

The Role of Nuclear Energy in Uzbekistan

Xolixmatov Baxriddin Berdi ugli

Assistant of the Department of "Electric Power Engineering",
Termez Engineering and Technology Institute
Termez, Uzbekistan

Abstract: This article describes the ongoing reforms in the field of nuclear energy in Uzbekistan. In addition, the problems and prospects of nuclear energy, the main problems that may arise in the field are highlighted.

Keywords: energy, nuclear power, nuclear power, thermal pollution.

Energy is the universal basis of natural phenomena. There is a variety of energy resources in the surrounding world, but the main ones that are used in large quantities for practical needs are organic fuels (coal, oil, gas, energy of rivers, seas, oceans, sun, etc.).

Man, since ancient times, used wood, peat, coal to generate heat. Charcoal was the main fuel until the early 19th century. In 1919, Ernest Rutherford conducted a successful experiment to split the atom, he is rightly considered the father of nuclear physics. From the very beginning, nuclear energy appeared as a source of energy, which incomparably exceeds the reserves of other types of energy known at that time. It was calculated that each "separated" atom releases almost 200 million electron volts of energy. In turn, the combustion of one carbon atom releases energy 5-10 times less. A few more years passed, and a reactor was created in the United States to carry out a controlled nuclear reaction.

In 1949, the Soviet Union successfully tested the atomic bomb. The first industrial reactor began to produce plutonium. On an industrial scale, the production of enriched uranium was organized and mastered. Then they began an active discussion of the problems and directions associated with the creation of nuclear power reactors that would be used for transport and generation of electricity and heat. In the USSR, on June 26, 1954, the power start-up of the world's first nuclear power plant took place, which worked for 48 years. Thus, the road to the use of atomic energy for peaceful purposes was opened. People have learned to use a huge amount of energy from the decay of the atomic nucleus.

It turned out that even more energy is released as a result of the fusion of atomic nuclei. In 1953, Soviet scientists first tested a thermonuclear bomb, and since then man has learned to reproduce the processes that occur in the sun. Today, nuclear fusion cannot be used for peaceful purposes. But, if it ever becomes possible, then people will provide themselves with cheap energy for many years.

We cannot imagine ourselves without electrical energy, so more and more electricity needs to be produced every year. The concentration and consumption of energy resources in developed countries has led to the fact that 30% of the population of developed countries consume 90% of all energy, and the remaining 70% of the population - 10% of energy. The rapid growth in energy consumption, of course, entails an increase in production. Modern scientists are looking for ways to obtain primary energy using solar radiation.

Nuclear energy is a branch of energy that is engaged in the production of electrical and thermal energy by converting nuclear energy.

Nuclear energy in human life has both positive and negative aspects of use.

Let's start with the negatives.

Thermal pollution is one of the problems of nuclear power. According to most experts, nuclear power plants emit more heat into the surrounding world than comparable thermal power plants. An example is the construction project in the Rhine basin of several nuclear and thermal power plants. Calculations showed that, if all the planned facilities were launched, the temperature in a number of rivers would rise to 45 ° C, destroying all life in them.

The second equally important problem is the disposal of nuclear waste. This event is costly and not environmentally friendly. Nuclear power plants are an expensive and time-consuming decommissioning of an end-of-life nuclear power plant. In addition, heavy metals and other contaminants can enter the environment

with water used to cool reactors. After getting into the soil and water, these wastes remain in it for hundreds of years. Thus, the accident at the Chernobyl nuclear power plant that occurred in 1986 created serious problems in the development of nuclear power industry. This large-scale man-made disaster by modern standards made the whole world think about the safety of the peaceful atom. Then in 2011, life on the northeast coast of Japan changed forever as earthquakes and tsunamis triggered the worst nuclear disaster since the Chernobyl accident. These two man-made disasters were assigned the highest level 7 on the International Nuclear Event Scale (INES). Thus, the ecological situation in these areas is not suitable for human life, the radiation background remains elevated to this day. And in the case of the Japanese Fukushima, the ocean also suffered.

On July 19, 2018, by the Decree of the President of the Republic of Uzbekistan “On measures for the development of nuclear energy in the Republic of Uzbekistan”, a state body authorized for the development and implementation of a unified state policy and strategic directions in the field of development of nuclear energy was created - the Agency for the Development of Nuclear Energy (Agency "Uzatom"), whose main tasks and activities are defined as:

- preparation of proposals on priority areas of state policy in the field of peaceful use of atomic energy, including the development of regulatory legal acts;
- development and implementation of state programs for the development of nuclear energy in the Republic of Uzbekistan, attraction of investments, including foreign ones, for the implementation of projects in the field of nuclear energy;
- conclusion of agreements and contracts for the design, construction and operation of nuclear power facilities with the introduction of modern technologies and equipment that meet international requirements for industrial and environmental safety;
- preparation and implementation of comprehensive measures for the development of nuclear science and nuclear technologies, projects of fundamental research, research, development and innovation work, introduction of advanced technologies;
- ensuring the development and safe operation of research and power nuclear reactors, nuclear physics facilities, storage facilities for nuclear materials and radiation sources, disposal of radioactive waste;
- improvement of the system of radiation and nuclear safety of objects of the republic with the development, together with other ministries and departments, of an action plan for the prevention of nuclear accidents and radiation emergencies;
- ensuring non-proliferation of nuclear materials and technologies, radioactive materials, implementation of measures for physical protection and ensuring nuclear and radiation safety;
- organization of a system of training, retraining and advanced training of personnel, including in leading foreign institutions;
- implementation of international cooperation and interaction with the International Atomic Energy Agency, the European Atomic Energy Community and other international organizations;
- development, together with interested ministries and departments, of cooperation with international financial institutions, donor countries, companies and banks in order to attract foreign investment and advanced technologies in the field of nuclear energy.

Currently, over 80 highly qualified specialists, including foreign ones, work in the system of the Uzatom Agency. In order to implement the project for the construction of nuclear power plants on the territory of the Republic of Uzbekistan, the Uzatom Agency established the Directorate for the construction of nuclear power plants, which is the sole customer for the construction of the facility, and which in the future will be transformed into the operating organization of nuclear power facilities of the republic. Also, world-famous UJV REZ (Czech Republic) and White&Case (Great Britain) companies with experience and relevant qualifications in the construction of nuclear power plants of Russian design were involved in an independent price, technical and legal examination of the project.

Over the past period after its formation, the Uzatom Agency has carried out large-scale work in the development of nuclear energy in Uzbekistan and the implementation of the project for the construction of the first nuclear power plant in the Republic of Uzbekistan.

Thus, from all of the above, we can conclude that although nuclear energy is the most developing way of obtaining energy for mankind, it is also the most dangerous. If some countries make the main bet on this

type of energy, then they need to pay great attention to safe use. Negligent handling of it can lead to global cataclysms throughout our planet.

References:

1. Allaev, K., & Makhmudov, T. (2019). Prospects of diversification and ensuring energy safety of Uzbekistan. In E3S Web of Conferences (Vol. 139, p. 01002). EDP Sciences.
2. Saitov, E. B. (2020). Renewable energy development in Uzbekistan: current status, problems and solutions. In E3S Web of Conferences (Vol. 216, p. 01134). EDP Sciences.
3. Dosimbaev, A., Karabaev, K., & Khalikov, U. (2004). Nuclear material control and accounting at the Institute of Nuclear Physics of the Academy Sciences of Uzbekistan.
4. Gómez, A., Dopazo, C., & Fueyo, N. (2015). The future of energy in Uzbekistan. *Energy*, 85, 329-338.
5. Akhmedov, O., & Begmullaev, O. (2020). The ways ensuring energy balance in Uzbekistan. In E3S Web of Conferences (Vol. 216, p. 01137). EDP Sciences.
6. Allaeva, G. Z. (2021). FACTORS OF SUSTAINABLE DEVELOPMENT OF THE FUEL AND ENERGY COMPLEX OF THE REPUBLIC OF UZBEKISTAN. *Economics and Innovative Technologies*, 2021(2), 2.
7. Allaeva, G. J. (2021). Sustainable development methodology of fuel-energy complex of the republic of Uzbekistan. In E3S Web of Conferences (Vol. 289, p. 07033). EDP Sciences.