

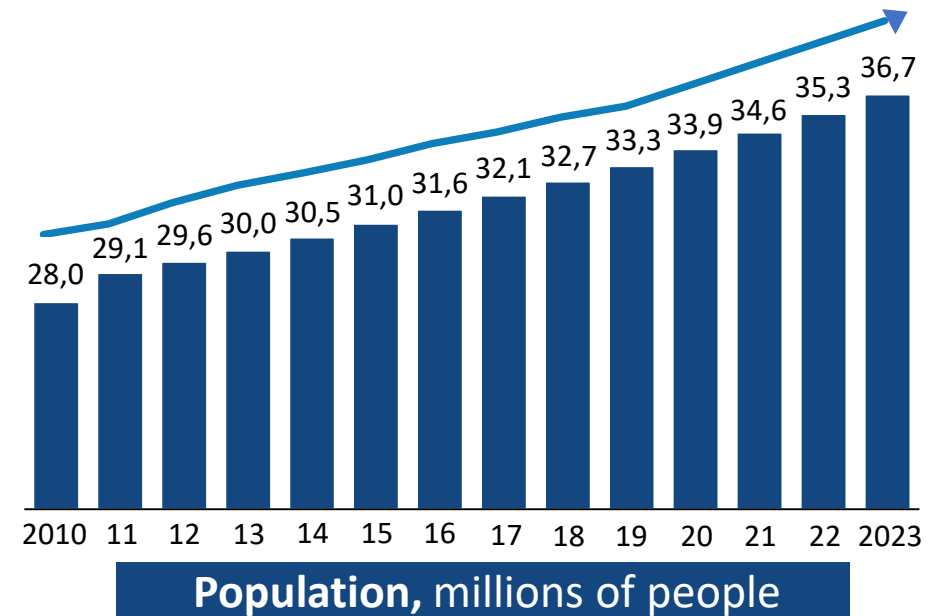
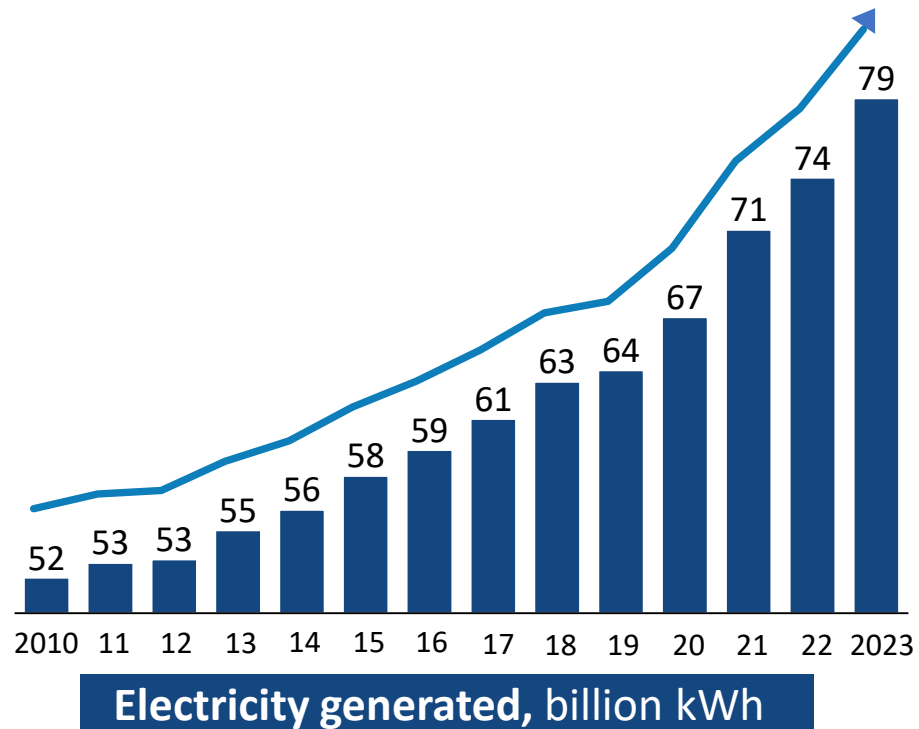


Atomic Energy Agency “Uzatom”
under the Cabinet of Ministers
of the Republic of Uzbekistan

Status of nuclear energy program in Uzbekistan

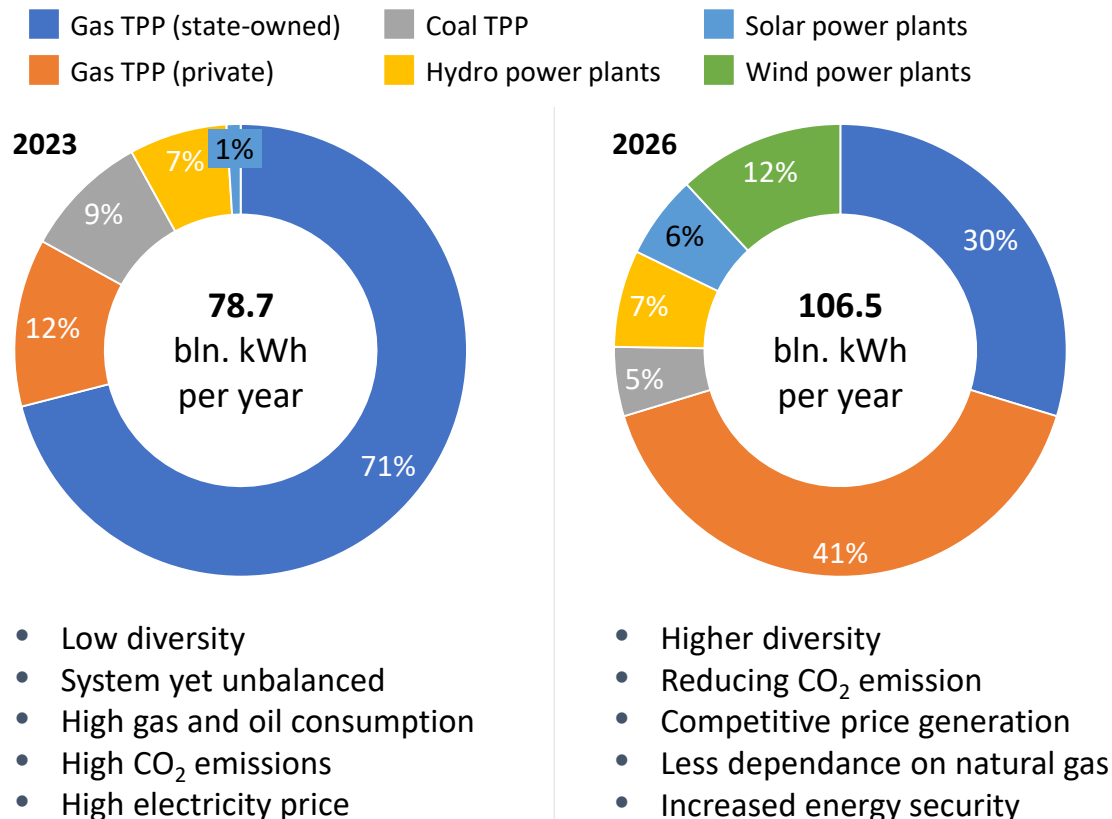


UZBEKISTAN ENERGY SYSTEM WITNESSES STEADY AND SUBSTANTIAL GROWTH IN ENERGY DEMAND



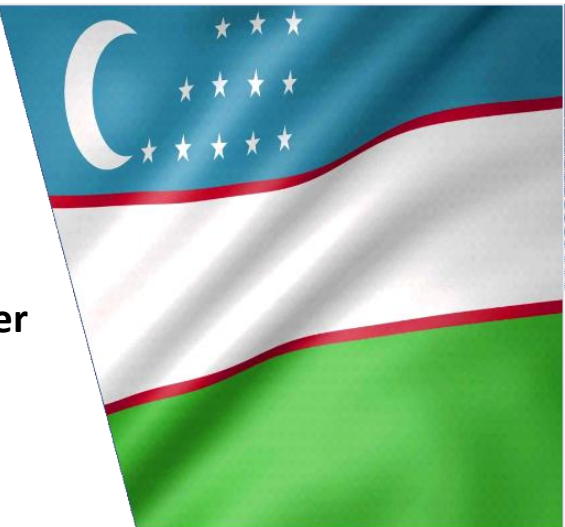
National Strategy - Energy Mix Diversification

Electricity generation by plant type, %



The Uzbekistan government is actively considering **nuclear energy** generation as a strategic solution to address its energy, economic and ecological objectives for the 2030s

National strategy for reducing greenhouse gas emissions

Reducing emissions by 35 % per GDP compared to 2010

PD – 436
02/12/2022

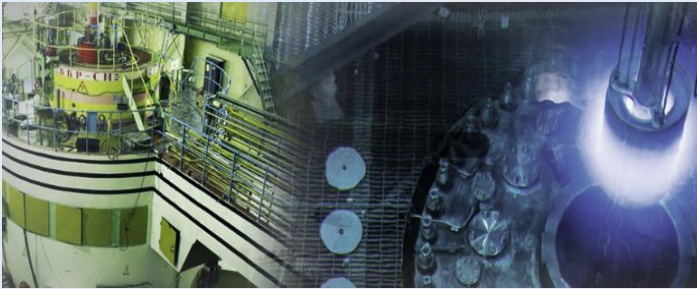
Background

- In **2023**, over **78 billion kWh** of electricity were generated
- About **90 %** of electricity is generated from burning **organic fuels**
- Diversification of the country's fuel and energy mix by including **"green"** energy generation
- By **2026**, it is expected that consumption will increase to **106.5 billion kWh and 120 billion kWh** by **2030**
- About half of the energy is planned to come from **"green"** sources, including nuclear power plants in the future

Current Capabilities in the Field of Peaceful Use of Nuclear Science and Technologies in Uzbekistan



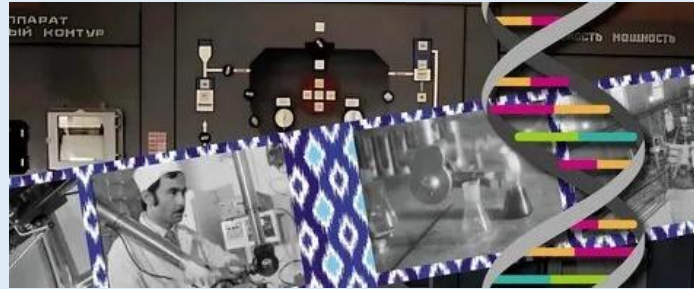
Nuclear Physics Institute in Tashkent



Institute has a research reactor BBP-CM, Cyclotrons; Neutron generator; Gamma unit; Isotopes laboratory



State enterprise "Radiopreparat"



Production of radiopharmaceuticals and isotopes: Co-57, P-32, P-33, S-35, Fe-55, Fe-59, I-125, I-131, Sm-153, Lu-177, Hg-203, etc.



NAVOIURANIUM State Company



Main activities are extraction of natural uranium and its processing to U3O8 oxide. Export sales of uranium oxide U3O8



Tashkent State Technical University



Samarkand State University



National University of Uzbekistan



Tashkent branch of MEPhI



Capacity
of universities **1,500**



Academic
staff **100+**



Laboratories **30**



Academic
degrees **64%**

There are universities that have departments or programs related to nuclear engineering and nuclear physics. Focus on research and education in areas such as nuclear reactors, radiation protection, nuclear materials, and related fields

The Role of Uzatom Agency



PD-№188
2024/05/24

By the **Decree of the President of the Republic of Uzbekistan from 2024/05/24**, the **Atomic Energy Agency Uzatom** was created (former *Agency for the Development of Atomic Energy*), reporting directly to the **Cabinet of Ministers of the Republic of Uzbekistan** (formerly – to the Ministry of Energy)

Atomic Energy Agency Uzatom under the Cabinet of Ministers of the Republic of Uzbekistan

Uzatom Agency is responsible for the development and implementation of the coordinated national policy in the field of peaceful uses of nuclear energy

Uzatom Agency objectives:

- Develop legislation framework
- Attract investments and financing
- Ensure technology and safety choice
- Conclude contracts for the design and construction of new nuclear facilities in the country
- Establish cooperation with the IAEA

The Directorate for the construction of NPP under Uzatom established in February 2019

The Directorate performs the functions of single customer for all projects implemented by Uzatom with the objective to become the operating organization in the future

The Directorate objectives:

- Organize engineering surveys on NPP sites
- Develop and approve contracts for construction & life cycle of NPPs
- Develop technical documentation for NPPs
- Control the quality of construction works of NPP
- Coordinate work with foreign consultancies

Construction of a low-power nuclear power plant on the territory of the Republic of Uzbekistan



- **POWER - 6 units** from **55 MW (RITM-200H)**
- **Service life– 60 years** (There is an opportunity to extend for **20 years**)
- **SAFETY - Active and Passive systems are exist**
- **SEISMIC RESISTANCE - 9 points** (according to the MSK-64 scale)



- **Time of launch of the first energy unit - 5 years.**
- **The deadline for launching subsequent units is carried out every - 6 months.**



- **The number of station employees after launch - approximately 2 000 people.**
- **Construction of a city for employees with a capacity of over 7 000 PEOPLE** (school, kindergarten, hospital, recreation areas, etc.)



- **Each energy unit produces 408,070 MWe·h (2.4 bln. kWe·h) of electricity per year.**
- **In order to ensure sustainable operation of the energy system, the availability of reactor capacity manufacturing from 30% to 100%. (6%/min of $W_{\max}$)**

Nuclear Program Challenges

- The project's adaptation to the climate conditions of the region



The water resources problem in the region

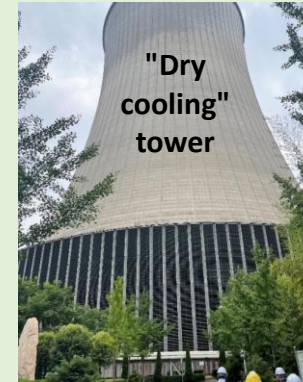
According to estimates by international experts and scientists, Central Asia is expected to face the following challenges

- A **sustainable deficit** of **water resources** in the region
- By 2040, water availability is projected to **decrease by 25%**
- Glaciers in Kyrgyzstan are expected to **shrink by 30-40%** by 2025; Tajikistan has already **lost more than 30%** of its glaciated area

Source: Central Asia 2022: Forecasts, Trends and Risks



Dry cooling system factors



Positive factors

- Reduces** irreversible **water losses** at the NPP
- Decreases** operational costs for **water treatment** in the third circuit
- Minimal impact** on the environment

Negative factors

- Lack of a reference solution for NPP
- High sensitivity to weather conditions
- Decrease in generation during hot periods



Half-speed turbine technology

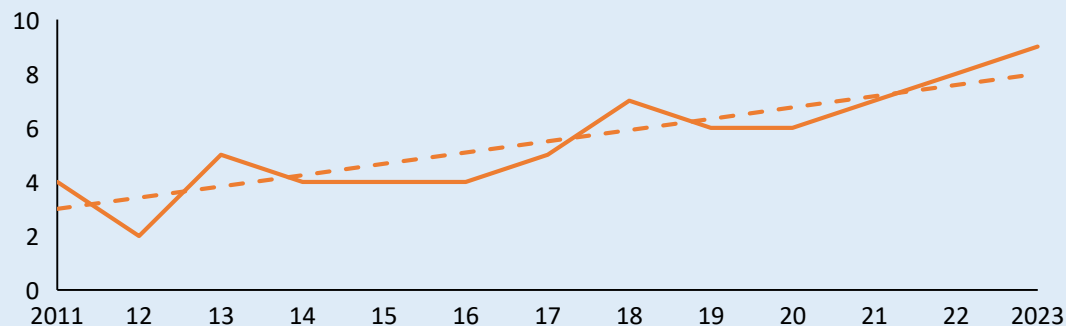


- Has a **greater vacuum reserve** and the ability to operate stably under adverse conditions (high temperature) in combination with a dry cooling system
- The most widely used type of turbine for NPPs worldwide



Ambient air temperature increase

Number of days with air temperatures above 40 °C





**ATOMIC ENERGY AGENCY
UNDER THE CABINET OF MINISTERS OF THE
REPUBLIC OF UZBEKISTAN
“UZATOM” AGENCY**

BALTABAEV DUSTJON

*SPECIALIST
OF THE DEPARTMENT OF NUCLEAR ENERGY SAFETY*

100015, Tashkent city, Aybek str. 26/1

d.baltabayev@uzatom.uz

+998 (94) 712-56-59

<https://gov.uz/en/uzatom>



Thank you!