USAID
FROM THE AMERICAN PEOPLE

# ACTION PLAN TO ENSURE IMPLEMENTATION OF THE REPUBLIC OF ARMENIA ENERGY SECTOR DEVELOPMENT STRATEGIC PROGRAM

## MARKET LIBERALIZATION AND ELECTRICITY TRADE (MLET) PROGRAM

January 2021

This report is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this publication are the sole responsibility of Tetra Tech ES, Inc. and do not necessarily reflect the views of USAID or the United States Government.

**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 | |
|---|---|---|---|---|---|---|---|
| **1. Development of Electricity Generation Capacity** | | | | | | | |
| 1.1 | 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 | |
| 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 2022 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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 2026 | |
| 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 | |
| 1.5 | Construction of Yerevan CCGT – 2 with installed capacity of about 254 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 | |
| 1.6 | Construction of Masrik -1 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 | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | | or 1000 MW by 2030. | | | | | |
| 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 | |
| 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 | |
| 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 | |
| 1.11 | Construction of Autonomous Solar Power Plants increasing total installed capacity from 40 MW to 100 MW | Increased energy independence through increased share of solar generation to 15% | Clean electricity generation of about 0.16 billion kWh per year. | Private companies, individuals | RA PSRC | December 2023 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | | or 1000 MW by 2030. | | | | | |
| 1.12 | 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 | |
| 1.13 | 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 | |
| 1.14 | 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 | |
| **2. Development of the High-Voltage Electriicty Transmission Network** | | | | | | | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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 | |
| 2.5 | Reconstruction of 220 kV Substation "Shinahayr" | Increased reliability of the electricity supply | Reduced emergency in the electricity system | HVEN | ESO | December 2022 | |
| 2.6 | Reconstruction of 220 kV Substation "Ashnak" | Increased reliability of the electricity supply | Reduced emergency in the electricity system | HVEN | ESO | December 2020 | |
| 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 | |
| 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 | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | Increased reliability and operation safety of the electricity system | RA MTAI | ESO, HVEN | December 2021 | |
| | 2.15.1 Construction of Iran-Armenia 400 kV double-circuit overhead transmission line | | | | | | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 2.15.2 Construction of 400 kV Substation "Noravan" | MW to 1200 MW, meantime will improve reliability of parallel operation of the energy systems and enhance Armenia energy security. | | | | | |
| 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 cooperation in the energy sector, and in increase of transmission capacity of parallel operation with Georgia from the existing 200 MW to 350 MW. | Increased reliability and operation safety of the electricity system; transient flows, as well as favorable conditions for operational regimes are ensured. | RA MTAI | ESO, HVEN | December 2025 | |
| | 2.16.1 Construction of Substation "Ddmashen" | | | | | | |
| | 2.16.2 Construction of transmission lines | | | | | | |
| | 2.16.3 Construction of the Back-to Back HVDC station | | | | | | |
| 2.17 | Development of the Ten-Year Transmission Network Development Plan, and its | Optimization of the Electricity Sysytem Transmission | | ESO | EMO<br>HVEN | December 2022 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | periodic review once in two years. | Network Development | | | ENA (by agreement)<br>ANPP<br>Yerevan TPP<br>Hrazdan TPP (by agreement) | | |
| **3. Development of the Electricity Distribution Network** | | | | | | | |
| 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, | Increased reliability and quality of customers electricity supply | ENA (by agreement) | | December 2027 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | | exclude the 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 | Ensure electricity supply reliability and uninterrupted supply | ENA (by agreement) | | December 2022 | |
| | | | | | | | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| **4. Electricity Market** | | | | | | | |
| 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<br>ESO | HVEN<br>ENA (by agreement)<br>ANPP<br>Yerevan TPP<br>Hrazdan 5 (by agreement)<br>ContourGlobal (by agreement)<br>IEC<br>(by agreement)<br>REPP | February 2021 | |
| 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<br>ESO | HVEN<br>ENA<br>ANPP<br>Yerevan TPP<br>Hrazdan 5 (by agreement)<br>ContourGlobal (by agreement)<br>IEC (by agreement)<br>REPP | February 2022 | |
| 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<br>EMO<br>ESO | December 2022 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 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 | | Improved economic indicators of the system.<br>Application of flexible tariff systems. | | ENA (by agreement) | | |
| | 4.3.2 Introducing tariff for reactive energy for the electricity customers | | | | | | |
| | 4.3.3 Adoption of the Methodology and Procedure for Setting (Revision) of Tariffs in the Electricity System of Armenia | | | | | | |
| 4.4 | Improvement of protection mechanisms for vulnerable customers | Ensure efficient tariff policy | Poverty reduction | RA MTAI | RA MLSA<br>RA PSRC | December 2022 | |
| 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:<br>1. the renewable energy power plants will be entitled to sell electricity in new electricity market exclusively under competitive terms | 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 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.<br>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 Electricity 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| **5. Regional Energy Cooperation** | | | | | | | |
| 5.1 | Participation in the EAEU common electricity market in accordance with the Action plan approved by the decree N 31 of Supreme Eurasian Economic Council dated December 20, 2019. | Development and adoption of the regulatory documents | Interstate flow access rules.<br>Electricity interstate trading rules.<br>Identification of interstate sections and distribution rules.<br>Information exchange rules.<br>Interstate networks development procedure. | RA MTAI | RA PSRC | 2021-2024 | |
| 5.2 | Participation in the EAEU common natural gas market 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.<br>Unified rules for access to the gas transportation system of the Member States.<br>Protocol on completion of the complex measures as pre-conditions required for ensuring access to the gas transportation system of the Member States. | RA MTAI | RA PSRC | 2021-2024 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | | | Trading rules in the common gas market. Identification of documents for informational cooperation in the information exchange system. | | | | |
| 5.3 | EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA): 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 | 2021-2026 | |
| 5.4 | Implementation of measures focused on the expansion of Armenia - Iran Energy Cooperation and conclusion of agreements | Implementation of Armenia – Iran gas - for - electricity exchange program | Electricity export of 5.0 billion kWh | RA MTAI | ESO<br>EMO<br>Yerevan TPP | 2021-2025 | |
| 5.5 | Implementation of measures focused on the expansion of Armenia - Georgia Energy Cooperation and conclusion of agreements | As a result, prerequisites will be established for regular electricity trade between the | Regular electricity trade between the two countries | RA MTAI | RA PSRC<br>ESO<br>EMO<br>HVEN | 2021-2023 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 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 | two countries based on the EU directives to the extent possible. | Regular electricity trade between the two countries | RA MTAI | RA PSRC<br>ESO<br>EMO<br>HVEN | 2021-2023 | |
| | 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<br>ESO<br>EMO<br>HVEN | 2023 | |
| **6. Heat Supply** | | | | | | | |
| 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,<br>1500 – 7500 AMD/litre, ($60^0$C – $70^0$C) | Large-scale use of renewable energy sources,<br>Increased level of energy security and independence | RA MTAI | Private sector | Continuously until 2040 | |
| 6.2 | Development of new Law on Heating of the RA | Regulation of Heating sector and ensuring legal framework | Harmonization of the legislation with implementation of international practice | RA MTAI | | December 2022 | |
| **7. Gas Supply** | | | | | | | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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 | |
| 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 | |
| 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 (by agreement) | | December 2022 | |
| **8. Energy Efficiency** | | | | | | | |
| 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 | 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<br>RA UDC | December 2027 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | legislation which are aimed at promotion of energy efficiency. | | | | | | |
| 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 | | June 2021 | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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<br>RA UDC | Continuously | |
| **9. Information Technology in the Energy Sector** | | | | | | | |
| 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<br>EMO<br>ESO | RA MHTI | December 2022 | |
| 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 (by agreement) | RA MHTI | December 2027 | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 9.4 | Implementation of the information security management international standards at ANPP, as provided in 9.4.1 – 9.4.2<br>9.4.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"<br>9.4.2 NIST SP 800-53 "Security and Privacy Controls for Information Systems and Organizations" | 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 | |
| 9.5 | Implementation of the information security international standards at Yerevan TPP, as provided in 9.5.1 – 9.5.2<br>9.5.1 ISO/IEC 27000" Security Management Systems (ISMS) standards"<br>9.5.2 NIST SP 800-53 "Security and Privacy Controls for Information Systems and Organizations" | 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 | |
| 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 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 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 | |
| | 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" | | | | | | |
| 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 | |
| | 9.8.1 ISO/IEC 27000" Security Management Systems (ISMS) standards" | | | | | | |
| **10. Scientific Advancement in the Energy Sector** | | | | | | | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| 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 | |
| 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 | |
| 10.3 | "Armatom" CJSC | Application of scientific- research studies in nuclear energy sector | Increased quality of the system operation | Armatom | | Continuously | |
| 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 | October 2021 | |
| **11. Management of State - Owned Companies** | | | | | | | |
| 11.1 | ANPP management improvement and implementation of international | Ensuring efficient management at ANPP, in | Improvement of management efficiency | | | 2021 - 2024 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | standards, in accordance with 11.1.1 – 11.1.7 | compliance with the international standards | of state-owned energy companies | | | | |
| | 11.1.1 Revision of the rules applied to profit rate for calculation of ANPP electricity tariff, to involve commercial capital without state guarantee. | | | RA MTAI ANPP | RA PSRC | January 2021 | |
| | 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 | |
| | 11.1.3 ISO 9001: 2015 Quality Management | | | RA MTAI ANPP | | December 2024 | |
| | 11.1.4 ISO 37001: 2016 Anti-Bribery Management Systems | | | RA MTAI ANPP | | December 2024 | |
| | 11.1.5 ISO 50001: 2018 Energy Management Systems | | | RA MTAI ANPP | | December 2024 | |
| | 11.1.6 ISO14001: 2015 Environmental Management Systems | | | RA MTAI ANPP | | December 2024 | |
| | 11.1.7 ISO 31000: Risk Management | | | RA MTAI ANPP | | December 2024 | |
| 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 | Improvement of management efficiency of state-owned energy companies | | | 2021 - 2024 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 11.2.1 Revision of the rules applied to profit rate for calculation of Yerevan TPP electricity tariff, to involve commercial capital without state guarantee. | international standards | | RA MTAI Yerevan TPP | RA PSRC | January 2021 | |
| | 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 2021 | |
| | 11.2.3 ISO 9001: 2015 Quality Management | | | RA MTAI Yerevan TPP | | December 2024 | |
| | 11.2.4 ISO 37001: 2016 Anti-Bribery Management Systems | | | RA MTAI Yerevan TPP | | December 2024 | |
| | 11.2.5 ISO 50001: 2018 Energy Management Systems | | | RA MTAI Yerevan TPP | | December 2024 | |
| | 11.2.6 ISO14001: 2015 Environmental Management Systems | | | RA MTAI Yerevan TPP | | December 2024 | |
| | 11.2.7 ISO 31000: Risk Management | | | RA MTAI Yerevan TPP | | December 2024 | |
| 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 | Improvement of management efficiency of state-owned energy companies | | | 2021 - 2024 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | 11.3.1 Revision of the rules applied to profit rate for calculation of HVEN electricity tariff, to involve commercial capital without state guarantee | international standards | | RA MTAI HVEN | RA PSRC | January 2021 | |
| | 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 2021 | |
| | 11.3.3 ISO 9001: 2015 Quality Management | | | RA MTAI HVEN | | December 2024 | |
| | 11.3.4 ISO 37001: 2016 Anti-Bribery Management Systems | | | RA MTAI HVEN | | December 2024 | |
| | 11.3.5 ISO 50001: 2018 Energy Management Systems | | | RA MTAI HVEN | | December 2024 | |
| | 11.3.6 ISO14001: 2015 Environmental Management Systems | | | RA MTAI HVEN | | December 2024 | |
| | 11.3.7 ISO 31000: Risk Management | | | RA MTAI HVEN | | December 2024 | |
| 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 | | | 2021 - 2024 | |
| | 11.4.1 Revision of the rules applied to profit rate for calculation of ESO electricity | | | RA MTAI ESO | RA PSRC | January 2021 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | tariff, to involve commercial capital without state guarantee. | | | | | | |
| | 11.4.2 Fixing ESO operation and maintenance costs and establishment of approaches for its annual revision for the next 10 years | | | RA MTAI<br>ESO | RA PSRC | December 2021 | |
| | 11.4.3 ISO 9001: 2015 Quality Management | | | RA MTAI<br>ESO | | December 2024 | |
| | 11.4.4 ISO 37001: 2016 Anti-Bribery Management Systems | | | RA MTAI<br>ESO | | December 2024 | |
| | 11.4.5 ISO 50001: 2018 Energy Management Systems | | | RA MTAI<br>ESO | | December 2024 | |
| | 11.4.6 ISO14001: 2015 Environmental Management Systems | | | RA MTAI<br>ESO | | December 2024 | |
| | 11.4.7 ISO 31000: Risk Management | | | RA MTAI<br>ESO | | December 2024 | |
| 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 | | | 2021 - 2024 | |
| | 11.5.1 Revision of the rules applied to profit rate for calculation of EMO electricity | | | RA MTAI<br>EMO | RA PSRC | January 2021 | |

| NN | Action | Expected Immediate Result | Expected Impact | Responsible Body(ies) | Co-implementer(s) | Deadline | |
|---|---|---|---|---|---|---|---|
| | tariff, to involve commercial capital without state guarantee. | | | | | | |
| | 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 | |
| | 11.5.3 ISO 9001: 2015 Quality Management | | | RA MTAI EMO | | December 2024 | |
| | 11.5.4 ISO 37001: 2016 Anti-Bribery Management Systems | | | RA MTAI EMO | | December 2024 | |
| | 11.5.5 ISO 50001: 2018 Energy Management Systems | | | RA MTAI EMO | | December 2024 | |
| | 11.5.6 ISO14001: 2015 Environmental Management Systems | | | RA MTAI EMO | | December 2024 | |
| | 11.5.7 ISO 31000: Risk Management | | | RA MTAI EMO | | December 2024 | |

**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 |
| Armatom | "Armatom" CJSC |
| NPUA | "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 | US dollar |