

## HYDROPOWER OF UZBEKISTAN: HISTORY, CURRENT PERIOD AND TOWARDS PROMISING PROJECTS

Ibragimova Sevara

master,

Head of International Cooperation Department  
of JSC "Uzbekneftgaz".

Olimov Dilshod

master,

JSC "Uzbekneftgaz" Deputy Head of Business  
Development Department

<https://doi.org/10.5281/zenodo.10654217>

**Abstract:** The article contains an analysis of the previous and current state of Uzbekistan's hydropower, which has a history of almost 100 years, the country's hydropower potential, existing problems and their rational solutions, construction of new hydroelectric power stations, modernization of old hydroelectric power stations, investments in the field, practical cooperation with leading foreign energy companies. , current and promising projects are highlighted.

**Key words:** hydropower, HPP, micro HPP, investment projects, modernization and construction projects, hydropower, "Uzbekgidroenergo" JSC, hydropower development.

In New Uzbekistan, which is boldly stepping up the ladder of development, the energy sector, in particular, the hydropower sector, which is considered the main source of power of our national economy, is also developing more and more.

The growing population in the Republic of Uzbekistan and the emergence of new enterprises in recent years to develop the economy, create new jobs, and thus increase the economic well-being of the people naturally increase the demand for electricity.

It should be said that in the series of systematic updates and changes, among the rapid and large-scale reforms implemented in all sectors in modern Uzbekistan, consistent reforms are being carried out step by step in the field of hydropower, which is considered an integral link of the energy sector. In recent years, construction of new hydroelectric power stations (HPS) based on investment projects, modernization of HPPs that have been in operation for many years and the efficiency of energy production has decreased sharply, based on the requirements of the times, is being carried out at a high pace.

Ensuring the increase of the share of hydropower, which has a relatively small volume in the energy balance of our country, effective management of water resources taking into account the climate, natural and other characteristics of our country, is gaining urgent importance today.

Also, the use of renewable energy sources in the production of electric energy resources in our country, the organization of cheap and environmentally friendly development capacities on this basis, the wide use of modern technologies in the field and, on this basis, ensuring the full satisfaction of the needs of enterprises and the population for electricity are among the important tasks.

Hydropower is a carbon-free production of environmentally friendly and cheap electricity. The field of hydropower is important because it has a number of advantages. In particular, in the field of hydropower:

- renewable energy is produced (1);

- fuel is not required and harmful emissions are not released into the atmosphere during operation (2);

- without additional fuels, work is carried out in safe mode (3).

If we look directly at the history of the hydropower industry of our country, which has a history of almost 100 years, in the first years, hydroelectric power stations were built only by manual labor, that is, by public effort. In this regard, the first hydroelectric power station built in Uzbekistan is Bozsuv GES-1. This hydrotechnical facility is located in the Yunusabad district of our capital, Tashkent, and is part of the cascade of Tashkent HPPs.

On May 26, 1923, a specially created commission reviewed and approved the project for the construction of a hydroelectric station on the Bozsuv Canal in Tashkent.

With the permission of the government, the construction of the hydroelectric power station began in 1923. It is known that at that time, affairs of state importance were organized by means of the people. It should be said that the construction of Bozsuv HPP is also a public concern<sup>1</sup> carried out on the basis of.

During the construction of Bozsuv HPP, a number of problems arise, in particular, the financing of the construction, the supply of necessary technical devices and equipment, the supply of personnel and construction materials become urgent issues.

In order to resolve these important issues quickly and positively, the former Union Government will be repeatedly approached and sources of funding identified. It is determined that construction works will be organized by manual labor.

It should be noted that all the main mechanization equipment in the construction process consisted only of railway wagons, pumping devices, and a diesel-powered concrete mixer. Despite this, Bozsuv HPP was built in a short time with the hard work of local residents. The HPP dam was built in 94 days, and the main part of the HPP building and hydrostructure was built in 9 months.

Bozsuv HPP was put into operation on May 1, 1926, with a capacity of 4,000 kW (4 MW). Historically, 1926 is characterized by the further development of energy in Uzbekistan. Thus, uninterrupted supply of electricity to the textile industry and other types of industrial enterprises is ensured. Kerosene lighting of city streets at night will end.

For comparison, in the 30s of the 20th century, the capacity of the Bozsuv HPP was higher than all existing HPPs in Uzbekistan. HPP was of great importance in providing electric energy to industrial enterprises, city transport and residents of Tashkent city. Bozsuv HPP is fully automated and managed from a single dispatch center.

It is noteworthy that only after 7 years, that is, in 1933, the second hydroelectric power station of the republic - "Qadiriya" HPP was built, and the experience, skills, advice and active participation of the first HPP specialists in its construction and operation were also important.

In this way, one after another hydroelectric power plants are starting to be built in places where the hydropower potential has been assessed and identified as sufficient. In particular, from the 1930s to the 1980s, "Tashkent HPP Cascade", "Chirchik HPP Cascade", "Qadiriya HPP Cascade", "Middle Chirchik HPP Cascade", "Samarkand HPP Cascade", "Shahrikhan HPP Cascade", "Andijan HPP Cascade" ", a number of hydroelectric power stations will be built and put into operation<sup>2</sup>.

<sup>1</sup> Ўзбекистон гидроэлектр станциялари тарихи (1923-2019 йй.) / Сангинов А. ва бошқ. – Тошкент, 2019. – 5-б.

<sup>2</sup> Ўзбекистон гидроэлектр станциялари тарихи (1923-2019 йй.) / Сангинов А. ва бошқ. – Тошкент, 2019. – 120 б.

Also, in the territory of Uzbekistan, the experience of designing and building mini and small hydroelectric power plants was observed in the 1960s, and they were transferred to the autonomous mode of operation. Today, the demand for the development of small hydropower is increasing all over the world. There are several reasons for this. Firstly, it is environmentally safe, secondly, it does not require large financial costs, and thirdly, it does not require a large area for construction<sup>3</sup>.

Historically, the hydroelectric power plants under the control of JSC "Uzbekenergo" in our country were built in 1926-1980, while the hydroelectric power plants under the association "Uzsuvenergo" were built and commissioned in 1984-2013<sup>4</sup>.

In general, before the establishment of JSC "Uzbekgidroenergo", the construction of existing hydroelectric power stations was as follows:

- 1920-1930 years – 1 hydroelectric power station;
- 1930-1940 years - 2 hydroelectric power plants;
- 1940-1950 years – 11 hydroelectric power stations;
- 1950-1960 years - 7 hydroelectric power plants;
- 1960-1970 years – 4 hydroelectric power stations;
- 1970-1980 - 2 hydroelectric power stations;
- 1980-1990 - 3 hydroelectric power stations;
- 1990-2010 - 4 hydroelectric power stations.

At the modern stage, 29 hydroelectric power plants that were under the control of JSC "Uzbekenergo" in their time, as well as 8 that were part of the association "Uzsuvenergo" - a total of 37 hydroelectric power stations, 15 as unitary enterprises with legal status are part of JSC "Uzbekgidroenergo", which was established in May 2017 entered<sup>5</sup>. At that time, the total volume of hydropower of our country was 1754 MW.

In recent years, more precisely, since 2017, in line with the large-scale consistent reforms implemented in Uzbekistan, much attention is being paid to the hydropower sector as an important direction of the economy, like all other sectors.

Today, in order to ensure the continuity and stability of electricity, which is considered important for the development of the national economy and industrial enterprises, there is a great need for renewable alternative energy resources. In this regard, effective use of existing hydropower resources, stable efficiency level of the sector and continuous increase of production capacity have become one of the priorities of the economic policy of Uzbekistan.

From a regulatory and legal point of view, the frameworks regulating and coordinating large-scale organizational and practical activities in the field of hydropower are the Decision PQ-2947 "On measures for the further development of hydropower in 2017-2021" signed by the President of the Republic of Uzbekistan, "Uzbekgidroenergo" Decree No. PF-5044 on the establishment of a joint-stock company<sup>6</sup>, Decision PQ-2972 "On measures to organize the

<sup>3</sup> “Ўзбекгидроэнерго” акциядорлик жамиятининг расмий веб-сайти / <https://uzgidro.uz/site/history>

<sup>4</sup> Уразов А. Мамлакат гидроэнергетикасининг бугунги салоҳияти ва келгуси истикболлари // “Ўзбекгидроэнергетика” илмий-техник журнали, 2019. – №2. – Б.8.

<sup>5</sup> Ўша жойда.

<sup>6</sup> Ўзбекистон Республикаси Президентининг 2017 йил 18 майдаги ““Ўзбекгидроэнерго” акциядорлик жамиятини ташкил этиш тўғрисида”ги ПФ-5044-сон Фармони // [www.lex.uz](http://www.lex.uz).

activities of the joint-stock company "Uzbekhydroenergo"<sup>7</sup> are considered important documents.

On the basis of these important normative legal documents, the effective use of the hydropower potential of our country, the increase of the share of renewable hydropower resources in the electricity production system, the creation of environmentally friendly production capacities, the technological re-equipment of existing hydroelectric power plants, and the modernization of hydrotechnical facilities are expressed.

It should be said that one of the important tasks assigned to "Uzbekgidroenergo" JSC, which is the main organization in the field of hydropower in our country, is the construction of new hydroelectric power stations based on modern and comprehensively based scientific and technical solutions in the field of designing and construction of large, medium, small and micro hydropower plants implementation of modernization investment projects, water reservoirs transferred to the management of the Society, as well as ensuring the safe and reliable operation of water reservoirs by carrying out reconstruction and modernization works in them. Also, the development of cooperation with international companies and financial institutions to attract foreign investments and advanced technologies to the implementation of projects for the modernization of hydroelectric power plants is one of the urgent tasks facing the Society.

In a short historical period, i.e. in 2017-2021, the number of newly built large, medium and micro hydropower plants by JSC "Uzbekgidroenergo" increased to 49, and the total hydropower capacity of the country reached 2,051 MW by the electricity generating enterprises in the system<sup>8</sup>.

Analytical figures show that the share of electricity produced by JSC "Uzbekhydroenergo" is about 12-13% of the total energy production of Uzbekistan.

It should be noted that "Uzbekhydroenergo" JSC is carrying out large-scale activities based on a number of investment projects. In these projects, the aspects that are considered important for the safe and stable operation of existing hydrotechnical structures in the country's hydropower system, in particular, hydroelectric power stations, are taken into account.

If we look at the 5-year summary of its activities (2017-2021), during the past period, the activity of JSC "Uzbekhydroenergo" was recognized at the international level. In particular, in 2020, "Uzbekhydroenergo" JSC received a "B+" (stable) rating from the international rating agency "Fitch Ratings", which is considered one of the leading "three" rating agencies in the world.<sup>9</sup> won the In 2021, in the same direction, the rating of the Society was raised to the level of "BB-" (stable)<sup>10</sup>.

At the same time, the international rating agency "Fitch Ratings" deeply studied the financial and economic situation of JSC "Uzbekgidroenergo", as well as the corporate management system, business strategy, maintenance of internal regulatory documents and other areas. As a result of the studies, in-depth analyzes and fair assessment of the activities of

<sup>7</sup> Ўзбекистон Республикаси Президентининг 2017 йил 18 майдаги ““Ўзбекгидроэнерго” акциядорлик жамияти фаолиятини ташкил этиш чора-тадбирлари тўғрисида”ги ПҚ-2972-сон Қарори // www.lex.uz.

<sup>8</sup> Равшанов Х. “Ўзбекгидроэнерго” АЖ: 2022 йилдаги устувор мақсад ва вазифаларга доир // “Ўзбекгидроэнергетика” илмий-техник журнали, 2022. – №1. – Б.9.

<sup>9</sup> “Ўзбекгидроэнерго” АЖ. Каталог. Ўзбек, рус, инглиз тилларида / “Ўзбекгидроэнерго” АЖ Ахборот хизмати ва Медиа маркази. – Тошкент, 2023.

<sup>10</sup> Ўша жойда.

the enterprises, as a result of the effectiveness of the work of thousands of employees operating in the society and the rating agency, JSC "Uzbekhydroenergo" became one of the first manufacturing enterprises in the republic to receive the "BB-" level of the international credit rating of "Fitch Ratings".

It is worth mentioning that advanced consulting companies of the world were involved in order to analyze the activities of JSC "Uzbekhydroenergo" at the world level. In particular, cooperation was established with "Pricewaterhousecoopers" in the field of finance, "X-Holdings" of Russia for digital transformation, "McKinsey & Company" for revising the corporate management and investment program, and necessary advice and recommendations were received for the development of the Society.

Within the framework of the program of construction of new hydroelectric power plants and modernization of existing hydroelectric power plants, "Uzbekhydroenergo" JSC is conducting consistent cooperation with advanced energy companies of foreign countries. In particular, consistent cooperative relations have been established with prestigious and leading energy companies of a number of countries, such as the People's Republic of China, the Russian Federation, France, Italy, Germany, South Korea, Austria, Turkey, Tajikistan, and Kyrgyzstan, on the launch of new production capacities.

Concept project for 2020-2024 aimed at developing the hydropower sector of our country by JSC "Uzbekgidroenergo"<sup>11</sup> was developed and consistent practical efforts were made within it. According to the concept, the tasks of carrying out activities in the following main directions were determined by the Society:

- providing consumers with electricity, taking into account all requirements (1);
- to provide the most effective solution to the structural problems that hinder the rapid development of the network (2);
- implementation of priority directions of development strategy and scientific and technical potential of natural and artificial open water streams (3);
- to strengthen the order of activities for the performance of priority tasks (4);
- creation of favorable conditions for civil society to participate in the solution of the most important problems of social and economic development of the network and the republic with the least costs (5);
- creation of regulatory capacities in the energy system (6);
- use of modern hydropower equipment with localization of production in the republic (7).

Concept of supplying the Republic of Uzbekistan with electricity in 2020-2030<sup>12</sup> according to 2030, the volume of hydropower in our country is set to reach 3.8 GW.

<sup>11</sup> "Ўзбекгидроэнерго" акциядорлик жамиятининг расмий веб-сайти / <https://uzgidro.uz/post/view/53>

<sup>12</sup> 2020-2030 йилларда Ўзбекистон Республикасини электр энергияси билан таъминлаш Концепцияси // Ўзбекистон Республикаси Энергетика вазирлигининг расмий веб-сайти – [https://minenergy.uz/uploads/f11fddb2-dc19-9986-9329-8e4e72ab7c43\\_media\\_.pdf](https://minenergy.uz/uploads/f11fddb2-dc19-9986-9329-8e4e72ab7c43_media_.pdf)



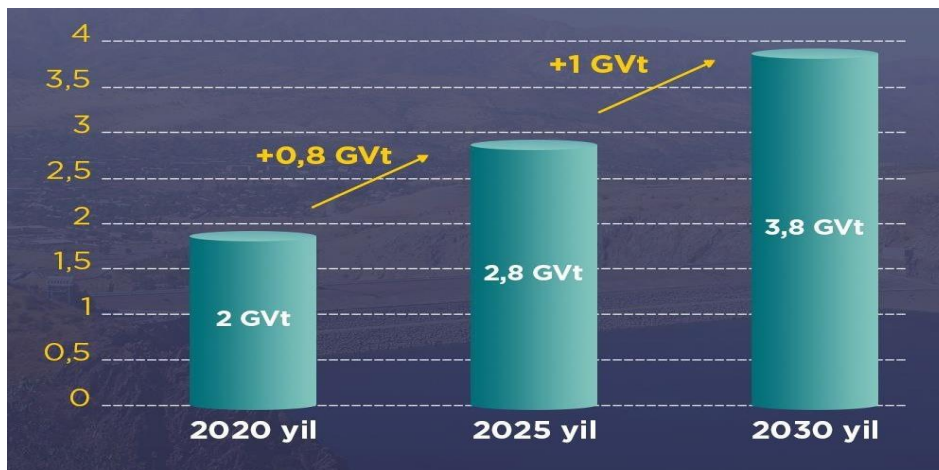


Fig-1. Growth dynamics of hydropower of Uzbekistan in 2020-2030.

Society's 6-year capacity in 2023 increased to 2,225 MW from 1,754 MW in 2017<sup>13</sup>. In the general section, the capacities were increased to a total of 471 MW.

Also, the analysis of the figures shows that the Society will invest a total of 30,408 billion for the energy system of our country in 2017-2021. kWh of electricity was produced<sup>14</sup> is showing. Of this, 29.995 billion kWh of electricity transferred to the Unified Network.

On December 22, 2023, at the press conference held at the Information and Mass Communications Agency under the Presidential Administration of the Republic of Uzbekistan on the topic "Uzbekhydroenergo JSC: Summary of the results of 2023, prospective plans and international rating results", the summary of the Society's activities in 2023 was announced.

In particular, in 2023, JSC "Uzbekhydroenergo" carried out systematic work in this direction. In particular, as a result of active reforms, a total of 36 projects were built, including 23 new hydroelectric power plants, 13 existing hydroelectric power plants were modernized.

In the last six years, the total number of hydroelectric power stations in our country has increased from 36 in 2017 to 58. As a result of large-scale reforms carried out in 2023, 8 hydroelectric power stations with a total capacity of 190 MW, including 3 large hydroelectric power stations and 5 microhydroelectric power stations, were launched in Tashkent, Andijan, Samarkand and Surkhandarya regions for the development of our country's industry and public welfare. In particular, these include Ispaysoy micro-hydroelectric power plant in Tashkent region, Zavroq micro-hydroelectric power plant in Andijon, Khanabad micro-hydroelectric power plant, Shaudar and PK 102+00 hydroelectric power plant in Samarkand, Topolang hydroelectric power plant and Isfara-1 microhydroelectric power plant in Surkhandarya. In 2023, 7.0 bln. About kWh of electricity was delivered to the national power grids<sup>15</sup>. This represents 8 percent more electricity generation than the 2022 figure.

At the same time, it should be noted that "Uzbekgidroenergo" JSC has been maintaining the "VV-" international credit rating of the international rating agency "Fitch Ratings", which is considered one of the top three rating agencies in the world, at a stable level for four years.

<sup>13</sup> "Ўзбекгидроэнерго" акциядорлик жамиятининг расмий веб-сайти / <https://uzgidro.uz/news/view/4368>

<sup>14</sup> "Ўзбекгидроэнерго" АЖ. Каталог. Ўзбек, рус, инглиз тилларида / "Ўзбекгидроэнерго" АЖ Ахборот хизмати ва Медиа маркази. – Тошкент, 2023.

<sup>15</sup> "Ўзбекгидроэнерго" акциядорлик жамиятининг расмий веб-сайти / <https://uzgidro.uz/news/view/5545>

In addition, as a result of the activities carried out by the Society in the field of environmental, social and corporate management, the UK's "Sustainable Fitch rating" agency gave it an ESG international rating yesterday. It can be said that "Uzbekgidroenergo" JSC became the first organization in our Republic to receive an international ESG rating<sup>16</sup>.

Also, in order to increase transparency in the state procurement system, a positive audit conclusion was obtained by an organization that is among the "Big Four" that provides audit services in the world for 2022 and 2023 by conducting an audit of procurement processes and improving the efficiency of anti-corruption systems ("forensics").

Another important achievement in the system at the international level is the introduction of the "Green Energy" certificate for the first time in our country at hydroelectric power plants owned by the Society. In this regard, in accordance with the Decision No. PQ-156 of the President of the Republic of Uzbekistan dated May 12, 2023 on measures to introduce the system of "Green Energy" certificates, for the first time the Dutch I-REC "Green Energy" for electricity produced at energy-generating enterprises certificate system was implemented<sup>17</sup>. This, in turn, allows Uzbekistan to demonstrate environmental responsibility and commitment to the use of renewable energy through the sale of "green energy" certificates, and naturally serves to increase Uzbekistan's environmental rating at the international level.

The most important thing is that Uzbekistan is actively striving for the development of "green energy" and the development of renewable energy sources. It was specially noted by the President of the Republic of Uzbekistan Shavkat Mirziyoyev in his speech at the second summit of "Central Asia - European Union", that "green" energy is actively developing in Uzbekistan, and by 2030 it was specially noted that it is planned to increase the production capacity of renewable energy up to 25 thousand megawatts and increase its share from the current 14% to 40%<sup>18</sup>.

Decision PQ-104 of the President of the Republic of Uzbekistan dated March 30, 2023 "On measures to further reform the hydropower sector"<sup>19</sup> and a set of measures in the near future regarding the further development of the industry and the increase of hydropower capacities were determined. According to the decision:

- By 2030, the total capacity of hydropower will reach 4,999 MW, including the creation of additional 2,311 MW by the Society and 615 MW with the participation of private investors (1);

- Starting from 2023, the construction of the Ukurenpskem, Korongitogai, Toldiksoy hydroelectric power stations, the cascade of Oygain hydroelectric power stations, and the Ukurenpskem hydroelectric power station with a total capacity of 876 MW in the Bostonliq district of the Tashkent region (2);

- Construction of a cascade of Norin hydropower stations with a total capacity of 225 MW on the Norin River in Namangan region (3);

<sup>16</sup> Ўша жойда.

<sup>17</sup> "Ўзбекгидроэнерго" АЖ. Каталог. Ўзбек, рус, инглиз тилларида / "Ўзбекгидроэнерго" АЖ Ахборот хизмати ва Медиа маркази. – Тошкент, 2024.

<sup>18</sup> Ўзбекистон Республикаси Президенти Шавкат Мирзиёевнинг "Марказий Осиё – Европа Иттифоқи" иккинчи саммитидаги нутқи. 2023 йил 2 июнь // Ўзбекистон Республикаси Президентининг расмий веб-сайти – www.president.uz.

<sup>19</sup> Ўзбекистон Республикаси Президентининг 2023 йил 30 мартдаги "Гидроэнергетика соҳасини янада ислох қилиш чора-тадбирлари тўғрисида"ги ПҚ-104-сон Қарори // www.lex.uz.

- The construction of a cascade of Urykotopolang hydroelectric power stations with a total capacity of 264 MW in Sariosiyo district of Surkhondarya region (4) was determined.

Also, in the Decision, the program of additional measures for the further development of hydropower in 2023-2030; In 2023-2030, updated target indicators for further development of hydropower and increasing the level of use of hydropower; List of 9 investment projects with a total capacity of 748.5 MW included in the investment program of the Republic of Uzbekistan for 2023-2025 and implemented in 2023-2027; A list of 47 investment projects with a total capacity of 2,749.5 MW in 2024-2030 aimed at increasing the level of use of existing hydropower, creating new capacities of hydropower stations and modernizing existing ones;

The list of equipment, components and spare parts necessary for the construction and operation of small hydroelectric power stations and proposed for localization on the basis of cooperation in 2023-2025, relevant applications<sup>20</sup> confirmed with

"Uzbekhydroenergo" JSC plans to produce a total of 7,044 million kWh of electricity in 2024 in order to ensure growth in electricity production.

Also, at the meeting held in the presence of the President of the Republic of Uzbekistan on October 31, 2023, regarding the measures implemented in the field of hydropower, the Head of State decided to increase the total capacity of hydropower to 6,000 MW (2.7 times) by 2030, and the average annual production to 7 billion. 17 billion per kWh. The need to develop a program for the transmission of kilowatt-hours and for this to attract large foreign direct investments to the network was specially emphasized<sup>21</sup>.

In this regard, with the involvement of foreign and local experts, the hydropower potential of our republic was re-examined and a list of prospective projects was formed. Based on it, increasing the current capacity of 2,233 MW by almost 3 times due to the implementation of 37 promising projects was determined as a priority task for the Society.

Another important direction, according to the order of the President, in the construction of micro and small hydroelectric power stations, it is aimed to implement first of all in neighborhoods with hydropower and to create a "neighborhood" system to deliver the produced electricity directly to the consumer without connecting it to a single energy system. According to the developed new Program, in 2023-2024, the total capacity of the society in the neighborhoods is 23 MW, the value is 43 million. It is planned to launch 23 micro-hydropower projects worth USD.

In conclusion, it should be noted that further development of the hydropower sector in New Uzbekistan, modernization of existing hydrotechnical facilities based on modern standards and requirements, technological re-equipment and control of their stable and safe operation, in this regard, cooperation with foreign partner organizations within the framework of investment projects will contribute to Uzbekistan's alternative electric energy. creates a favorable environment for effective and stable provision of the needs.

<sup>20</sup> Ўзбекистон Республикаси Президентининг 2023 йил 30 мартдаги “Гидроэнергетика соҳасини янада ислох қилиш чора-тадбирлари тўғрисида”ги ПҚ-104-сон Қарори // [www.lex.uz](http://www.lex.uz).

<sup>21</sup> Хамраев С. “Ўзбекгидроэнерго” АЖ: 2023 йил якунлари сарҳисоби ва истикболдаги режалар // “Ўзбекгидроэнергетика” илмий-техник журнали, 2023. – №4.





**References:**

1. Resolution No. PQ-2947 of the President of the Republic of Uzbekistan dated May 2, 2017 "On measures for the further development of hydropower in 2017-2021" // The website of the "National Database of Legislative Documents of the Republic of Uzbekistan" - [www.lex.uz](http://www.lex.uz).
2. Resolution PQ-2972 of the President of the Republic of Uzbekistan dated May 18, 2017 "On measures to organize the activities of the joint-stock company "Uzbekgidroenergo" // [www.lex.uz](http://www.lex.uz).
3. Decree of the President of the Republic of Uzbekistan dated May 18, 2017 "On the establishment of the joint-stock company "Uzbekgidroenergo" No. PF-5044 // [www.lex.uz](http://www.lex.uz).
4. Decision PQ-3012 of the President of the Republic of Uzbekistan dated May 26, 2017 "On the program of measures to further develop renewable energy in 2017-2021, increase energy efficiency in economic sectors and the social sphere" // [www.lex.uz](http://www.lex.uz).
5. Resolution PQ-4422 of the President of the Republic of Uzbekistan dated August 22, 2019 "On urgent measures to increase the energy efficiency of economic sectors and the social sphere, introduce energy-saving technologies and develop renewable energy sources" // [www.lex.uz](http://www.lex.uz).
6. Decision PQ-44 of the President of the Republic of Uzbekistan dated December 10, 2021 "On additional measures for the further development of hydropower" // [www.lex.uz](http://www.lex.uz).
7. Decree of the President of the Republic of Uzbekistan No. PF-220 dated September 9, 2022 "On additional measures for the introduction of energy-saving technologies and the development of small-capacity renewable energy sources" // [www.lex.uz](http://www.lex.uz).
8. Resolution PQ-57 of the President of the Republic of Uzbekistan dated February 16, 2023 "On measures to accelerate the introduction of renewable energy sources and energy-saving technologies in 2023" // [www.lex.uz](http://www.lex.uz).
9. Decision PQ-104 of the President of the Republic of Uzbekistan dated March 30, 2023 "On measures to further reform the hydropower sector" // [www.lex.uz](http://www.lex.uz).
10. Resolution No. 476 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 28, 1995 "On the development of small hydropower in the Republic of Uzbekistan" // [www.lex.uz](http://www.lex.uz).
11. Resolution No. 331 of the Cabinet of Ministers of the Republic of Uzbekistan dated November 16, 2015 "On the hydropower development program in 2016-2020" // [www.lex.uz](http://www.lex.uz).
12. Resolution No. 724 of the Cabinet of Ministers of the Republic of Uzbekistan dated September 14, 2017 "On the development of small hydropower in the Republic of Uzbekistan" // [www.lex.uz](http://www.lex.uz).
13. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated July 7, 2022 "On amendments and additions to some decisions of the Government of the Republic of Uzbekistan, as well as considering some of them to be invalid" Resolution No. PQ-4249 and Resolution No. 372 of December 10, 2021 (Resolution No. PQ-44 "On additional measures for the further development of hydropower") // [www.lex.uz](http://www.lex.uz).
14. History of hydroelectric stations of Uzbekistan (1923-2019) / Sanginov A. and others. - Tashkent, 2019. - 120 p.
15. Towards the development of hydropower of Uzbekistan / Sanginov A. and others. - Tashkent, 2024. - 412 p.

16. "Uzbekhydroenergo" JSC. Catalog. In Uzbek, Russian, English / "Uzbekgidroenergo" JSC Information Service and Media Center. - Tashkent, 2023.
17. "Uzbekhydroenergo" JSC. Catalog. In Uzbek, Russian, English / "Uzbekgidroenergo" JSC Information Service and Media Center. - Tashkent, 2024.
18. Allaev K. Uzbekistan is the source of energy. - T.: Moliya, 2007. - 388 p.
19. Аллаев К. Электроэнергетика Узбекистана и мира. Учебник. – Ташкент: Fan va texnologiya, 2009. – 465 с.
20. Muhammadiev M.M. Introduction to hydropower. Text of lectures. - T.: ToshDTU, 2006.
21. Badalov A.S. et al. Hydroelectric power stations. Study guide. - Tashkent, 2009.
22. Аллаева Г.Ж. // Потенциал использования возобновляемых источников энергии в Республике Узбекистан // “Иқтисодиёт ва инновацион технологиялар” илмий электрон журнали/ – № 4, июль-август, 2016.
23. Альтернативные источники энергии: возможности использования в Узбекистане. Аналитический доклад // Центр экономических исследований. ПРООН, 2014.
24. Шарипов Ф., Шарипова М. Гидроэнергетические ресурсы и их использование в Узбекистане // Research focus. – Volume 1. – Issue 2. – 2022.

