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Armenia

RENEWABLE ENERGY

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This country-specific Q&A provides an overview of renewable energy laws and regulations applicable in Armenia.

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ARMENIA

RENEWABLE ENERGY



1. Does your jurisdiction have an established renewable energy industry? What are the current production levels?

Following the severe economic crisis in the early 90s, the Republic of Armenia has undertaken significant policy reforms, including legal, regulatory and institutional reforms to recover from economic decline, undertake the transition from planned to a market economy and overcome the obstacles created due to its unfavourable geopolitical conditions and lack of natural resources.

Armenia has limited fossil fuel and coal reserves, and no to very little and hard to extract confirmed oil or natural gas reserves. The energy system of the country is highly dependent on electricity generation. Electrical energy is generated by the Armenian Nuclear Power Plant, Yerevan TPP CJSC, Hrazdan Energy Company, Vorotan HPP Cascade, and Sevan-Hrazdan Cascade, as well as many smaller entities holding licences for the generation of energy through renewable energy plants (mostly hydro).

Currently, Armenia can meet only around 35 percent of the current demand for energy with its domestic resources (Armenia imports fuel for thermal power plants, and the fuel for the nuclear power plant). Therefore, the development of renewable energy resources is of critical importance for the energy security of the country. Hydropower generation was the main driving force in solving the problem during the last 20 years. In the meantime, radical abatement of the price of solar (PV) technologies nowadays and respective increase of capital investment is likely to create a level playing field by solving energy sufficiency problem by the development of solar (PV) technologies in Armenia. Wind and geothermal energy generation is another area of development of renewables, and there are already some projects implemented or in the phase of implementation also in these areas.

The electricity generated in Armenia mainly produced at three types of power plants: nuclear, hydro, thermal. 39% is produced at nuclear power plants, the remaining

60% equally at hydro and thermal power plants. The share of all other stations in the electric power system is quite low – up to 1%. The government's goal is to have 12 billion kWh of products by 2030, and at the same time to increase the renewable energy production up to 15% by 2030.

2. Who are the key regulators for renewables industry in your jurisdiction? How do they impact the industry?

Mainly, the key regulators in this industry are the Ministry of Territorial Administration and Infrastructure ("the Ministry") and the Public Services Regulatory Commission ("the PSRC" or "the Commission").

Pursuant to the RA Law on Energy ("the Law"), the Ministry:

- develops strategic plans for the development of the energy sector, as well as relevant legal acts and safety regulations, and presents them for approval by the government;
- cooperates with the PSRC in order to trigger cross-border sales and expand interstate cooperation;
- advises the PSRC on the annual limits of licences to be provided by the PSRC to plants using renewable energy with up to 30MW installed capacity, taking into consideration the strategic development plans for the sector;
- approves PSRC decisions to grant licences to power plants with over 30MW installed capacity;
- approves the market rules, indicators of security and reliability of the energy sector; and
- submits proposals to the government of Armenia with regard to public-private partnerships in the energy sector .

The PSRC is the entity authorised to regulate the sector. The RA Law on Energy and RA Law on Public Regulatory

Authority determine its authorities. In particular, the PSRC:

- determines the tariffs of distribution and transmission in the sectors of electricity, thermal energy and natural gas, the tariffs of system operators and service provision in the electricity market, as well as the maximum tariffs for the importation of electric energy and natural gas;
- to carry out licensing in the energy sector in accordance with the procedure established by it for granting licences, extending their validity, reissuing, suspending and terminating their validity, as well as establishing the terms of licences, monitoring their execution and applying the liability measures established by this law; gives a consent to investment programs submitted by licensed persons in order to include or reject them in full or in part in future tariffs;
- determines the mandatory terms of service provisions and energy or natural gas supply agreements to be concluded between licensed entities or verifies the exemplary agreements, and registers the agreements between licensed entities;
- establish minimum requirements for the quality of customer service by licensed persons;
- establish mandatory conditions or approximate forms of contracts for the supply and provision of electric energy, thermal energy and natural gas services concluded between licensed persons and consumers, and ensure their implementation;
- to cooperate with the authorised body of the Government of the Republic of Armenia in the field of energy in the direction of stimulating interstate trade in electric energy (capacity), expanding interstate cooperation in the field of energy;
- monitors the activities of licensees in order to control compliance with the conditions of the licence, etc.

3. How are rights to explore/set up renewable energy projects, such as solar or wind farms, granted? How do these differ based on the source of energy, i.e. solar, hydropower, wind, geothermal and biomass?

Types of activities subject to licensing in the energy sector are:

1. production of electric energy (capacity), production of thermal energy or combined production of electric and thermal energy;
2. transmission of electric energy, transmission of thermal energy or transportation of natural gas;
3. distribution of electric energy, distribution of thermal energy or distribution of natural gas;
4. supply of electric energy, guaranteed supply of electric energy;
5. the service of the operator of the electric power system or the operator of the gas supply system
6. electric power market operator service;
7. Wholesale of electricity;
8. import of natural gas or export of natural gas:

In the meantime, it must be highlighted that the regulations for renewable energy, irrespective of the source used for production (whether wind or solar), the process for acquisition of the license is the same.

Only persons who have a licence to operate in accordance with the RA law on Energy can purchase and sell electric and thermal energy, natural gas (buy for the purpose of sale), unless otherwise provided by this law:

Import and (or) export of electric energy may be carried out only under a licence for the type of activity issued by the commission, which, in accordance with the Law, includes the right to import and (or) export electric energy in accordance with this law and market rules.

The respective licence is provided by PSRC. The list of documents and forms to be submitted for an Operational Licence shall be determined by the Commission. The Commission, within the specified period, which shall not exceed eighty (80) days (in the case of small hydroelectric power plants and other renewable energy sources -25 working days) from the date when all the required documents are submitted by the applicant to the Commission, will review and act on all Licence applications.

According to the PSRC N 374-Ն decision adopted on 1st November 2013 licences for the production of electric energy (capacity), production of thermal energy, combined production of electric and thermal energy is issued taking into account the need for effective use of local resources, protection of the interests of consumers of the domestic market`

1. in the case of licences for the production of electric energy at stations using renewable energy resources with an installed capacity of up to 30 MW, also taking into account the proposals of the energy authority authorised

by the Government of the Republic of Armenia arising from the strategic development programs of the energy sector of the Republic of Armenia regarding the maximum annual total capacities of these stations, except for the cases provided the same order.

2. in the case of licences for the production of electric energy with an installed capacity of 30 MW or more, also obtaining the consent of the authorised body of the Government of the Republic of Armenia in the field of energy.

At a station using a renewable energy resource, a licence for the production of electric energy may also be granted when, regardless of the availability for this station of the maximum annual total capacities established by PSRC, in order to obtain a licence for the production of electric energy, including the construction period, the applicant waives its right to the statutory purchase guarantee of electricity.

4. What does the energy split look like in your jurisdiction and how is this changing as a result of the green energy transition?

According to the explanatory note to the energy balance published by the PSRC of the Republic of Armenia in 2020, the RA exports electricity to Iran, Artsakh and Georgia. Electricity is also being imported from these countries. Exports to Iran are carried out on the principle of exchanging electricity for gas, and in 2020 it amounted to 97.3% of all exported electricity. Inflow from Iran in 2020 was 30.9 million kWh, which is due to the power system modes. Electricity is exported to Georgia mainly in case of disconnection of the 500 kV Caucasus power transmission line from Russia to the Caucasus power system, which was practically absent during 2020.

Electricity supply to the northern regions of Armenia during the swampy seasons is carried out from Georgia, in a separate regime and in 2020 it amounted to 66.4 million kWh. In 2020 electricity supplies to Artsakh amounted to 36.6 million kWh, and the inflow 223.0 million kWh.

In 2020 the Armenian NPP produced 2,756.3 million kWh of electricity, which is about 35.5% of the total production. These indicators have increased compared to 2019, which is conditioned by the works related to the extension of the NPP operation period.

There are three major thermal power plants in Armenia. The "Yerevan Thermal Power Plant" CJSC, operating on a combined cycle, which, although it is a combined cycle

production station, in 2020, it produced 1083.6 million kWh electricity. The Hrazdan-5 condensing power unit, owned by Gazprom Armenia CJSC, produced 1083.6 million kWh of electricity. In the condensing power units of "Hrazdan TPP" OJSC in 2020 658.3 million kWh of electricity was produced. Combined production power units of "Hrazdan TPP" OJSC in 2020 did not work. Production of "Gazprom Armenia" CJSC compared to 2019, increased by 14.7%, due to a reduction in production volumes as a result of works on the modernization of the HPP of Kontur Global Hydro Cascade CJSC.

The shares of the mentioned power plants in the total production make 18.3%, 14.0% and 8.5%, respectively. So, compared to the same period last year, the share of the power plant of CJSC "Yerevan TPP" decreased and the shares of JSC "Hrazdan-5" and "Hrazdan TPP" increased.

A certain amount of electricity was also generated at low-power stations of combined production of electric and thermal energy. Total output of cogeneration plants of the Fund "Yerevan State Medical University named after Mkhitar Heratsi" and CJSC "Armruskogeneration" in 2020 amounted to 13.3 million kWh or 0.17% of the total production.

Armenia's hydropower industry is represented by two large cascades of hydroelectric power plants operated by CJSC International Energy Corporation and Contour Global Hydro Cascade, as well as many small hydroelectric power plants. The HPP of International Energy Corporation CJSC produced 403.1 million kWh, and the HPP of CJSC Contour Global Hydro Cascade produced 543.3 million kWh of electricity, which is respectively 5.2% and 7.0% of total production. Thus, the production of large hydroelectric power plants in 2020 has decreased compared with 2019, particularly in the HPP "Contour Global hydro Cascade"-about 1.8 times. According to the PSRC the number of small hydroelectric power plants reached 188 during 2020 and their total installed capacity was 376.0 MW, while the actual annual electricity production was 832.0 million kWh. The share of small HPPs in the total useful supply was 11.0%, which is 1.8% lower than in 2019.

A certain amount of energy was also produced at the NPP. 1.9 million kWh of electricity was produced, which is only 0.02 of the total output.

2020 the development of the use of PV installations continued. According to the information provided on the official website of the PSRC, in 2020 the installed capacity of autonomous solar photovoltaic installations amounted to 16.75 MW, the energy production was 21.3 million kWh. The installation capacity of autonomous solar photovoltaic installations, according to expert

estimates, amounted to about 76.8 MW, and the annual output, taking into account the data of the solar map of Armenia, amounted to 115.3 million kWh. Compared to 2019, the volume of electricity produced by autonomous PV installations increased about 2.4 times.

As part of the green energy transition, in the RA special attention is paid to the expansion of electricity production using modern renewable energy sources (solar, wind, geothermal), furthermore the Republic of Armenia aims to increase the share of solar energy production to 15% by 2030.

5. Is the government directly involved with the renewables industry? Is there a government-owned renewables company?

According to the Strategic program for the development of the energy sector of the RA (until 2040) adopted by the Government decision N43-L on 14 January 2021, the Government of the Republic of Armenia plans to significantly improve the management of state-owned energy companies by introducing new tools in accordance with international standards. Currently, there are five companies with state participation in the energy sector, including.

- Armenian Nuclear Power Plant CJSC – electric energy production,
- Yerevan CHP CJSC – electricity production,
- CJSC " High -voltage Electric Networks " – provision of services for the transmission of electric energy,
- CJSC "Electric Power system operator" – provision of dispatching services to the electric power system,
- CJSC "settlement centre" – provision of services to the operator of the electric power system market.

In order to improve the management efficiency of the above-mentioned five state-owned companies, over the next few years, the state intends to ensure that companies' compliance with the requirements of international standards. At the same time, in order to increase the efficiency of these companies, it is necessary to change the tools of tariff regulation of the latter, moving from annual tariff regulation to a multi-year cycle, also introducing incentive regulation measures.

This approach is already being applied in the case of private companies in the sector and enables companies to improve both the quality of services provided and the level of profitability as a result of increasing the

efficiency of their activities. In addition, it is necessary to revise the profit rate established by the Commission for the regulation of public services for state-owned companies for the purpose of tariff regulation, since at its current level, among other restrictions, it is impossible to attract private investment and the Government of the Republic of Armenia attracts the necessary financial resources for the implementation of these investments through the provision of state guarantees.

In the context of the above, the following works will be carried out during 2020-2024.

- Revision of the profit margin used to calculate electricity tariffs for companies with state participation in order to attract commercial capital without a state guarantee,
- fixing the costs of operating and maintaining companies with state participation and approving approaches to their annual revision for the next 10 years.,
- Implementation of international standards such as ISO 9001: 2015 Quality Management, ISO 37001: Anti-Bribery Management systems, ISO 50001:2018 energy management systems, ISO 14001: 2015 Environmental Management Systems and ISO 31000. Risk management.

6. What are the government's plans and strategies in terms of the renewables industry? Please also provide a brief overview of key legislation in the renewable energy sector?

Reducing dependence on imported fossil fuels is a priority task for Armenia, the main way to achieve this is the progressive development of renewable energy. The RA Government by its decision N 398-L on 22 March of 2022 has adopted Energy Saving and Renewable Energy Sources Program for 2022-2030. The program aims to improve the energy efficiency of the Armenian economy in the next ten years and to stimulate energy conservation, as well as to expand the use of renewable energy sources as a means of increasing energy security and reliability and reducing the negative impact on the environment.

In addition to the main goals, the program sets goals in the following two directions`

- development of renewable energy sources,
- energy saving:

In terms of maximising the use of renewable energy

potential (in particular, solar energy), the program emphasises the possibilities of introducing and developing battery systems that will contribute to improving the safety and reliability of the republic's energy system.

In this direction, as a first step in the near future, it is planned to develop a concept of business models for the construction of accumulator battery systems. The construction of accumulator battery systems is planned to be carried out mainly within the framework of public-private partnership, considering 2 business models`

1. a large solar station together with an accumulator battery system.
2. separated energy accumulator battery systems.

It is also planned to conduct a study of the possibilities of building battery systems of network energy, taking into account international experience and best practices of the industry.

In terms of the functioning of these systems, special importance will be attached to changes in the tariff policy, which will be aimed at stimulating the functioning of energy battery systems.

During the program period, it is planned to prepare and hold an international competition for the construction of 5 large solar photovoltaic plants with a capacity of 120 MW.

Concerning the key legislation, as mentioned before, the principal legal acts regulating the renewable industry is **The RA Law on Energy**, which is regulating the ownership and structure of the energy sector and the rights and obligations of entities engaged therein. Further, **the RA Law on Energy Saving and Renewable Energies** regulates the relations in the area of energy conservation and renewable energy, the inter-relationships of the state administration and local self-government bodies of the Republic of Armenia, legal and physical persons arising from and in connection with the activities in the sphere of energy saving and renewable energy, sets the principles of energy saving and development of the sector.

The RA Law on Public Regulatory Authority sets the rules and conditions for the activities of the PSRC, which is the authority regulating the energy sector.

The renewable energy industry sector is being regulated by Network transmission rules of the electric power market of the RA, as established by the decision of PSRC No 522-N, dated 25 December 2019. The Network Transmission Rules of the Electric Power Market of the

Republic of Armenia (hereinafter referred to as the EGC Rules) regulate the planning of the development of the electric power system, short-term planning in the electric power system, operational management and regulation of the electric power system, connection of new capacities to the electric power transmission network, requirements for electric energy metering complexes in the electric power system and procedures aimed at improving the efficiency of work electric power system.

7. Are there any government incentive schemes promoting renewable energy? For example, are there any special tax deductions or incentives offered?

In recent years, according to the Energy saving and Renewable Energy Sources program for 2022-2030 the following methods of state support have been used in Armenia:

1) Easy conditions for connection to the distribution network of autonomous producers and incentive prices for the purchase of surplus products.

This policy, adopted by the PSRC and supported by the Government of the Republic of Armenia, has been the most effective, due to which the capacity of solar stations, exclusively through private investment, has increased by an average of more than 30 MW per year in the last three years reaching about 101 MW in June. Continuation of this policy, with some changes and improvements, in particular, the introduction of the institute of group autonomous producers (in this regard the amendments made to the law on Energy have entered into force since 1 May 2022), as well as the increase of the upper capacity limit in case of installation of appropriate capacity accumulator battery systems, may provide 200-250 MW increase of installed capacity of solar stations in the next 10 years.

2) Tariff tenders with the provision of additional state guarantees.

Although the Law "On Energy" of the Republic of Armenia stipulates a 20-year guaranteed purchase norm for renewable energy stations (15 years for small hydroelectric power plants), from the point of view of investors and financiers, the privacy of distribution networks in Armenia poses additional risks, which must be covered by the RA Government, by providing guarantees. Due to this policy, during the last three years, two tenders for the construction and operation of solar photovoltaic stations were held (Masrik-1 solar photovoltaic station (with a capacity of 55 MW at a fixed

tariff of 4.19 US cent/ kWh) և Ayg-1 solar photovoltaic station with a capacity of 200 MW 2.9 US cents/kWh fixed rate)). However, the continuation of this policy, in particular the implementation of tenders for large solar photovoltaic stations with a capacity of 320 MW envisaged by the Government of the Republic of Armenia, depends on increasing the capacity of the Armenia-Iran power transmission lines, installing storage capacity, as well as the progress of the development of the high-voltage power transmission network (by measures, in particular, the reconstruction of substations) under the Strategic Plan for the Development of the Energy Sector of the Republic of Armenia (until 2040).

Moreover, on July 1, 2019, the RA Law on Making Amendments to the RA Tax Code entered into force, according to which the import or alienation of electric motor vehicles (passenger vehicles, mopeds) is exempt from VAT. Within the framework of the new public (street) parking policy, new privileges are envisaged for electric vehicle operators. Along with the expansion of privileges for electric car operators, the policy will also be aimed at introducing an electric car charging network and expanding it in the whole territory of Armenia. It is planned to be implemented within the framework of public-private partnership.

In addition, the tax code provides certain tax benefits, in particular it provides that for the purpose of determination of profit tax base, the compensation amounts received from the entity having an electric energy distribution licence of an autonomous energy producer using renewable energy resources, as well as the compensations received in the form of electric energy for the electric energy supplied to the entity having electric energy distribution licence by an autonomous energy producer using renewable energy resources in case of equal reciprocal flows shall not be deemed income for profit taxpayers.

At the same time, the Tax Code envisages, as a deducted income for the purpose of determining the tax base, the compensation amounts received from the entity having an electric energy distribution licence of an autonomous energy producer using renewable energy resources, as well as the compensations received in the form of electric energy for the electric energy supplied to the entity having an electric energy distribution licence by an autonomous energy producer using renewable energy resources in case of equal reciprocal flows.

Furthermore, within the meaning of applying the legal acts regulating tax relations the Tax Code does not consider as an entrepreneurial activity the following:

- transfer of electric power generated by a

natural person being an independent energy generator using renewable energy resources for his or her needs — who is not an individual entrepreneur or a notary — to a person having a licence for distribution of electric power, including compensations received for such actions, where the rated capacity of their installations generating electric power does not exceed the total capacity of their located consumers of electric power, but not more than 150 kW.

8. How have private companies outside of the renewable energy sector responded to the renewables industry? Have you seen more companies set net-zero and/or science-based targets?

Renewable industry is newly developing in the Republic of Armenia and private sector companies seem to be highly interested in these sectors. For example, a number of banks (America, HSBC, Evocabank, etc) in Armenia suggest low interest loans in the framework of renewable energy programs which serve as a good funding source for the individuals and legal entities willing to develop the renewable energy sector in Armenia.

As for private companies' own targets and plans, there are unfortunately very few, and the vast majority of them are net-zero targets.

9. What are the key contracts you typically expect to see in a new-build renewable energy contract?

The key contracts which, the templates whereof have been published by the PSRC are the following:

- Contract for the purchase and sale of electricity (capacity) and the provision of services contract for the accounting of electricity supplied during debugging and operation
- Contract for the provision of market operator services (market operator-exporter)
- Suggested form of the contract for the provision of electricity transmission services (exporter-transmitter)
- Suggested form of a service agreement (system operator-exporter) of an electric power system operator,
- Suggested forms of contracts for the provision of services for the distribution of electric

energy (distributor-participant of the wholesale market) and the provision of services for balancing electric energy

- The Suggested form of the contract for the supply and reimbursement of electric energy (autonomous energy producer-distributor),
- An agreement on the supply of electric energy and the purchase and sale of electric energy during the connection, debugging and operation of a station under construction (being rebuilt) to the distribution network (according to the law - a manufacturer-distributor of electric energy at the station with a guarantee of purchase of 30 MW or more).

10. Are there any restrictions on the export of renewable energy, local content obligations or domestic supply obligations?

Any participant of the wholesale electric power market, in accordance with the requirements of the RA Law on Energy, market rules, licence terms and contracts, has the right to export electric energy. According to the RA law on energy import and (or) export of electric energy may be carried out only under a licence for the type of activity issued by the commission, which, in accordance with the Law on Energy, includes the right to import and (or) export electric energy in accordance with this law and market rules.

It is important to emphasise that according to the law, electricity can be exported only after meeting the demand of domestic consumption, which is approved by the operator of the electricity market in accordance with the rules of the market.

Interstate electricity trade can be carried out both by concluding direct contracts for the purchase and sale of electric energy with foreign individuals or legal entities, and by combining the wholesale electricity market of the Republic of Armenia with wholesale electricity markets of other countries.

Foreign individuals and legal entities, in accordance with the procedure established by the market rules, have the right to transit electric energy through the territory of the Republic of Armenia on the basis of contracts concluded with the operator of the electric power system, the operator of the electric power market, the transmission operator, as well as with persons licensed for distribution (if the transit electric energy also passes through the distribution network).

11. Does the regulatory regime include any specific decommissioning obligations? How do these obligations differ across solar, hydropower, wind, geothermal and biomass?

According to part 3 of the Article 7 of the Law of the Republic of Armenia "On energy" in case of elimination of the energy installation, its owner is obliged to restore or improve the occupied area in the manner prescribed by law. The Armenian legislation does not include any specification regarding this obligation across solar, hydropower, wind, geothermal or biomass.

12. Could you provide a brief overview of the major projects that are currently happening in your jurisdiction?

In recent years, industrial-scale solar photovoltaic technology has become more competitive compared to other electricity generation technologies in Armenia.

6 sites/sites were selected in order to encourage the construction of industrial-scale solar photovoltaic plants: Talin, Masrik-1, Mets Masrik, Gagarin, Dashtadem, Merdzavan.

The Masrik-1 solar photovoltaic plant with a capacity of 55 MW is planned to be built in the settlement of Mets Masrik in Gegharkunik region. The financing of the construction of the Masrik-1 solar photovoltaic plant has already been completed and it is under construction.

In addition, it should be noted that within the framework of the joint program of Armenian National Interests Fund (Anif) and the company "Masdar" Abu Dhabi, the preparatory work on the construction of a 200 MW photovoltaic plant "Ayg-1" photovoltaic power plant is in process. is planned to be built on the administrative territory of the Talin and Dashtadem communities of the Aragatsotn region and construction will begin in 2023-2024. Environmental impact assessment (EIA) is currently underway.

It is also important to note that in November 2021 a new 254 MW Yerevan-2 combined cycle power plant (EHEA-2) was opened in Yerevan, which was designed by the Italian companies "Renco", "Siemens" and "Armpower" founded by "Simest" state investment fund.

Within the next three years, a new 400 kV line with the capacity of 1000 MW, from Georgian to Iranian border will be commissioned. At the initial stage, it will have a capacity of 350 MW.

13. Who are the key players that are driving the green renewable energy transition in your jurisdiction?

As of July 1, 2020, the following stations with a total capacity of 2878.7 MW are operating in the electric power system.

- ANPP: 407.5 MW,
- RazTES: 410 MW,
- «Hrazdan-5» enterprise: 467 MW,
- «YEREVAN TPP» CJSC: 228.6 MW,
- Vorotan HPPs Cascade: 404.2 MW,
- Sevan-Hrazdan HPPs Cascade: 561.4 MW,
- Small renewable power plants (with a capacity of up to 30 MW) with a capacity of about 400 MW, of which about 380 MW of small hydroelectric power plants.

From the above, the Hrazdan HPP Cascade is planned to be decommissioned due to low efficiency after the commissioning of the Iran-Armenia transmission line with a voltage of 400kV and the Yerevan's second CCPP which is under construction. At the moment, the following production facilities are being built:

- Yerevan's second CCPP- 250 MW, commissioning until July 2022 (250 million US dollars of investment),
- Masrik-1 55 MW capacity solar PV plant, commissioning until 2022. July (\$60 million investment),
- Small hydroelectric power plants - 23 stations, 50 MW, production up to and including 2023 (60 million dollars of investment),
- Small solar stations: 48 stations, 197 MW, production until 2022 (2022 including). At the same time, it is planned that in 2022 the total installed capacity of such stations will be 210 MW.

As of July 1 of 2020, 2,669 solar autonomous stations with a capacity of up to 500 kW with a total capacity of 49.5 MW were connected to the network. The current pace of development makes it possible to predict that in the next three years their total installed capacity will reach 100 MW.

The Government of the Republic of Armenia aims to increase the share of solar energy production in the total volume to at least 15% or 1.8 billion kWh by 2030. For this purpose, solar stations with a capacity of about 1000 MW, including autonomous ones, will be built.

Armenia is a favourable country for the development of

solar energy, despite this, solar energy currently plays an insignificant role in the structure of primary energy supply (2019). Nevertheless, it should be noted that over the past three years, international competitions of two large solar stations with a total installed capacity of 255 MW have been successfully held in Armenia.

14. Please can you give a summary of the key renewable projects in the pipeline in your jurisdiction?

In 2021, the "Armpower" power plant with a combined cycle of gas fuel with a capacity of 250 MW was commissioned. More than \$250 million has been invested to implement the program.

In 2021, the reconstruction of the 220 kV Ashnak substation was completed. About 9.8 million US dollars invested.

Masdar Company signed an agreement on government support with Abu Dhabi Futures Energy Company under the program of construction of Aig-1 solar station with a capacity of 200 MW in Armenia in 2021. The station will be put into operation in 2023, the investment volume will be about \$ 170 million.

The number of autonomous solar stations has significantly increased, in particular, as of January 2022, 6940 autonomous power producers with a capacity of up to 500 kW (with a total capacity of about 136.08 MW) have signed contracts with Electric Networks of Armenia CJSC, which is 2796 (59.8 MW capacity) more than in January 2021, another 518 autonomous power producers (with a total capacity of about 11.5 MW) received technical specifications, which is 284 more compared to January 2021.

As of January 2022, according to the licences granted, electricity is produced by 27 solar power plants with a total capacity of about 55.8 MW.

As of January 2022, 2 wind farms with a total installed capacity of about 2.89 MW produce electricity, 4 more wind farms with an installed capacity of 4.23 MW have received a licence.

15. What are the key issues facing the renewables industry in your jurisdiction across solar, hydropower, wind, geothermal and biomass?

The renewable energy market, overall, is undergoing major changes: initially, the government was very interested in creating incentive mechanisms in order to

trigger the interest of potential investors in the energy sector, and respectively develop the market. However, after this initial stage has been completed, the market seems to go in the direction of liberalisation. Further, incentives like the feed in tariff are being gradually removed from the legislation. This creates somewhat an uncertain situation in the market and the investors lack clarity as to what the future of energy market and government policy will be.

Further, logistical obstacles remain a major issue in the sector. Investors face problems like ensuring favourable grid connection points, when the potential project requires a specific location where the grid connections are not developed. This is particularly problematic in the cases of wind power plants, which usually are located in mountainous locations. Further, on the same line, access to the sites, including the lack of necessary infrastructures to carry the heavy machinery to such remote locations (both to Armenia and within the country) can be problematic.

16. How has the consequences of the Covid-19 pandemic particularly impacted the renewables industry?

Generally, Covid-19 has not had any direct detrimental impact on the sector, although it is possible that the pandemic crisis had an indirect impact on the renewables industry, which cannot be accurately identified.

17. How do you think the impact of foreign investment and changes in regulation will affect investment in the renewables industry?

The renewable energy sector in Armenia is initially mainly financed by foreign investors, and it should be noted that, in general, there always have been and still are sufficiently favourable conditions for foreign investment in Armenia. Therefore, there have not been significant obstacles or problems in this area, foreign investment has been and continues to be quite developed and favorable.

18. How has your jurisdiction performed against its commitments as part of the Paris Agreement?

The Paris Agreement was signed by the RA on 20 September 2016 and it was ratified on 23 March 2017. Under the 4th article of the Paris Agreement RA

undertook to prepare, to communicate and to maintain successive nationally determined contributions (NDC) that it intended to achieve.

Armenia has submitted its first NDC on 23/03/2017, and an updated version on 05/05/2021 for the period of 2021-2030, which was approved by the Government decision N610-L on 22 April of 2021.

According to the updated NDC, RA as a developing country Party to the UN Framework Convention on Climate Change, it is not included in the Annex I to the Convention. Article 4, paragraph 4, of the Paris Agreement provides that developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reductions targets, and that developing country Parties should continue enhancing their mitigation efforts and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances.

In its 2015 INDC, Armenia undertook to pursue economy-wide mitigation measures, striving to achieve per capita net emissions of 2.07 tCO₂eq in 2050, subject to adequate international financial, technological and capacity-building support.

By 2030, Armenia is going to double its share of renewables in energy generation on the path to achieve climate neutrality in the second half of this century.

In order to ensure the fulfilment of the obligations assumed by the Paris Agreement, a separate Agency has been established in the RA, even more by the Decision N 894-U of the Deputy Prime Minister of 11 April 2021 3 working groups have been established. Coordination of the NDC preparation and monitoring of its implementation is a task of the Inter-agency Coordinating Council on Climate Change, established by the Decision No 955 of the Prime Minister of the Republic of Armenia of 02 October 2012. The Council is composed of representatives of 10 ministries, three State agencies adjunct to the Government and two independent bodies, namely the Armenian Public Services Regulatory Commission and Statistical Committee of the Republic of Armenia.

Here are the sectors which are included in the mitigation contribution:

1. Energy (Energy Production and Use)
2. Industrial Processes and Product Use (Mineral Industry and F-gases)
3. Agriculture (Enteric Fermentation, Direct and Indirect N₂O Emissions from managed soils)
4. Waste (Solid Waste management,

Wastewater)

5. Forestry (afforestation, forest protection) and Other Land Use.

Armenia's GHG emissions come primarily from the energy sector (electricity and heat generation, other stationary and mobile combustion including in transport and residential sectors, fugitive emissions from natural gas systems). In 2018, total primary energy supply (TPES) in Armenia amounted to 3.15 million toe or 1.1 toe/capita.

Armenia has practically no domestic resources of fossil fuels and highly depends on fossil fuel imports. In 2018, 28.4 percent of TPES was covered by indigenous resources: nuclear energy, hydro energy, biofuels, and small share of solar and wind energy. Natural gas accounted for 64.9 percent of Armenia's TPES in 2018 (2.04 million toe), followed by oil products: 10.2 percent (0.3 million toe). Energy efficiency, energy conservation and renewable energy development are key priorities for the country's energy security and key drivers of low carbon development.

In 2018, Armenia produced 0.67 million toe electricity, of which 43.3 percent came from natural gas fired thermal power plants, 29.8 percent came from hydro power plants, 26.6 per cent came from nuclear power plants and 0.3 per cent from wind and solar plants. Since 1990, Armenia gradually and completely phased out fuel oil (mazut) from the electricity mix. The government of Armenia does not subsidise the use of fossil fuels.

Furthermore each Party, under the 4th article should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Following this obligation Armenia undertakes to develop and submit its Long-Term Low Emissions Development Strategy, which will be mainly focused on the implementation of the mitigation measures in the energy sector.

It is important also to mention that Programme of the Government of Armenia (2021) puts emphasis on the development of nuclear energy, renewable energy sources, introduction of energy efficient and new technologies for ensuring energy security and providing affordable and reliable energy supply as well as for mitigating and preventing problems resulting from climate change, pursuant to the commitments under

international agreements, the development and implementation of a sustainable policy for promoting green economy and achieving long term sustainable development goals.

The Armenian Government by its decision No 48-L of 14 January 2021 adopted "Strategic Program for the Development of the Energy Sector of the Republic of Armenia (until 2040)", according to which Armenia is developing solar energy capacity from current 59.57 MW to 1000 MW before 2030, to increase both, green energy share and energy security (at least 15 per cent in 2030 in power generation mix).

This strategic Program provides that a draft resolution of the Government decision "On approval of the Climate Change Adaptation Program in the energy sector" should be developed and submitted to the Office of the Prime Minister of the Republic of Armenia by the fourth quarter of 2022.

19. How has the government used COP26 as an opportunity to drive the green energy transition?

During the Glasgow conference Armenia signed 3 important documents.

- The COP26 Declaration on Accelerating the Transition to 100% Zero Emission Cars and Vans
- Glasgow leaders' declaration on forests and land use
- scheme to cut 30% of methane emissions by 2030

The RA has launched "Debt for Climate Swap" Initiative, which presents a new climate finance instrument, and it will help developing countries to adapt more efficiently to climate change finance and provide new economic opportunities.

20. How is the government stepping up its commitment as a part of the COP26 agreement?

As already mentioned, now the Long-Term Low Emissions Development Strategy is being developed by the Armenian Government and the Ministry of Environmental protection, which will also take into account the goals announced by the parties, including the RA, during the Glasgow conference.

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