



# Online Workshop Sustainable Energy Policies and Implementation of National Sustainable Energy Action Plans

17 November 2021

# VISION OF THE RA GOVERNMENT FOR ENERGY SECTOR DEVELOPMENT

- Free, competitive and non-discriminatory,
- Inclusive and diversified,
- Energy independence at the 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 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.



# DEVELOPMENT OF GENERATING CAPACITY

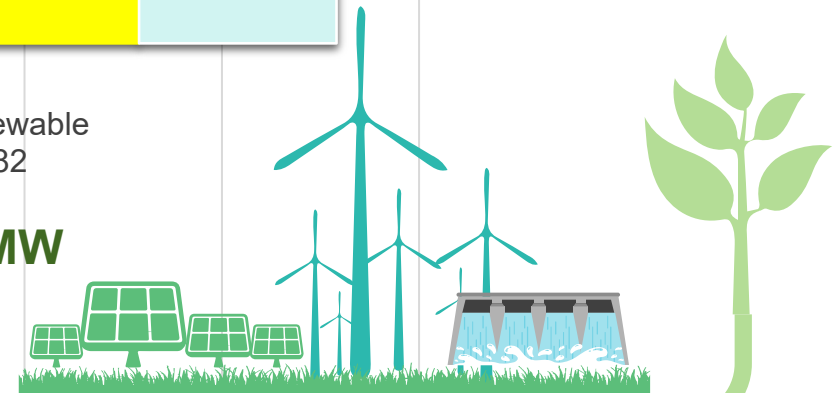
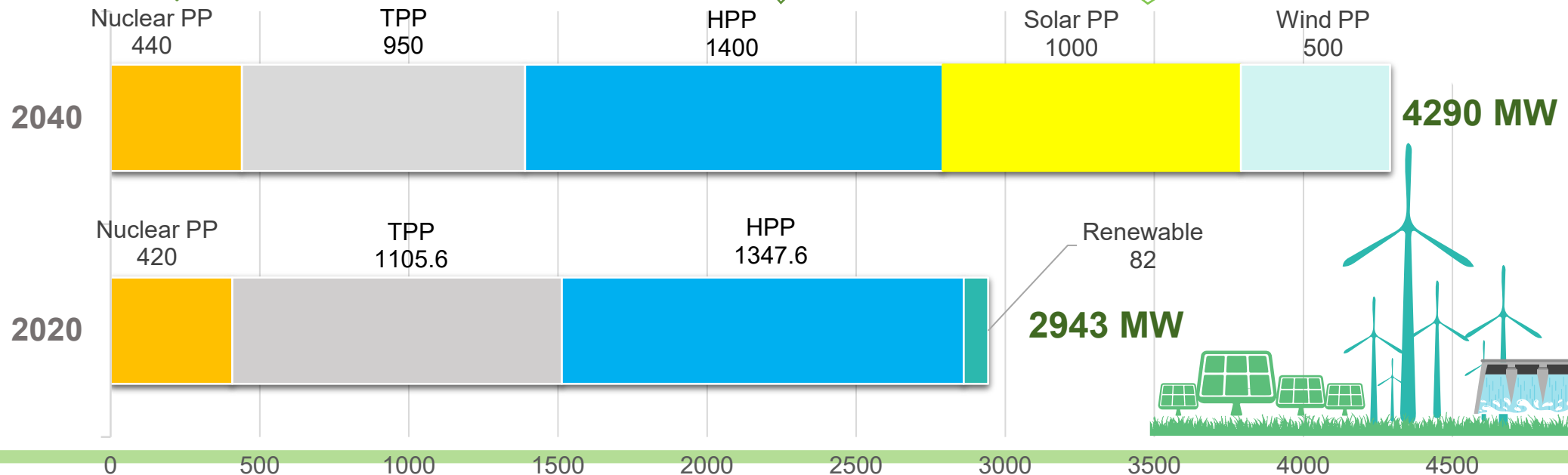
The extension of operational lifetime of ANPP Unit 2 after 2026 is on the main priorities of the RoA Government and the construction of a new nuclear power plant upon the expiration of the term is the main objective. The availability of the nuclear power plant in the power system will allow to diversify more the energy resources, not to increase reliance on the imported natural gas as well as the volume of emissions.

Due to low efficiency the 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 (250 MW, by January 2022) which is being constructed into service.

Small HPPs. 23 power plants, 50 MW, commissioning by 2023.

Solar Power Plants  
 1) Masrik -1 55 MW,  
 2) Ayg-1 200 MW  
 3) 5 Solar plants- 120 MW ,  
 4) Small solar plants-325 MW ,  
 5) Autonomous solar plants-300 MW

Small and utility scale Wind Power Plants with capacity of up to 500 MW, if competitive tariff offers exist.



## Maximum use of Renewable Energy Potential



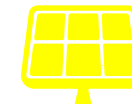
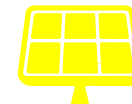
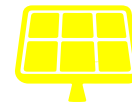
The maximum use of renewable energy potential, considering it as a part of the Least Cost Energy Development Plan, is one of the key priorities of the Energy Sector development.

According Energy law of Armenia.

For a person with a license to generate electricity (capacity), the PSRC shall establish the first decision on the establishment of an electricity tariff within fifteen years after the entry into force of small hydropower plants and other renewable energy sources (wind, solar, geothermal and biomass). All generated electricity (capacity) is subject to purchase in accordance with market rules.

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.

The Republic of Armenia 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.



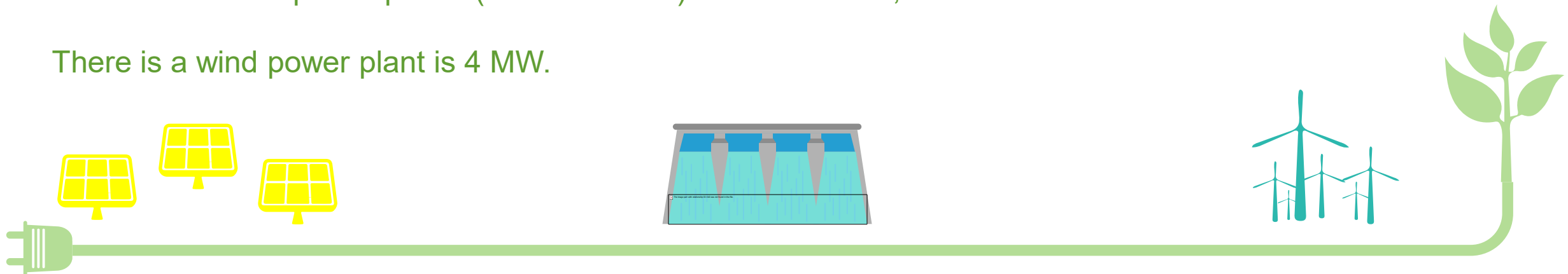
# Maximum use of Renewable Energy Potential

Physical and juridical persons can install solar autonomous stations with capacity of up to 150 kW to produce electricity to use their own needs and the surplus can be sold to the "Electric Networks of Armenia" company. For this process not only a license is required but also the whole process is tax-free.

As of November 1, 2021, 6382 autonomous solar power plants with capacity up to 500 kW, with the total installed capacity of 122 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 300 MW for the next three years. The first solar floating plant development project was launched in Armenia on 2021. Based on the studies' outcomes, a pilot floating solar photovoltaic plant with a capacity of about 150 kW will be built in Armenia.

Renewable small power plants (under 30 MW ) about 400 MW, whereof about 380 MW are small HPP.

There is a wind power plant is 4 MW.



## 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.

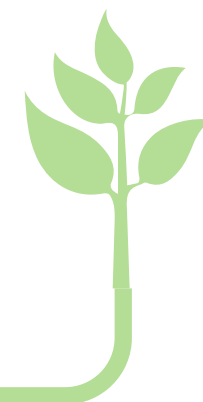
The process of development of National Program on Energy Saving and Renewable Energy 2022-2030 has already commenced taking into consideration increasing economic and energy security, power system reliability, strengthening economic and energy independence, promoting energy efficiency and renewable energy development based on new production and services organization, as well as reducing man-made impact on environment and human health.



## Possible realization of energy efficiency potential

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.

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.



# 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. 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. 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.

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.

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, implementation of new tariff adjustment mechanisms for reactive energy, necessity to fix monthly service 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.







## SCIENCE-BASED AND DIGITAL 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.

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.

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.

# SUMMARY

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.





Thank you