings, public sector budgeting, fuel system, etc. The Government of the Republic of Armenia will be consistent in terms of creating a new culture of energy efficiency, therefore will implement institutional reforms by promoting investments in the alternative energy sources, that may result in energy efficiency, security, environmental regulation and promotion of energy efficiency in all the spheres of economy.

**Life extension of the Armenian nuclear power plant**

The extension of operational lifetime of ANPP after 2026 is on the main priorities of the RoA Government and the construction of a new nuclear power plant upon the expiration of the term is the main objective. The availability of the nuclear power plant in the power system will allow to diversify more the energy resources, not to increase reliance on the imported natural gas as well as the volume of emissions.

**North- South Road Corridor construction program**

The full implementation of the North- South Road Corridor construction program, its Armenia-Iran and Armenia-Georgia power transmission lines and infrastructures play a decisive role in terms of having power system of regional significance.

This program provides an opportunity to Armenia to be a bridge for being engaged into the more global electricity markets as well as for using opportunities of mutually beneficial electricity trade with Iran and Georgia. Meanwhile the full implementation of the Program will increase the reliability and security of the Armenia's power system.

### **Gradual liberalization of the electricity market**

The current model of Armenia's electricity market has been applied since 2004. Electricity markets of a number of developed and developing countries are already liberalized. Armenia has also commenced this process and will transit to a new liberalized model in the coming years which will still be a subject to limited competition but will have precise milestones towards the full liberalization given the creation process of EAEU Common energy market and the EU Comprehensive and Enhanced Partnership Agreement.

## **DEVELOPMENT OF GENERATING CAPACITY**

In the Republic of Armenia in 2016, 2017, 2018, 2019, 7.3, 7.8, 7.8 and 7.6 billion kWh of electricity has been generated respectively, of which 1.2, 1.4, 1.6 and 1.25 billion kWh of electricity respectively has been exported and the own needs and the total consumption in terms of losses of generating units have made 1.03, 1.02, 0.96 and 0.88 billion kWh respectively. In Armenia, electricity is mainly generated by nuclear, hydro and thermal plants whereof 39% is generated by the nuclear power plant while the remaining 60% is almost generated equally by hydro and thermal plants. The share of all the other plants in the power system is quite low - up to 1%. The Government aims to have 12 billion kWh output by 2030, whereof about 5.0 billion kWh will be export based. In accordance with the statistics of the last 5 years the winter peak in the

Armenia's power system is 1300 MW, and in summer it is 1040 MW. The variation between winter and summer peaks recently has significantly declined. The following plants with a total installed capacity of 2878.7 MW as of July 1, 2020 are currently operating in the power system.

1. Armenian Nuclear Power Plant (ANPP)- 407.5 MW
2. Hrazdan TPP- 410 MW
3. Hrazdan Unit 5 - 467 MW
4. Yerevan CCGT -1 - 228.6 MW
5. Vorotan Cascade of Hydroelectric Power Plants - 404.2 MW
6. Sevan-Hrazdan Cascade of Hydroelectric Power Plants - 561.4 MW
7. Renewable small power plants (under 30 MW )about 400 MW, whereof about 380 MW are small HPP.

Due to low efficiency of the above mentioned Hrazdan TPP it is envisaged to take the plant out of service after putting Iran-Armenia 400 kV transmission line and the Yerevan CCGT-2 which is being constructed into service. The following generating capacities are currently under construction:

1. Yerevan CCGT-2- 250 MW, by July, 2022 (USD 250 million investment),
2. Masrik-1 Solar Photovoltaic Power Plant- 55 MW, by July, 2022 (USD 60 million investment),
3. Small HPPs. 23 power plants, 50 MW, commissioning by 2023 (USD 60 million investment),
4. Small Solar Plants - 48 plants, 197 MW, by 2022. Moreover, it is envisaged that the total installed capacity of such plants will comprise 210 MW in 2022.
5. Wind Power Plant- 4MW, by 2021.

In the near future new tenders for construction of seven more solar photovoltaic power plants with total installed capacity of about 520 MW will be conducted, whereof capacity of two plants will comprise 200 MW each.

As of July 1, 2020, 2669 autonomous solar power plants with capacity up to 500 kW, with the total installed capacity of 49.5 MW are connected to the network. The current development rates allow to anticipate that the total installed capacity of the above-mentioned plants will reach to 100 MW for the next three years.

The RoA Government aims to increase the share of solar power generation at least to 15% or 1.8 billion kWh by 2030. For that purpose, solar power plants with total installed capacity of 1000 MW including autonomous plants will be constructed.

It is worthwhile to mention that in the coming years the prospective changes in the world market can enable not only solar but also renewable energy power plants with storages to compete with the traditional base plants. As for Public-

Private Partnership (PPP) agreements, the RoA Government will conclude such agreements for the utility scale generation units construction by means of attracting investors exclusively on a competitive basis, where their access to the electricity market cannot be granted without additional guarantees from the state.

*The fact that the solar and wind technologies are considered as part of the least cost solution for new generation under all scenarios underscores the importance to Armenia of ensuring a policy and institutional environment that supports development of technologies to the maximum extent practicable, not only to ensure the lowest cost generation but also to minimize reliance on other imported energy sources and to strengthen Armenia's energy security and competitiveness.*

The Least Cost Energy Development Plan is developed with application of the TIMES-Armenia model, which provides a platform for the integrated power system modelling and envisages to guide policy formulation over a wide range of energy, economic and environmental planning as well as climate change issues. The TIMES Armenia platform allows to:

- 1) encompass the entire power system from resources through to end-use demands;
- 2) employ least-cost optimization to identify the most effective pattern of resource use and technology deployment over time;
- 3) evaluate medium and long-term policies and programs that can impact the evolution of the power system;
- 4) quantify the expected costs and technology choices that result from imposing those policies and program.

Within the baseline scenarios modelling, through the TIMES-Armenia platform, the following was considered: the construction costs of different power generating capacities, imported fuel prices, anticipated economic growth rate and the associated changes in demand, as well as potential technological development and other required inputs that may affect power generating capacities in terms of choosing the least cost development option. The outcomes show that the possible development of the solar and wind technologies ensure the least cost in the power system. Moreover, the sensitivity analyses revealed that the results of model calculations on new generating capacities required to meet the electricity demands don't essentially differ in all the considered GDP growth scenarios.

The Government will stay committed to the policy to maintain nuclear power plant in the country's generation mix. In this context, it is worthwhile to mention that the possibility of the nuclear plant's life extension will guarantee development of the system on the basis of least cost. The investment program focused on the ANPP's life extension will be completed by 2023, resulting in USD 330 million investment, and the nuclear power plant will be extended to 2026. In the event that a safe operation of the nuclear plant is justified after 2026 in accordance with the respective studies, the Government intends to operate it at least until 2036 which according to forecasts will require an additional USD 150 million investment. Moreover, the lowest level of greenhouse gas (GHG) emissions can only be reached in the case of availability of the nuclear power plant compared to other scenarios, which is consonant with the implementation of the Government's long-term development purposes with the low level of greenhouse gas emission. After the expiration of the existing nuclear power plant's operational lifetime (including its life extensions), the construction of new nuclear unit with replacing capacity on the existing ANPP site is considered, which will prevent an increase in the country's reliance on the imported natural gas. Meantime, regardless of the construction of Meghri, Shnogh and Lori-Berd HPPs has not been considered by the least cost development scenarios, they will remain relevant projects and will be constructed as utility scale plants when the construction of such power plants will be needed in the power system. With regard to the wind plants, the RoA Government will be consistent in development of such technology as well and is planning to construct utility scale wind power plants with total installed capacity of 500 MW, in 2025 – 2040, but the implementation of Public-Private Partnership programs focused on the construction of such plants will be driven exclusively by the fact that the prices of electricity delivered from the wind plants are competitive.

It is worthwhile to mention that if the price of imported natural gas changes by 2040 the maximum utilization of solar and wind power plants will reduce the power system total costs. In any case, the natural gas will remain one of the main consumed fuel sources, as it is used not only for enterprises but also for the residential heating, household and transportation needs. Meanwhile the gradual market penetration of electric cars can also be implemented solely on the basis of the solar and wind power by reducing the volume of imported natural gas.

To summarize the above mentioned, it can be stated that in the coming seven years about USD 1.5 billion will be invested in electricity generation.

, Forecasts and assessments presented within the framework of the Least Cost Energy Development Plan, based on global warming, change in water resources



as well as other significant circumstances that might impact on the power system, shall be biennially revised.

## **HIGH-VOLTAGE ELECTRICITY TRANSMISSION NETWORK DEVELOPMENT**

High voltage electricity transmission networks are state-owned, and their natural development is one of the strategic issues of the energy sector. The development of the high-voltage transmission network includes two sets of actions aimed at modernization of the existing infrastructures and the expansion of the transmission network. The first set of actions are aimed at modernization of substations of the high-voltage transmission network and overhead transmission lines, while the second set of actions are focused on installation of monitoring system for transmission capacity, automation (SCADA system expansion) as well as electricity system reliability and safety indicators and development of new infrastructures for the regional integration.

In the high-voltage transmission network 13 substations of 220 kV, two substations of 110 kV and one switching point on the border with Iran as well as 1960 km electrical transmission lines with 5600 towers are currently being operated. Five above mentioned substations (220/110/10 kV “Haghtanak”, 220/35/10 kV “Kamo”, 220/110/10 kV “Gyumri-2”, 220/110/35 kV “Vanadzor-2” and 220/110/35 kV “Alaverdi 2”) have been completely reconstructed.

Five more substations are currently under reconstruction, in particular:

1. With the support of the International Bank for Reconstruction and Development, which provided USD 36 million within the scope of the loan agreement “Electricity Supply Reliability Project - Additional Financing”, 220kV substation “Haghtanak” was reconstructed in 2019; the reconstruction of 110kV substations “Charentsavan-3”, “Vanadzor-1” and 220kV substation “Zovuni” is envisaged.
2. With the support of the Asian Development Bank, which provided about 24.02 million SDR within the scope of the loan agreement «Power Transmission Rehabilitation Project», the reconstruction of 220 kV “Agarak-2” switching point to the substation, and reconstruction of “Shinahayr” substation are planned to be implemented, along with the second stage of SCADA communication and automation system investment program.
3. With the support of the International Bank for Reconstruction and Development, which provided USD 39.86 million within the scope of the Loan Agreement “Power Transmission Network Improvement”, a new 220 kV substation of Yerevan TPP was constructed and commissioned replacing the previous substation of 110 kV. The reconstruction of 220 kV

“Ashnak” substation is underway as well as reconstruction of the “Ararat-2” substation is envisaged to be implemented.

4. With the support of the International Bank for Reconstruction and Development, which provided about USD 35.5 million within the scope of the loan agreement “Electricity Supply Reliability”, the modernization of the 230 kilometer 220 kV overhead transmission line along Noraduz-Lichq-Vardenis-Vayq-Vorotan-1 between Hrazdan TPP and 220 kV “Shinuhayr” substation is carried out, which has increased the export capacity to Iran by about 50 MW. Within the scope of the savings made as a result of the concluded agreements aimed at reconstruction of the above mentioned overhead transmission line, the reconstruction of about 50 kilometer overhead transmission line “Larvar” and “Noyemberyan” of 110 kV is being conducted. The lines, having been in operation since 1962 under the influence of severe chemical substances, have been corroded and have a negative impact on ensuring of the reliable and uninterrupted power supply to consumers.

The following programs are being implemented for regional integration process.

1. With support of Export Development Bank of Iran and “Sanir FZE”, which provided EUR 107.9 million, 400 kV Iran-Armenia double-circuit overhead transmission line and 400 kV “Noravan” substation are under construction. The construction of the power transmission line and the substation will enable to increase the electricity exchange capacity between both countries’ power systems from 350 MW to 1200 MW also by improving reliability of the power systems’ parallel operation and energy security of the Republic of Armenia.
2. The construction of the “Caucasus Electricity Transmission Network” (transmission line / substations) is aimed at connection of Armenian and Georgian power systems by 500 kV overhead transmission line ensuring the reliability of asynchronous-parallel operation of the two countries’ systems by constructing 500/400 kV HVDC back-to-back station of 350 MW capacity, 500/400 kV overhead line with the length of 8 km from the station to Georgian border in Ayrum at the first stage , new substation of 400/220 kV in Ddmashen equipped with two 440/220 kV autotransformers and 400 kV single-circuit overhead transmission line from Ddmashen to Ayrum substation with double-circuit supports. Implementation of the project will ensure power exchange of electricity with 350 MW capacity. Within the scope of this stage of the project, investments will amount to about EUR 188.2 million and the transmission capacity with Georgia will be 350 MW, which is intended to be increased to 1000 MW during the next two stages depending on power flows volume.

In addition to the above mentioned, another substation (220/110/35 kV “Litchq”) will be reconstructed at the company’s expense, and the financing options and dates of investment projects for the reconstruction of the remaining three substations (220/110/10 kV “Shahumyan-2”, 220/110/10 kV “Marash” and 220/110/35 kV “Yeghegnadzor”), for will be considered.

In addition to the above-mentioned, along with the construction of solar plants, it will be necessary to invest additionally about USD 70 million in the transmission network.

Investments aimed at system automation in the high-voltage electric network are being conducted, in addition to the infrastructure investments. SCADA Automated control system will be installed by 2023 which will ensure a new level of dispatch and technological dispatch. With a view to considering the changing requirements of the power system of Armenia, the system will have scalable modular structure and possibility to select operating characteristics. As a result, accident elimination time in the power system will be significantly reduced and the level of reliability of power supply to consumers will increase.

It is worthwhile to mention that Electricity System Transmission Network Development plan (2020-2024) was developed in 2019, which, based on the international experience and up-to date models considered the possible developments of the energy sector within that period and the volume of necessary investments for the least cost development of the respective transmission network including the investments which will be aimed at reconstruction of high-voltage power transmission lines and expansion of the Transmission network. This will be continuous work and the development plan will be reviewed in 2022 including the period for the next ten years, and afterwards will be biennially updated

Investments in the Transmission Network will reach about USD 550 million by 2030.

## **DEVELOPMENT OF THE DISTRIBUTION NETWORK**

The distribution networks were privatized in 2002 as a united company with the purpose of distribution and, for a while, supply of electricity throughout the Republic of Armenia. As a wholly private company, its activity is regulated by the Public Services Regulatory Commission. Currently, the Electricity Networks of Armenia CJSC operates the distribution networks for a seven-year period until 2026 and also fulfils a function of Universal Supplier. The company is currently distributing and supplying electricity to about one million consumers including residents, commercial organizations and industrial enterprises operating the lines of 110 kV and under.

After privatization, the Electricity Networks of Armenia is implementing its first investment program at the cost of USD 750 billion, which will be completed by 2028. The investment program is designed to reduce the number and duration of the power outages as a result of reconstruction of the distribution networks, reduce technical losses and exclude the risks of commercial losses, reduce the operation and maintenance cost, expand the distribution network for connection of new capacities and meeting additional needs, modernize completely the metering system, creating electronic map for the existing infrastructures, implement environmental international standards, management information system (MIS) and ISO management system standards.

As a result of the implementation of the investment program the following are expected:

1. The system average interruption duration index (SAIDI) and frequency index (SAIFI) will significantly decrease by 2028 to 55% of the 2021 baseline indicator. At the same time, the customer average interruption duration index (CAIDI) in both urban and rural areas will be reduced by 50%.
2. Long-term voltage deviations beyond the permissible limits for consumers will be excluded.
3. Technical losses in the Distribution Networks will decrease to 7.5% in 2021 and 6.4% in 2028.
4. Material and maintenance costs will decrease by 30% in 2021, by 20 % in 2025, and by 15% in 2028. Other costs will decrease by 10% in 2025 and by another 10% in 2028.
5. The list of employees will be reduced by about 1100 positions in 2021 and by 560 positions in 2028.
6. All consumers shall be connected to the Automated System of the Electrical Energy Metering which will enable the consumers to receive data of commercial metering devices on the basis of remote operation, ensuring availability of the data in real time for consumers and new suppliers in the Retail Electricity Market as well as for the Market Operator, creating a favorable environment for liberalization of the Retail Market.

It should be noted that the Electricity market Distribution Network Code was approved by the Public Services Regulatory Commission, which stipulates additional requirements in terms of the Ten-Year Network Development Plan and its further regular update. The Development Plan will be designed with the use of up-to-date models considering the possible developments in the energy

sector within that period and the volume of investments required for the distribution network development on the basis of least cost. The program will complete the development programs of power generation and the transmission network accomplishing the Least Cost Energy Development Plan.

## **ELECTRICITY MARKET**

The current model of the Armenian electricity market was introduced in 2004. The market is fully regulated both in the wholesale and retail sectors. The electricity market is solely based on the forecasted annual amount of electricity generation and consumption and it doesn't impose responsibility on the Market Participants in the event of deviations from that amount. Hence, the risks resulted from differences between the forecasted and actual amounts of electricity generation are balanced by tariffs of electricity delivered to consumers including the cost of such risks balancing of the electricity distribution licensee. In many developed and developing countries, the electricity markets are already liberalized and operate under perfect competition.

The liberalization of the electricity market requires the transition to a new model which will improve efficiency of the wholesale and retail electricity markets, while the promotion of the interstate commerce will enable to have new elements of competition in the domestic market. This process has already commenced, and activities aimed at development of bylaws are currently underway.

The transition to the new market model will be carried out in the coming years with a long-term target of a full market liberalization. The market's new model already at this stage will be based on the current electricity trading rules, will operate on the basis of balancing demand and supply as well as will define the responsibility mechanisms of the Market Participants during trade. The first stage of reforms will be followed by the development of a new RoA Law on Electricity, which will consider the EU directives requirements, that will be a start of the second stage of reforms. At that stage of reforms, opportunities for perfectly competitive market design will be taken into account.

At the first stage of the market reforms, issues related to improving the efficiency of the tariff policy, in particular the feasibility of future use of night-time and day-time tariffs and its alternatives, including the differentiated tariffs according to the seasons, implementation of new tariff adjustment mechanisms for reactive energy, necessity to fix monthly service fee and capacity fee, etc. will be considered. In this context, the improvement of protection mechanisms

of vulnerable consumers will constantly remain in the focus of the Government's attention.

Meanwhile, it is envisaged to initiate changes in the RoA Laws "on Energy" and "on Energy Saving and Renewable Energy", as a result of which the renewable energy power plants will be entitled to sell electricity in new electricity market exclusively under competitive terms without providing a power purchase guarantee and signing Public Private Partnership agreement, as well as to generate and consume at different metering points of the power system. Moreover, the current mechanisms for implementation of autonomous generators technical power flows will be improved, enabling the latter to generate and consume electricity at different metering points of the power system and to form groups involving residents and organizations.

## **REGIONAL ENERGY COOPERATION**

The Armenian Power System is currently connected to the power systems of Iran and Georgia. Through these countries the natural gas is being imported to Armenia. In this respect, the current energy relationships with Iran and Georgia are of strategic importance.

As a member of EAEU, Armenia is involved in a process of establishing EAEU common energy market. Meanwhile, Armenia has signed Comprehensive and Enhanced Partnership Agreement (CEPA) with EU which envisages gradual implementation of the EU energy related directives. In this context, scientific and technical cooperation is envisaged, including exchange of experience regarding development and improvement of technologies in electricity generation, transmission, supply and utilization, with a particular focus on energy efficiency and environmentally friendly technologies.

It is highly important to assess regional development trends in the energy sector so that Armenia's competitive advantages are effectively realized for mutually beneficial cooperation with other countries of the region.

### *THE COMMON ELECTRICITY MARKET OF THE EURASIAN ECONOMIC UNION (EAEU)*

#### EAEU common electricity market

Armenia is actively involved in the process of establishing the Eurasian common electricity market, which is planned to be launched in 2025 in accordance with the Action plan approved by the decree N 31 of Supreme Eurasian Economic Council dated December 20, 2019. The plan also stipulates the adoption of the following five key regulatory documents:

1. Access rules for cross border transmission service of electricity (capacity) within the

- framework of the EAEU common electricity market.
2. Mutual electricity trade rules.
  3. Rules for determination and distribution of cross border power lines transmission capacity.
  4. Rules for exchange of information.
  5. Regulation of cross-border networks development.

Currently the drafts of the above-mentioned documents are developed and under discussion.

#### EAEU common natural gas market

The common gas market of the Eurasian Economic Union is to be launched in 2025. In this regard, the concept of the common gas market formation and its implementation plan have been adopted pursuant to the decree N 7 of Supreme Eurasian Economic Council dated May 31, 2016. The member-states have to sign an international agreement on forming the common gas market. The following regulatory documents related to the common gas market's full launch will be adopted:

1. The procedure for the conduct of exchange trading sessions.
2. Common rules for access to gas transportation system in the member-states.
3. Protocol on the completion of complex measures which are preconditions for ensuring access to gas transportation system in the member-states.
4. Trading rules for the common gas market.
5. Definition of communication documents in the information exchange system.

#### EAEU technical regulation

The Section X of the Treaty of Eurasian Economic Union stipulates the procedures of the technical regulations and standards of the Union, general principles of technical regulations, circulation of products and accreditation. In accordance with the Decision N 526 of the Customs Union Commission of

January 28, 2011, the unified list of products was approved for which mandatory requirements are to be established. In accordance with the Decision N 79 of Eurasian Economic Council of October 1, 2014, the Action plan of adoption and modification of the technical regulations according to which the procedures of development, adoption and modification of the EAEU technical regulations are continuing. The Drafts of Technical Regulation of the Eurasian Economic Union "On the Safety of High Voltage Equipment" and "On Requirements to Pipelines for Transportation of Liquid and Gaseous Hydrocarbons" are under discussion.

*EU-ARMENIA  
COMPREHENSIVE  
AND ENHANCED  
PARTNERSHIP  
AGREEMENT (CEPA)*

Within the scope of the Comprehensive and Enhanced Partnership Agreement signed on November 24, 2017 between the Republic of Armenia and the European Union and the European Atomic Energy Community and their member-states, the Republic of Armenia has undertaken a commitment to implement large-scale reforms in the energy sector to bring the RoA legal framework into compliance with the European one. With the purpose of fulfilment of the agreement's provisions, according to the RoA Prime Minister decision N 666-L dated June 1, 2019, a road map was adopted, which clearly stipulates the completion period and the responsible authorities.

Within the scope of the CEPA, the cooperation shall cover the following areas: energy policy, energy security, diversity of energy sources, diversification of transmission path, competitive electricity markets, use of renewable energy sources, promotion of energy efficiency and energy saving, regional energy cooperation, technological and scientific-technical cooperation etc.

Bringing EU directives and regulations into compliance will result in harmonization of the RoA energy sector regulations with the European standards which will make the investment environment of the energy sector more attractive,



promote trade in the energy sector with the neighboring countries and increase the level of energy security and diversification. New incentives will be introduced for the use of renewable energy sources, which will bring new players to the market. The level of nuclear safety will also increase in terms of radwaste and spent fuel management and control. New criteria for energy efficiency including energy labelling and eco design shall be determined.

*ARMENIA- IRAN  
ENERGY  
COOPERATION*

The power system of Armenia operates in conjunction with the power system of Islamic Republic of Iran which significantly increases the reliability of the Armenian power system. Besides, the gas pipeline connecting the two countries is an alternative way for natural gas supply. In this regard, in the energy sector Armenia-Iran relationship is strategic and that will be ongoing in the long-term outlook.

Possible extension of terms of Armenia-Iran gas-electricity exchange program and increase in exchange volume under the mutually beneficial conditions is the key for further development of this relationship. For this reason, a new Armenia-Iran 400 kV voltage transmission line and the Caucasus transmission line projects are being implemented. Within the framework of the gas-electricity exchange program, the exploitation of new infrastructures will raise the electricity export at least up to 5.0billion kWh. The export of electricity will reach the maximum level by the end of 2025.

*ARMENIA-GEORGIA  
ENERGY  
COOPERATION*

The Armenian power system is also connected to the Georgian power system, which is strategically important for Armenia. Nevertheless, that is subject to various technical constraints considering synchronous-parallel operation between Armenia and Iran and between Georgia with Russia. The Caucasus Transmission Network Project (Armenia-Georgia power transmission line/substations) is

being implemented for removing the current constraints as well as increasing transmission capacity, which will enable to stimulate the energy cooperation between the two countries.

In parallel to the above-mentioned investment program, the Agreement on the principles of Armenia-Georgia electricity trade is envisaged to be developed, which will lead to creation of prerequisites for regular electricity trade between the two countries that will rely, to the greatest extent possible, on the requirements of the EU directives.

The relations with Georgia are also of great importance as a natural gas transit country, currently transiting gas from Russia in terms of supply of natural gas from Russia to Armenia.

## **HEAT SUPPLY**

The centralized heat supply system in Armenia ceased to exist back in the early 2000's for a variety of reasons. Recently the construction of smaller systems has begun to meet the heating and hot water demands of individuals or group of new multiapartment buildings, which, however, are not significant in the overall demand pattern.

Currently the production of heating and hot water is mainly carried out by means of individual natural gas heating boilers which is the result of the large-scale gasification in Armenia. The effectiveness of this approach as an orienting point for the future development needs to be reassessed. First, it should be taken into account that the population should regularly make investments in the replacement of the individual heating boilers and pay more for the consumed natural gas due to the maintenance of additional infrastructure to supply gas to the household, than it would have paid in the presence of centralized gas supply system. Moreover, the availability of natural gas in apartments will always be a challenge in terms of ensuring safety of people's lives and property.

In terms of heat supply and hot water production, other individual systems using renewable energy sources for the production of solar water heaters and their own energy needs are the alternative to the individual heating boilers. A number of projects are already being implemented to install such systems, in particular, with the involvement of the Armenia Renewable Resources and Energy Efficiency Fund, "Energy efficient" loan project is being carried out in the non-gasified communities of Armenia. Within the framework of the project,

as of July 1, 2020, 3042 water heaters have already been installed in different communities.

The RoA Government shall gradually expand the implementation of such projects that will enable the use of individual heating and hot water generation systems based on the renewable resources.

## **GAS SUPPLY**

Natural gas is the main fuel consumed in the country, about 60% of primary energy, about 85% of fossil fuel consumption and more than 83% of CO<sub>2</sub> emissions from fossil fuels combustion are natural gas. The level of gasification of the RoA communities is 96%, natural gas is also widely used in the road transport.

The natural gas transportation and distribution systems are available in Armenia, which are managed by “Gazprom Armenia” CJSC. The latter is the only natural gas supplier. The natural gas transportation system is connected to the gas transportation systems of Georgia and Iran. Moreover, there is a gas storage facility in Armenia, which is available, significantly increases the reliability of the gas supply to consumers while being connected to the two neighboring countries.

The price of the natural gas currently imported to Armenia is determined based on the agreement between the RoA Government and Russian Federation Government signed on December 2, 2013 in Yerevan regarding purchase and sale of shares of “ArmRosGazprom” CJSC and the further operational conditions as well as the agreement between RoA Government and RF Government on pricing procedure for the natural gas supply. Meanwhile the common gas market of the Eurasian Economic Union is to be launched in 2025. In view of this, the concept of the common gas market formation and its implementation program have already been adopted. An international agreement will be signed between the member-states for a full launch of the common market.

The gas sector regulations in Armenia were developed back in the early 2000’s and need to be updated. In view of this the Government of Armenia will commence the process of developing a new law based on a separate and current principles on “Gas supply” by 2022 and by the end of 2024 bylaws including the regulatory framework will be thoroughly reviewed. Meanwhile, for the purpose of gas transportation and gas distribution systems development prospects and clarification of investment priorities, in case of both energy sector and gas supply system, a ten-year least cost development plans for gas transportation and gas distribution networks will be implemented which shall be periodically updated.

## ENERGY EFFICIENCY

The energy efficiency is a legal, organizational, scientific, productive, technical and economic targeted activity aimed at reducing the specific cost of energy sources. In the last decades of the last century, the world leading energy efficiency experience showed that the energy efficiency potential for current technologies amounts to 30% - 40% of electricity materials and fuel saving is 2-3 times cheaper than extraction and supply of equivalent amount of fuel to consumers. Thus, energy efficiency as a new energy source is more cost-effective than other sources to meet the increasing demand. In accordance with the data of the International Energy Agency each AMD spent on energy efficiency measures provides more “clean” energy than the needed amount spent on other energy sources for generating the same energy. It should be emphasized that the significant amount of the conserved energy is generated in the consumption sector and that energy is ecologically clean as its generation is free of emissions.

The RoA Government prioritizes the energy efficiency as a measure for the country’s energy security, increasing economic competitiveness and reducing a negative impact on the environment as well as global climate warming. The RoA Government’s policy is to promote the energy efficiency in all the sectors of economy which is stipulated in the RA Law on “on Energy Saving and Renewable Energy” and in National Program on Energy Saving and Renewable Energy.

According to the official energy balance in 2018, the largest domestic energy consumer is the household which accounts for 33.21% of total final energy consumption. It is followed by the transport sector with a share of about 33.81%. 15.2% of energy has been consumed in the industry which is significantly less than the share of the Soviet-era industry. Commercial and public services consumed about 17.2% and agriculture - about 1.5%. The share of the housing sector varies depending on the weather.

The studies show that the additional capital investments aimed at energy efficiency in public and residential buildings can reach 15% and energy saving up to 40%. The overwhelming majority of about 19,000 multi-apartment buildings in Armenia were built during the Soviet period 35-60 years ago without energy efficiency measures.

Energy consumption in that buildings per square meter is about 2 or 3 times higher than in the developed countries and varies from 200 to 320 kWh/m<sup>2</sup> annually. In accordance with the preliminary studies, energy consumption for heating can be reduced at least by 40% by means of effective thermal insulation of residential and public buildings. The average cost per unit of energy conserved in buildings is 1 to 4 US cents per kWh meanwhile the average cost of energy generated by the Armenian power system is about 5 US cents. Heating and cooling systems in buildings as well as the use of different

appliances are the biggest consumers in buildings. Along with the improving the energy efficiency of the appliances, the consumer effective behavior in this sector will have greater saving potential -about 60% .

Within the framework of the international integration procedures, Armenia, by joining the Treaty on “Eurasia economic union” and as part of EAEU, accepted technical regulation on “energy efficiency requirements for energy consuming equipment”. Based on Comprehensive and Extended Partnership Agreement signed between the European Union and the Republic of Armenia, Armenia is obliged to adapt 65 regulations, instructions and guidelines (buildings and facilities, energy consuming equipment and means of transport) to the RoA legislation in the nearest period which are aimed at promotion of energy efficiency thereby enhancing the state policy in terms of energy conservation and energy efficiency development.

The process of development of National Program on Energy Saving and Renewable Energy 2021-2030 has already commenced taking into consideration increasing economic and energy security, power system reliability, strengthening economic and energy independence, promoting energy efficiency and renewable energy development based on new production and services organization, as well as reducing man-made impact on environment and human health.

## **DIGITAL ENERGY**

Information technology and new related opportunities are continuously transforming markets by offering completely new business models and lifestyles based on data management and the energy is a part of that transformation throughout the world. Sustainable and smart energy is one of the most important conditions for dynamic development of the economy aimed at improving human lives and their living standards.

The Information Technology sector of Armenia, which is competitive in the global market, shall be widely used in order to solve different energy sector-related issues. In this regard, the organization of trade in the wholesale electricity market will be primary and this will be completely carried out through the electronic platform in the next few years.

Along with the wholesale market electronic trading platform, it is planned to develop the unified information system for remotely transmitting and managing the information on the consumption and other necessary indicators from the electricity metering system of the consumers connected to the Distribution Network, which will promote the liberalization process of the Retail Electricity Market. Meanwhile the SCADA management system will be installed in the power system which will enable the System Operator not only to collect the

necessary data but also to carry out automatic remote control of the network equipment.

In this context, new cyber-security challenges will emerge and to ensure the digital transformation of the energy sector, it's important to consider the implementation of the information security management international standards, whereof the implementation of ISO/IEC 27000" Security Management Systems (ISMS) standards" and NIST SP 800-53 "Security and Privacy Controls for Information Systems and Organizations" standards is high-priority, which include the description of organizational and technical requirements for ensuring information security and developing a comprehensive management system.

The Government of Armenia will pursue continuous implementation of such tools, so that the procedures in the energy sector related to generation and consumption can be fully digitally manageable in the shortest possible time through the concept of the smart consumption systems.

### **SCIENCE-BASED ENERGY**

Research and innovations are of fundamental significance in terms of the energy sector development. The RoA Government will implement continuous programs aimed at science-based energy, supporting new educational programs, new researches and innovations.

In this regard, the Institute of Energy, Electrical Engineering, which is part of the National Polytechnic University of Armenia Foundation is the main higher education institution for training young specialists in the energy sector. This university ensures the demand for labor in the energy sector and the development of its relationship with the energy sector companies will be essential for supply of more skilled workers.

The Scientific Research Institute of Energy (SRIE) should be a major asset to the further retraining of personnel in the energy sector. Over 70-years of its activity, the SRIE has supported for the implementation of numerous reform programs in the power system of Armenia aimed at enhancing the country's energy independence and security, implementing the development plans and strategy, conducting research on renewable energy sources as well as providing scientific and technical guidance on different issues. The SRIE has the necessary experience to design development programs on power generation and the transmission network on the basis of least cost and equipped with the software tools of international importance to perform such activities. In this context, the further development of the SRIE as a scientific center of the world's best practice in the Armenian energy sector is essential, and it will render services not only in Armenia but also outside the country.

Armenian Scientific Research Institute for Nuclear Plant Operation CJSC ( "Armatom" CJSC) is science-based in the nuclear energy sector.

“Armatom” CJSC, which was founded in 1973 in the process of ANPP construction. The latter is the only organization in Armenia that provides scientific and technical support to nuclear power plant. , which conducts activities towards development and implementation of measures aimed at enhancing security and reliability of ANPP, personnel training, technical documentation development as well as design, development and implementation of necessary devices, equipment and systems.

“Armatom” CJSC also has the wide range of the international world-known partners and a recognition.

The RoA Government will continue supporting the further development of these scientific institutions, also considering the possibility of consolidating some of them into a single structure, for the purpose of strengthening direct connection with companies operating in the sector and, expanding the international cooperation and availability of energy sector enriched with modern scientific solutions. In this context, it is envisaged to establish unified institution for implementation of climate change, energy and energy efficiency projects with a purpose to increase efficiency and reduce management cost for implementation of such projects.

## **MANAGEMENT OF STATE-OWNED COMPANIES**

The Government of the Republic of Armenia will significantly improve the management of the state-owned energy companies by implementing new tools in compliance with the international standards. Currently, five entirely state-owned companies are operating in the energy sector, as follows:

1. “Armenian Nuclear Power Plant” CJSC, electricity generation.
2. “Yerevan TPP” CJSC, electricity generation.
3. “High Voltage Electric Networks” CJSC, provision of electricity transmission service.
4. “Electricity System Operator” CJSC, provision of dispatch services to the power system.
5. “Settlement Center” CJSC, provision of the Market Operator services to the power system.

With a view to improve the management efficiency of the above-mentioned five state-owned companies, the activity of the companies for the next four years will comply with the international standards requirements. Meanwhile, in order to increase the efficiency of companies, it is required to change the tools of their tariff regulation, switching from annual tariff regulation to multiyear cycle by introducing also incentive regulatory measures.

Such an approach is already used in case of the private companies operating in the energy sector and enables the companies to improve both the quality of services provided and the level of profitability as a result of increasing their efficiency. Moreover, depreciation and profit norms defined by the Public Services Regulatory Commission for the state-owned companies need to be reviewed for the purpose of tariff regulation, since, at their current level, among other restrictions, the attraction of private investments is impossible and the RoA Government shall raise funds necessary for the realization of these investments by providing a state guarantee. In the context of the above-mentioned during 2020-2024, the following activities shall be carried out:

1. Revision of the rules currently applied to profit and depreciation for calculation of electricity tariff of companies with state participation, to involve commercial capital without state guarantee;
2. Fixing operation and maintenance costs of companies with state participation and establishment of approaches for its annual revision for the next ten years;
3. Implementation of the international standards such as ISO 9001: 2015 Quality Management, ISO 37001: Anti-Bribery Management Systems, ISO 50001: 2018 Energy Management Systems, and ISO14001: 2015 Environmental Management Systems and ISO 31000: Risk Management.

## **SUMMARY**

Information technologies and new related opportunities are constantly transforming markets by offering completely new business models and lifestyles based on the data management and the energy is a part of that transportation throughout the world. Sustainable and smart energy is one of the most important conditions for dynamic development of the economy aimed at improving human lives and their living standards.

Hence, until 2040 the RoA power system will have the following description:

- Self-sufficient and export-oriented high reliability and equipped with state-of-the-art technology, modern infrastructures generating annually around 12 billion kWh.
- The large regional power center linking the neighboring power systems and the Common Electricity Market of the Eurasian Economic Union.
- Liberalized electricity market based on the best international models.
- Cost-effective and rational use of renewable energy sources in compliance with all environmental standards. Ensuring the highest



possible increase of the renewable energy share in the country's energy balance at least by 15% of solar energy in 2030.

- Extensive conducting of energy efficiency measures, implementation of energy efficient technologies in the transition to a green and science-based economy.
- Peaceful development of nuclear energy, in particular the construction of new nuclear power generating unit in Armenia.
- Balanced and predictable tariffs for reliable, uninterrupted, high-quality supply of electricity to consumers and reliable operation of the power system.
- Diversification of the primary energy resources, in particular natural gas supply routes to Armenia and types, by guarantying availability of at least two pipelines entry to the country.

Taking into account the activities envisaged by the Action Plan, the given strategy will be developed and the revised version for 2025-2050 will be presented by July 1, 2024. This will also include the regulatory, social and environmental impact assessments of the strategy as well as will introduce new target indicators in terms of energy efficiency and renewable energy. Meanwhile, the effectiveness and impact of the strategy will be evaluated once every three years.

## ACTION PLAN

### TO ENSURE IMPLEMENTATION OF THE REPUBLIC OF ARMENIA ENERGY SECTOR DEVELOPMENT STRATEGIC PROGRAM (TILL 2040)

NN	Action	Expected Immediate Result	Expected Impact	Responsible Body(ies)	Co-implementer(s)	Deadline	Action Cost and Financing Source
<b>I. Development of Electricity Generation Capacity</b>							
I.1	Implementation of the ANPP Unit 2 Upgrade and Design Lifetime Extension until 2026	Efficient and safe operation of the ANPP Unit 2 until 2026	Clean electricity generation of about 2.9 billion kWh per year (as a result of upgrade, annual generation will increase 300 million kWh)	ANPP	ANRA	December 2022	USD 189million USD million, of which USD 170 million loan, and USD 19 million grant, under the agreement with the Russian Federation 63.2 billion AMD investment

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
							under the budget loan of the RA state budget
1.2	Preparation of the studies justifying safe operation of the ANPP after 2026	Justification of the efficient and safe operation of the ANPP Unit 2 until 2036	Development of safety and reliability measures with implementation timetable for ANPP operation until 2036	ANPP	ANRA	December 2025	USD 50 million, RA state project loan or the ANPP investments
1.3	Implementation of the ANPP Unit 2 Design Lifetime Extension for 2026 - 2036	Efficient and safe operation of the ANPP Unit 2 until 2036	Clean electricity generation of about 2.9 billion kWh per year.	ANPP	ANRA	December 2030	USD 100 million, RA state project loan, the ANPP investments, Other sources not prohibited by Law.

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
1.4	Construction of New Nuclear Unit with Replacing Capacity on the ANPP Site after the Expiration of the ANPP Unit 2 Design Lifetime (including its extensions)	Timetable for the Unit decommissioning measures, including identification of realistic potential financing sources for construction of new unit.	Ensure energy independence, diversification of electricity generation.	RA MTAI	ANRA	December 2035	State Guarantee Loans, Private Investment
1.5	Construction of Yerevan CCGT – 2 with installed capacity of about 250 MW	Highly efficient and clean electricity generation of about 2 billion kWh per year.	Increased reliability of electricity supply. Potential decrease of electricity price in the wholesale market.	RA MTAI	ANRA	July 2022	USD 250 million investment from private and international institutions
1.6	Construction of Masrik -I Solar PV Plant with installed capacity of 55 MW	Increased energy independence through increased share of solar generation to 15% or 1000 MW by 2030.	Clean electricity generation of about 0.11 billion kWh per year.	RA MTAI	RA PSRC	July 2022	USD 60 million Private investment
1.7	Implementation of the projects for construction of five Solar PV Plants with total installed capacity of about 120 MW	Increased energy independence through increased share of solar generation to 15%	Clean electricity generation of about 0.192 billion kWh per year.	RA MTAI	RA PSRC	December 2024	Private investment through tenders based

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
		or 1000 MW by 2030.					on the lowest price offer
1.8	Construction of Ayg – 1 Solar PV Plant with installed capacity of 200 MW	Increased energy independence through increased share of solar generation to 15% or 1000 MW by 2030.	Clean electricity generation of about 0.32 billion kWh per year.	RA MTAI	RA PSRC	December 2023	USD 170 million private investment
1.9	Construction of Ayg – 2 Solar PV Plant with installed capacity of 200 MW	Increased energy independence through increased share of solar generation to 15% or 1000 MW by 2030.	Clean electricity generation of about 0.32 billion kWh per year.	RA MTAI	RA PSRC	December 2024	USD 150 million private investment
1.10	Construction of Small Solar Plants (up to 5 MW) with total installed capacity of 315 MW, out of which 15 MW capacity is for construction of community based solar plants.	Increased energy independence through increased share of solar generation to 15% or 1000 MW by 2030.	Clean electricity generation of about 0.326 billion kWh per year.	RA MTAI	RA PSRC	December 2029	USD 340 million Private investment within the tariffs set by the RA PSRC
1.11	Construction of Autonomous Solar Power Plants increasing	Increased energy independence through increased	Clean electricity generation of about	Private companies, individuals	RA PSRC	December 2023	USD 80 million

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	total installed capacity from 40 MW to 100 MW	share of solar generation to 15% or 1000 MW by 2030.	0.16 billion kWh per year.				Private investment
I.12	Construction of Small Hydropower Plants increasing total installed capacity from 380 MW to 430 MW	Increased energy independence	Increase in clean electricity generation of about 0.2 billion kWh per year.	Private company	RA PSRC	December 2023	USD 100 million Private investment
I.13	Construction of small and utility scale Wind Power Plants with capacity of up to 500 MW, if competitive tariff offers exist	Increased energy independence	Clean electricity generation	RA MTAI	RA PSRC	2025 - 2040	Private investment
I.14	Development of the Least Cost Energy Generation Plan, and its periodic review once in two years.	Planning of development of the electricity system's generating capacities	To provide the Government of Armenia with the visions of potential developments in the electricity system aiming at implementation of the measures in appropriate direction.	RA MTAI	ESO	December 2022	Other sources not prohibited by Law

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
<b>2. Development of the High-Voltage Electricity Transmission Network</b>							
2.1	Reconstruction of 110 kV Substation “Charentsavan-3”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2023	, USD 36 million, IBRD under the loan agreement
2.2	Reconstruction of 110 kV Substation “Vanadzor-1”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2021	
2.3	Reconstruction of 220 kV Substation “Zovuni”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2024	
2.4	Reconstruction of 220 kV Switching point “Agarak – 2”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2021	SDR 24.02 million, ADB
2.5	Reconstruction of 220 kV Substation “Shinahayr”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2022	under the loan agreement
2.6	Reconstruction of 220 kV Substation “Ashnak”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2020	USD 39.86 million, IBRD
2.7	Reconstruction of 220 kV Substations “Ararat – 2”	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2024	under the loan agreement

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
2.8	Reconstruction of 110 kV overhead transmission line "Larvar"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2020	USD 35.5 million, IBRD under the loan agreement
2.9	Reconstruction of 110 kV overhead transmission line "Noyemberyan"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO		
2.10	Reconstruction of 220/110/35 kV Substation "Litchk"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2022	USD 8.86 million, HVEN financing
2.11	Assessment of the financing options and dates for investment project to reconstruct 220/110/10 kV Substation "Shahumyan-2"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2030	State Guarantee Loans
2.12	Assessment of the financing options and dates of investment project for reconstruction of 220/110/10 kV Substation "Marash"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2030	State Guarantee Loans
2.13	Assessment of the financing options and dates for investment project to reconstruct 220/110/35 kV Substation "Yeghegnadzor"	Increased reliability of the electricity supply	Reduced emergency in the electricity system	HVEN	ESO	December 2030	State Guarantee Loans



<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
2.14	Implementation of the second stage of SCADA communication and automation system investment program	Improved observability and control of the electricity system	Increased reliability and control of the electricity system	ESO		June 2022	Included in SDR 24.02 million loan of ADB
2.15	Implementation of the project for construction of Iran-Armenia 400 kV double-circuit overhead transmission line, and 400 kV Substation “Noravan”	Construction of the transmission line and substation will enable increase of the electricity exchange capacity between two countries’ energy systems from 350 MW to 1200 MW, meantime will improve reliability of parallel operation of the energy systems and enhance Armenia energy security.	Increased reliability and operation safety of the electricity system	RA MTAI	ESO, HVEN	December 2021	EUR 107.9 million, EDBI Sunir FZE, under the loan agreement
	2.15.1 Construction of Iran-Armenia 400 kV double-circuit overhead transmission line						
	2.15.2 Construction of 400 kV Substation “Noravan”						
2.16	Caucasus Electricity Transmission Network (Armenia – Georgia power transmission line/substations)	Implementation of the project will result in significant promotion of the mutually beneficial regional	Increased reliability and operation safety of the electricity system; transient flows, as well as favorable conditions	RA MTAI	ESO, HVEN	December 2025	EUR 188.2 million , KfW, EIB, NIF under the loan and grant agreements

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	<p>2.16.1 Construction of Substation “Ddmashen”</p> <p>2.16.2 Construction of transmission lines</p> <p>2.16.3 Construction of the Back-to Back HVDC station</p>	cooperation in the energy sector, and in increase of transmission capacity of parallel operation with Georgia from the existing 200 MW to 350 MW.	for operational regimes are ensured.				
2.17	Development of the Ten-Year Transmission Network Development Plan, and its periodic review once in two years.	Optimization of the Electricity System Transmission Network Development		ESO	EMO HVEN ENA ANPP Yerevan TPP Hrazdan TPP Hrazdan 5 ContourGlobal IEC REPP	December 2022	ESO financing

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
2.18	Additional investment in transmission network, parallel to solar power development.	Reliable and uninterrupted transmission of the solar generation	Ensure proper level of energy independence	HVEN	ESO	December 2029	USD 70 million, state guarantee loans,
<b>3. Development of the Electricity Distribution Network</b>							
3.1	Implementation of the Investment Program of the Electric Networks of Armenia	As a result it is expected to reduce the average duration and frequency of the interruptions by 2028 to 55% of the 2021 baseline indicator, reduce maximum duration for an interruption by 50%, exclude long-term voltage deviations beyond the permissible limits for customers , reduce technical losses to 7.5% in 2021 and 6.4% in 2028, exclude the	Increased reliability and quality of customers electricity supply	ENA		December 2027	AMD 750 million ENA investment

NN	Action	Expected Immediate Result	Expected Impact	Responsible Body(ies)	Co-implementer(s)	Deadline	Action Cost and Financing Source
		risks of commercial losses, reduce the operational and maintenance cost, expand the distribution network, modernize completely the metering system, complete the works related to geo-informational elements of infrastructures (linear infrastructures), implement ISO standards for environmental, management system and management information system (MIS).					
3.2	Development of the Ten-Year Distribution Network Development Plan, and its periodic review once in two years.	Optimization of the Distribution system development	Ensure electricity supply reliability and uninterrupted supply	ENA		December 2022	ENA

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
<b>4. Electricity Market</b>							
4.1	Pilot -Transition to the new Wholesale Electricity Market Model with application of the pilot version of the Market Management System Software without financial liabilities to market participants.	Verification of the proposed model for wholesale electricity and capacity market	Experience gained in competitive market, reveal potential deficiencies and make adjustments	EMO ESO	HVEN ENA ANPP Yerevan TPP Hrazdan TPP ContourGlobal IEC REPP	February 2021	USAID assistance
4.2	Full Transition to the new Wholesale Electricity Market Model	Actual introduction of the wholesale electricity and capacity market	Increased efficiency of the system, introduction of responsibility tools	EMO ESO	HVEN ENA ANPP Yerevan TPP Hrazdan TPP ContourGlobal IEC REPP	February 2022	USAID assistance
4.3	Development of regulations to increase efficiency of the current tariff policy	Ensure efficient tariff policy	Increased level of transparent tariff setting.	RA PSRC	RA MTAI EMO ESO	December 2022	Other sources not

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	<p>4.3.1 Feasibility for future use of night-time and day-time tariff currently established for electricity customers, establishment of monthly fixed service fee for electricity customers</p> <p>4.3.2 Introducing tariff for reactive energy for the electricity customers</p> <p>4.3.3 Adoption of the Methodology and Procedure for Setting (Revision) of Tariffs in the Electricity System of Armenia</p>		Improved economic indicators of the system. Application of flexible tariff systems.		ENA		prohibited by Law
4.4	Improvement of protection mechanisms for vulnerable customers	Ensure efficient tariff policy	Poverty reduction	RA PSRC	RA MLSA RA MTAI	December 2022	Other sources not prohibited by Law
4.5	Development of the draft law on making changes in the RoA Laws “on Energy” and “on Energy Saving and Renewable Energy”, according to which: 1.the renewable energy power plants will be entitled to sell electricity in new electricity market exclusively under competitive	Improvement of the legislative framework of the electricity market	Increased level of the commercial competition in the electricity market	RA MTAI	RA PSRC	July 2021	No financing is required

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	terms without providing a power purchase guarantee and signing Public Private Partnership agreement, as well as to generate and consume at different metering points of the power system. 2. the current mechanisms for implementation of autonomous generators technical power flows will be improved, enabling the latter to generate and consume electricity at different metering points of the power system and to form groups involving residents and organizations						
4.6	Development of the new RoA Law on Energy taking into consideration international best practices, as well as issues revealed during implementation of Electricity Market Model and Electricity Trade Mechanisms.	Ensure regulatory and normative framework of the electricity and capacity liberalized market	Harmonization of the legal framework with application of the international practice	RA MTAI	RA PSRC	December 2022	USAID assistance
<b>5. Regional Energy Cooperation</b>							
5.1	<b>Participation in the EAEU common electricity market</b> in accordance with the Action	Development and adoption of the	Interstate flow access rules.	RA MTAI	RA PSRC	2020-2024	Other sources not

NN	Action	Expected Immediate Result	Expected Impact	Responsible Body(ies)	Co-implementer(s)	Deadline	Action Cost and Financing Source
	plan approved by the decree N 31 of Supreme Eurasian Economic Council dated December 20, 2019.	regulatory documents	Electricity interstate trading rules. Identification of interstate sections and distribution rules. Information exchange rules. Interstate networks development procedure.				prohibited by Law
5.2	<b>Participation in the EAEU common natural gas market</b> in accordance with the Action Plan approved by the decree N 7 of Supreme Eurasian Economic Council dated May 31, 2016.	Development and adoption of the regulatory documents	Rules for trading in the gas exchange. Unified rules for access to the gas transportation system of the Member States. Protocol on completion of the complex measures as pre-conditions required for ensuring access to the gas transportation system of the Member States. Trading rules in the common gas market. Identification of documents for	RA MTAI	RA PSRC	2020-2024	Other sources not prohibited by Law



<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
			informational cooperation in the information exchange system.				
5.3	<b>EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA):</b> Implementation of the reforms in the Energy Sector in accordance with the Road Map adopted by the RoA Prime Minister decision N 666-L dated June 1, 2019 that clearly stipulates the completion period and the responsible authorities.	Implementation of the EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA)	Promotion of the investment environment of the energy sector. Development of energy trading with neighboring countries. Increased level of energy security and diversification.	RA MTAI	RA PSRC	2020-2026	Other sources not prohibited by Law
5.4	<b>Implementation of measures focused on the expansion of Armenia - Iran Energy Cooperation and conclusion of agreements</b>	Implementation of Armenia – Iran gas - for - electricity exchange program	Electricity export of 5.0 billion kWh	RA MTAI	ESO EMO Yerevan TPP	2020-2025	Included in the cost for construction of Iran - Armenia electricity transmission line
5.5	<b>Implementation of measures focused on the expansion of Armenia - Georgia Energy</b>	As a result, prerequisites will be established for regular electricity	Regular electricity trade between the two countries	RA MTAI	RA PSRC ESO EMO HVEN	2020-2023	Included in the cost for construction of Armenia –

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	<b>Cooperation and conclusion of agreements</b>	trade between the two countries based on the EU directives to the extent possible.					Georgia electricity transmission line
	5.5.1 Conduct Armenia – Georgia Joint Working Group meetings to ensure electricity trade between Armenia and Georgia and development of the Agreement on the Principles for Electricity Trade		Regular electricity trade between the two countries	RA MTAI	RA PSRC ESO EMO HVEN	2020-2023	USAID assistance
	5.5.2 Conclusion of Armenia - Georgia Agreement on the Principles for Electricity Trade		Regular electricity trade between the two countries	RA MTAI	RA PSRC ESO EMO HVEN	2023	USAID assistance
<b>6. Heat Supply</b>							
6.1	Gradual expansion of implementation of such projects that will enable the use of individual heating and hot water generation systems based on the renewable resources.	Installation of solar water heating systems, 1500 – 7500 AMD/litre, (60°C – 70°C)	Large-scale use of renewable energy sources, Increased level of energy security and independence	RA MTAI	Private sector	Continuously until 2040	Other sources not prohibited by Law
<b>7. Gas Supply</b>							

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
7.1	Development of a new law on gas supply based on the modern principles.	Clarification of the sector management principles based on the international best practice.	Reforms in the sector, efficient protection of consumers rights	RA MTAI	RA PSRC	December 2023	International donor organizations
7.2	Comprehensive review of the regulatory framework for the gas supply sector.	Clarification of the sector activities and application of the modern principles.	Ensure requirements for having full transparency of applicable tariffs, and requirements for reliability and security.	RA MTAI	RA PSRC	December 2024	International donor organizations
7.3	Development of the Least Cost Gas Transportation and Gas Distribution Networks Development Ten-year Plans, and its review once in two years	Optimal development of the gas supply sector according to the long-term plan	Ensure reliable and safe gas supply of the customers	Gasprom Armenia CJSC		December 2022	USD 100,000 Gasprom Armenia CJSC,
<b>8. Energy Efficiency</b>							

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
8.1	In the framework of Comprehensive and Extended Partnership Agreement signed between the European Union and the Republic of Armenia, adapt 65 regulations, instructions and guidelines (buildings and facilities, energy consuming equipment and means of transport) to the RoA legislation which are aimed at promotion of energy efficiency.	As a result, new standards for energy efficiency and energy saving will be established including for energy labeling and eco design.	Reduced specific cost of energy resources	RA MTAI	RA ME RA UDC	December 2027	International donor organizations
8.2	Development of the National Program on Energy Efficiency and Renewable Energy for 2021-2030.	National Program will define new measures and targets for 2021-2030 that will facilitate future formation of the policy for Armenia Energy Efficiency and identification of specific actions for its implementation.	Reduced specific cost of energy resources	RA MTAI		December 2020	International donor organizations

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
8.3	Implement regular annual energy statistics in the RA	Annual energy balance development in compliance with the standards of the International Energy Commission	Support to implementation of the energy policy	RA MTAI	RA SC	Annually	International donor organizations
8.4	Establish new parameters for energy efficiency and energy saving, and develop and adopt national standards ensuring their implementation	Energy efficiency and energy saving new national standards for product and services	Reduction of specific cost for energy resources	RA ME	RA MTAI RA UDC	continuously	International donor organizations
<b>9. Information Technology in the Energy Sector</b>							
9.1	Installation of the electronic platform for trading in the wholesale electricity market	Application of the digital systems for transactions	Ensuring impartial and transparent decision making for the market participants	RA MTAI EMO ESO	RA MHTI	December 2022	International donor organizations
9.2	Installation of the unified information system for remotely transmitting and managing the information on the consumption and other necessary indicators from the electricity metering system of the customers connected to the distribution network.	Ensuring full awareness of customers	Ensuring absolute level of transparency	ENA	RA MHTI	December 2027	ENA financing

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
9.3	Installation of the SCADA system in the wholesale electricity market which will enable the ESO not only to collect the necessary data but also to carry out automatic remote control of the network equipment.	Ensuring reliable and uninterrupted operation of the system	Increased quality of the electricity supply	HVEN, ESO	RA MHTI	December 2022	ADB loan
9.4	Implementation of the information security management international standards at ANPP, as provided in 9.4.1 – 9.4.2	Ensuring Cyber-security, digital transformation of the energy sector at ANPP	Ensuring required level of reliability and safety of ANPP operation	ANPP	RA MHTI	December 2023	ANPP financing
	9.4.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"						
	9.4.2 NIST SP 800-53 "Security and Privacy Controls for Information Systems and Organizations"						
9.5	Implementation of the information security international standards at Yerevan TPP, as provided in 9.5.1 – 9.5.2	Ensuring Cyber-security, digital transformation of the energy sector at Yerevan TPP	Ensuring required level of reliability and safety of Yerevan TPP operation	Yerevan TPP	RA MHTI	December 2023	Yerevan TPP financing
	9.5.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"						

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	9.5.2 NIST SP 800-53 “Security and Privacy Controls for Information Systems and Organizations”						
9.6	Implementation of the information security international standards at HVEN, as provided in 9.6.1 – 9.6.2	Ensuring Cyber-security, digital transformation of the energy sector at HVEN	Ensuring required level of reliability and safety of HVEN operation	HVEN	RA MHTI	December 2023	HVEN financing
	9.6.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"						
	9.6.2 NIST SP 800-53 “Security and Privacy Controls for Information Systems and Organizations”						
9.7	Implementation of the information security international standards at ESO, as provided in 9.7.1 – 9.7.2	Ensuring Cyber-security, digital transformation of the energy sector at ESO	Ensuring required level of reliability and safety of ESO operation	ESO	RA MHTI	December 2023	ESO financing
	9.7.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"						
	9.7.2 NIST SP 800-53 “Security and Privacy Controls for Information Systems and Organizations”						

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
9.8	Implementation of the information security international standards at EMO, as provided in 9.8.1 – 9.8.2	Ensuring Cyber-security, digital transformation of the energy sector at EMO	Ensuring required level of reliability and safety of EMO operation	EMO	RA MHTI	December 2023	EMO financing
	9.8.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"						
	9.8.2 NIST SP 800-53 "Security and Privacy Controls for Information Systems and Organizations"						
<b>10. Scientific Advancement in the Energy Sector</b>							
10.1	National Polytechnic University-Fund of Armenia	Providing highly qualified science-based professionals for the safe and reliable operation and development of the energy system	Increased quality of the system operation	NPUA		Continuously	State budget, Contracts with companies of the system
10.2	Scientific Research Institute of Energy CJSC	Application of scientific- research studies in different subareas of the energy system	Increased quality of the system operation	SRIE		Continuously	State budget, Contracts with companies of the system
10.3	"Armatom" CJSC	Application of scientific- research	Increased quality of the system operation	"Armatom" CJSC		Continuously	State budget, Contracts with



<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
		studies in nuclear energy sector					companies of the system
10.4	Establishment of climate change, energy and energy efficiency projects implementation unified institution	Increased efficiency for projects implementation	Management cost reduction	RA MTAI	RA MEnv	July 2021	No financing is required
<b>11. Management of State - Owned Companies</b>							
11.1	ANPP management improvement and implementation of international standards, in accordance with 11.1.1 – 11.1.7	Ensuring efficient management at ANPP, in compliance with the international standards	Improvement of management efficiency of state-owned energy companies			2020 - 2024	
	11.1.1 Revision of the rules currently applied to profit and depreciation for calculation of ANPP electricity tariff, to involve commercial capital without state guarantee.			RA MTAI ANPP	RA PSRC	December 2020	No financing is required
	11.1.2 Fixing ANPP operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years			RA MTAI ANPP	RA PSRC	December 2021	No financing is required
	11.1.3 ISO 9001: 2015 Quality Management			RA MTAI ANPP		December 2024	ANPP Financing

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	11.1.4 ISO 37001: 2016 Anti-Bribery Management Systems			RA MTAI ANPP		December 2024	ANPP Financing
	11.1.5 ISO 50001: 2018 Energy Management Systems			RA MTAI ANPP		December 2024	ANPP Financing
	11.1.6 ISO 14001: 2015 Environmental Management Systems			RA MTAI ANPP		December 2024	ANPP Financing
	11.1.7 ISO 31000: Risk Management			RA MTAI ANPP		December 2024	ANPP Financing
11.2	Yerevan TPP management improvement and implementation of international standards, in accordance with 11.2.1 – 11.2.7	Ensuring efficient management at Yerevan TPP, in compliance with the international standards	Improvement of management efficiency of state-owned energy companies			2020 - 2024	
	11.2.1 Revision of the rules currently applied to profit and depreciation for calculation of Yerevan TPP electricity tariff, to involve commercial capital without state guarantee.			RA MTAI Yerevan TPP	RA PSRC	December 2020	No financing is required
	11.2.2 Fixing Yerevan TPP operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years			RA MTAI Yerevan TPP	RA PSRC	December 2020	No financing is required
	11.2.3 ISO 9001: 2015 Quality Management			RA MTAI Yerevan TPP		December 2024	Yerevan TPP Financing

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	11.2.4 ISO 37001: 2016 Anti-Bribery Management Systems			RA MTAI Yerevan TPP		December 2024	Yerevan TPP Financing
	11.2.5 ISO 50001: 2018 Energy Management Systems			RA MTAI Yerevan TPP		December 2024	Yerevan TPP Financing
	11.2.6 ISO 14001: 2015 Environmental Management Systems			RA MTAI Yerevan TPP		December 2024	Yerevan TPP Financing
	11.2.7 ISO 31000: Risk Management			RA MTAI Yerevan TPP		December 2024	Yerevan TPP Financing
11.3	HVEN management improvement and implementation of international standards, in accordance with 11.3.1 – 11.3.7	Ensuring efficient management at HVEN, in compliance with the international standards	Improvement of management efficiency of state-owned energy companies			2020 - 2024	
	11.3.1 Revision of the rules currently applied to profit and depreciation for calculation of HVEN electricity tariff, to involve commercial capital without state guarantee			RA MTAI HVEN	RA PSRC	December 2020	No financing is required
	11.3.2. Fixing HVEN operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years			RA MTAI HVEN	RA PSRC	December 2020	No financing is required

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	11.3.3 ISO 9001: 2015 Quality Management			RA MTAI HVEN		December 2024	HVEN Financing
	11.3.4 ISO 37001: 2016 Anti-Bribery Management Systems			RA MTAI HVEN		December 2024	HVEN Financing
	11.3.5 ISO 50001: 2018 Energy Management Systems			RA MTAI HVEN		December 2024	HVEN Financing
	11.3.6 ISO 14001: 2015 Environmental Management Systems			RA MTAI HVEN		December 2024	HVEN Financing
	11.3.7 ISO 31000: Risk Management			RA MTAI HVEN		December 2024	HVEN Financing
11.4	ESO management improvement and implementation of international standards, in accordance with 11.4.1 – 11.4.7	Ensuring efficient management at ESO, in compliance with the international standards	Improvement of management efficiency of state-owned energy companies			2020 - 2024	
	11.4.1 Revision of the rules currently applied to profit and depreciation for calculation of ESO electricity tariff, to involve commercial capital without state guarantee.			RA MTAI ESO	RA PSRC	December 2020	No financing is required
	11.4.2 Fixing ESO operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years			RA MTAI ESO	RA PSRC	December 2020	No financing is required

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	11.4.3 ISO 9001: 2015 Quality Management			RA MTAI ESO		December 2024	ESO Financing
	11.4.4 ISO 37001: 2016 Anti-Bribery Management Systems			RA MTAI ESO		December 2024	ESO Financing
	11.4.5 ISO 50001: 2018 Energy Management Systems			RA MTAI ESO		December 2024	ESO Financing
	11.4.6 ISO 14001: 2015 Environmental Management Systems			RA MTAI ESO		December 2024	ESO Financing
	11.4.7 ISO 31000: Risk Management			RA MTAI ESO		December 2024	ESO Financing
11.5	EMO management improvement and implementation of international standards, in accordance with 11.5.1 – 11.5.7	Ensuring efficient management at EMO, in compliance with the international standards	Improvement of management efficiency of state-owned energy companies			2020 - 2024	
	11.5.1 Revision of the rules currently applied to profit and depreciation for calculation of EMO electricity tariff, to involve commercial capital without state guarantee.			RA MTAI EMO	RA PSRC	December 2020	No financing is required

<b>NN</b>	<b>Action</b>	<b>Expected Immediate Result</b>	<b>Expected Impact</b>	<b>Responsible Body(ies)</b>	<b>Co-implementer(s)</b>	<b>Deadline</b>	<b>Action Cost and Financing Source</b>
	11.5.2 Fixing EMO operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years			RA MTAI EMO	RA PSRC	December 2021	No financing is required
	11.5.3 ISO 9001: 2015 Quality Management			RA MTAI EMO		December 2024	ESO Financing
	11.5.4 ISO 37001: 2016 Anti-Bribery Management Systems			RA MTAI EMO		December 2024	ESO Financing
	11.5.5 ISO 50001: 2018 Energy Management Systems			RA MTAI EMO		December 2024	ESO Financing
	11.5.6 ISO 14001: 2015 Environmental Management Systems			RA MTAI EMO		December 2024	ESO Financing
	11.5.7 ISO 31000: Risk Management			RA MTAI EMO		December 2024	ESO Financing

### Acronyms

RA	Republic of Armenia
RF	Russian Federation
RA MTAI	RA Ministry of Territorial Administration and Infrastructure
RA MLSA	RA Ministry of Labour and Social Affairs
RA ME	RA Ministry of Economy
RA MEnv	RA Ministry of Environment

RA MHTI	RA Ministry of High-Tech Industry
RA UDC	RA Urban Development Committee
RA PSRC	RA Public Services Regulatory Commission
ANRA	RA Nuclear Safety Regulation Committee
RA SC	RA Statistics Committee
ESO	“Electric Power System Operator” CJSC
EMO	“Settlement Center” CJSC/Electricity Market Operator
HVEN	“High Voltage Electric Networks” CJSC
ENA	“Electric Networks of Armenia” CJSC
ANPP	“Armenian Nuclear Power Plant” CJSC
Yerevan TPP	“Yerevan TPP” CJSC
Hrazdan 5	Unit of “Gasprom Armenia” CJSC
IEC	"International Energy Corporation" CJSC
ContourGlobal	"ContourGlobal Hydro Cascade" CJSC
REPP	Renewable Energy Power Plant
SRIE	“Scientific Research Institute of Energy” CJSC
NPUAF	"National Polytechnic University of Armenia" Foundation
ADB	Asian Development Bank
USAID	United States Agency for International Development
EIB	European Investment Bank
IBRD	International Bank for Reconstruction and Development
KfW	German development bank
NIF	Neighborhood Investment Fund
SDR	Special Drawing Right
EDBI	Export Development Bank of Iran
PPP	Public Private Partnership
USD	USD dollar