Development of energy sector of the Republic of Uzbekistan

ECONOMIC INDICATORS

Capital

Tashkent

Political system

Presidential multi-party democratic republic

Area

450 000 sq.km

Official currency

"*Soum*" – UZS (UZS/USD) 1$=12300)

Population

36 mln

Languages

Uzbek (official), Russian (commonly used)

Uzbekistan is a landlocked country in **Central Asia** with a more than **36 million** population. Uzbekistan has made significant progress in recent years in the development of its energy sector. The country is rich in natural resources, including oil, gas, and coal, and has a growing renewable energy sector. Uzbekistan has set ambitious goals for **renewable energy** production, aiming to generate **25 percent** of its electricity from renewable sources by **2030**. The government has also implemented policies to attract foreign investment in the energy sector, including the creation of special economic zones for renewable energy development.In addition to its domestic energy activities, Uzbekistan also plays an important role in regional energy cooperation. The country is part of the Central Asia South Asia Electricity Transmission and Trade Project **(CASA-1000)**, which aims to **interconnect electricity** markets in **Central and South Asia.**

REFORMS IN THE ENERGY SECTOR OF UZBEKISTAN

Thermal Power Plants
~ Total installed capacity:
11 932 MW

Uzbekhydroenergo
~ Total installed capacity:
2 225 MW

Private stations
~ Total installed capacity:
5 174 MW
including,
2 Photovoltaic PP

"National Electricity Grids of Uzbekistan"
Transportation of electrical energy from generation sources through high voltage networks

Regional Electricity Networks
Distribution and supply of electrical energy to consumers through distribution networks.

Uzbekneftegaz
extraction and processing of hydrocarbon raw materials

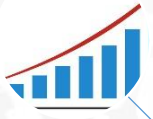
Uztransgaz
Transportation, building up the export and transit potential of natural gas

Hududgaztaminot
distribution of natural gas to the end consumer

Electricity market models and transition stages identified

Together with experts from the WB, ADB and EBRD, a new version of the Electricity Law is being developed

The Electricity Grid Code is being developed with technical support from the World Bank and The ADB



The Concept for the provision of the Republic of Uzbekistan with electric energy for 2020-2030 was developed

Transition to IEC standards in progress

REFORMS IN THE ENERGY SECTOR OF UZBEKISTAN

Energy sector reforms

Achievements of energy sector reforms

- In accordance with the decision of the President of the Republic of Uzbekistan dated March 27, 2019, at the first stage of reforming the electric power industry, the activities of “Uzbekenergo” JSC were reorganized;
- Investment deals worth US$17.7 billion were concluded based on PPP contracts;
- The first stage of the transition to the “Free Market” model for electricity is the creation of the current “Single Buyer” model;
  - ✓ Based on technical support from the European Bank for Reconstruction and Development and the World Bank, together with international experts, a new edition of the Law of the Republic of Uzbekistan “On electrical energy” has been developed;
- ✓ A concept has been developed for a phased transition to the mechanisms of the wholesale and retail electricity market for 2023-2030;
- ✓ Regulations on the Agency for Energy Market Regulator has been developed.

The following results will be achieved through the transition to a competitive electricity market, which will be created as a result of the reforms

- The wholesale price of electricity will be optimized;
- In connection with the construction of private stations not participating in the PPP, the issuance of indirect government guarantees by the PPP will be suspended, which puts pressure on the state’s credit rating;
  - As network operators become profitable, it becomes possible to attract corporate loans that do not require government guarantees;
- As a result of competition, power plants and retailers are motivated to reduce costs;
- The system of tariffs for social protection of the population will be preserved.

The following areas were identified as priorities for continuing reforms in this area:

- Development of regulatory documents;
- SCADA system, digitalization and network management;
- Personnel training and development;
- Preparation of market infrastructure (online platform).

Current condition of Power sector

Generation capacities of Uzbekistan:

Power plants	77	19 554 MW

including:

Thermal power plats	18	16 906 **MW**
Hydro power plants	54	2 225 **MW**
PV stations	2	200 **MW**
Block stations	3	223 **MW**

Existing substations:

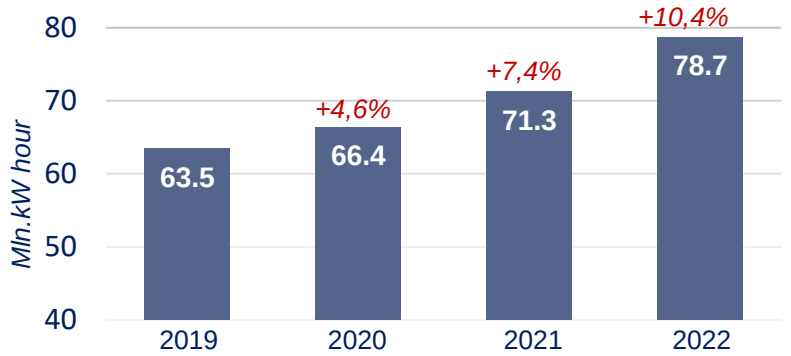
Substations		
500 kV substations	7	7 540 MVA
220 kV substations	72	20 158 MVA
35-110 kV substations	1793	21 950 MVA
6-10/0,4 kV transformers	94 538	17 150 MVA

Existing lines:

Total length of overhead lines are: 284 299 km

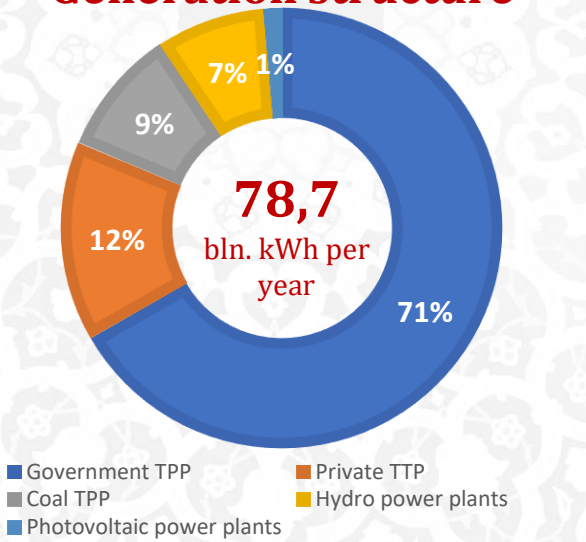
- **220-500 kV lines – 10 730 km**
- **35-110 kV lines – 28 966 km**
- **Low voltage distribution lines – 244 603 km**

Power generation:



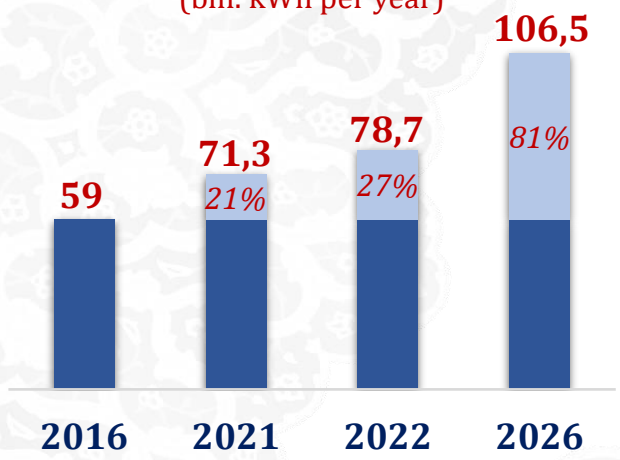
POWER GENERATION

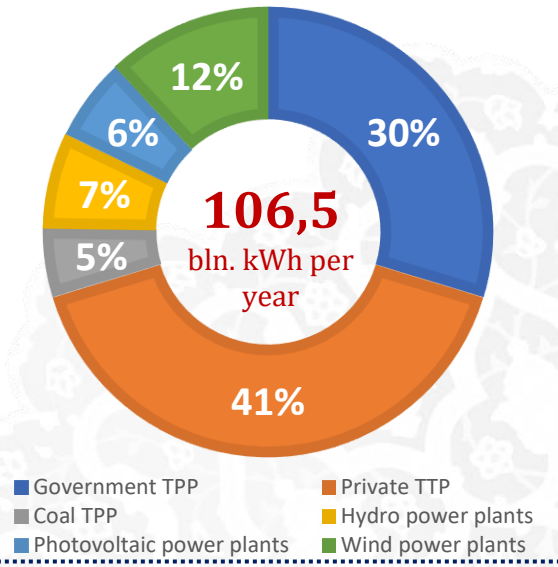
Generation structure

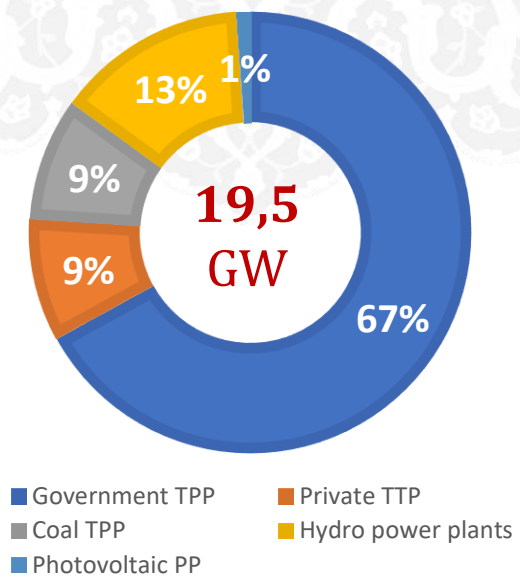


Generation growth

(bln. kWh per year)

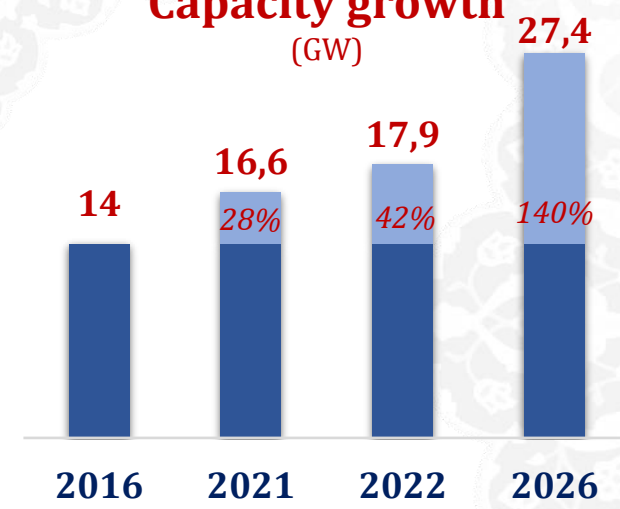


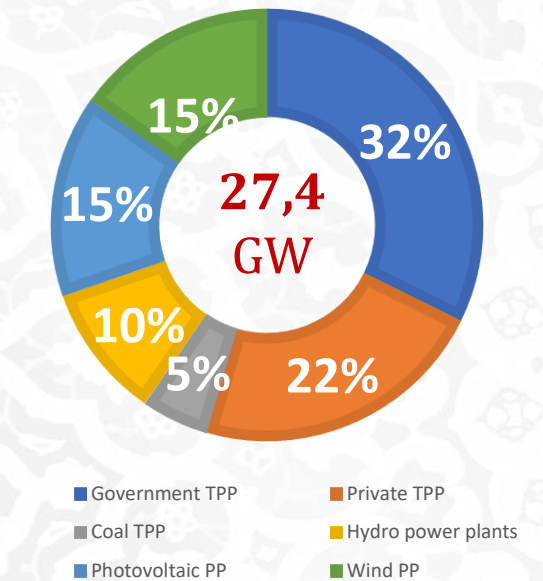




Capacity growth

(GW)





Goal achievement

Operating PPP projects - 28.
Total amount - 12 billion dollars, 12.9 GW of power.
They are:

9 projects of thermal power plants construction (***4,0** billion dollars, **6,0** GW*):

19 photovoltaic and wind (8 *billion dollars*, 6,9 *GW*).

Result:

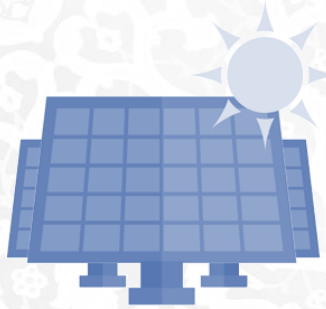
- the possibility of **67.2 billion kWh** electricity generating.
- Saving **7.6 billion cubic meters** of gas for electricity generation.

Implemented PPP projects – 7; (*915 mln dollars. 1354 MW*)

One more project until the end of the year (*140 mln dollars*; *220 MW, Syrdarya region*)

SIGNED AGREEMENTS ON PPP TERMS

Photovoltaic plants
12 projects with a total capacity of **3 847 MW (3,7 bln.dollar)**



Wind farms
7 projects with a total capacity of **3 100 MW (4,3 bln.dollar)**

28 projects
with a total capacity of **12.955 GW**
and the cost of
$11.87 billion

Combined cycle power plants **5 projects** with a total capacity of **5 114 MW (3,3 bln.dollar)**

Gas-piston power plants **4 projects** with a total capacity of **894 MW (0,5 bln.dollar)**

IMPLEMENTED AND PLANNED WORKS IN THE FIELD OF RENEWABLE ENERGY SOURCES

Works performed in 2017-2023

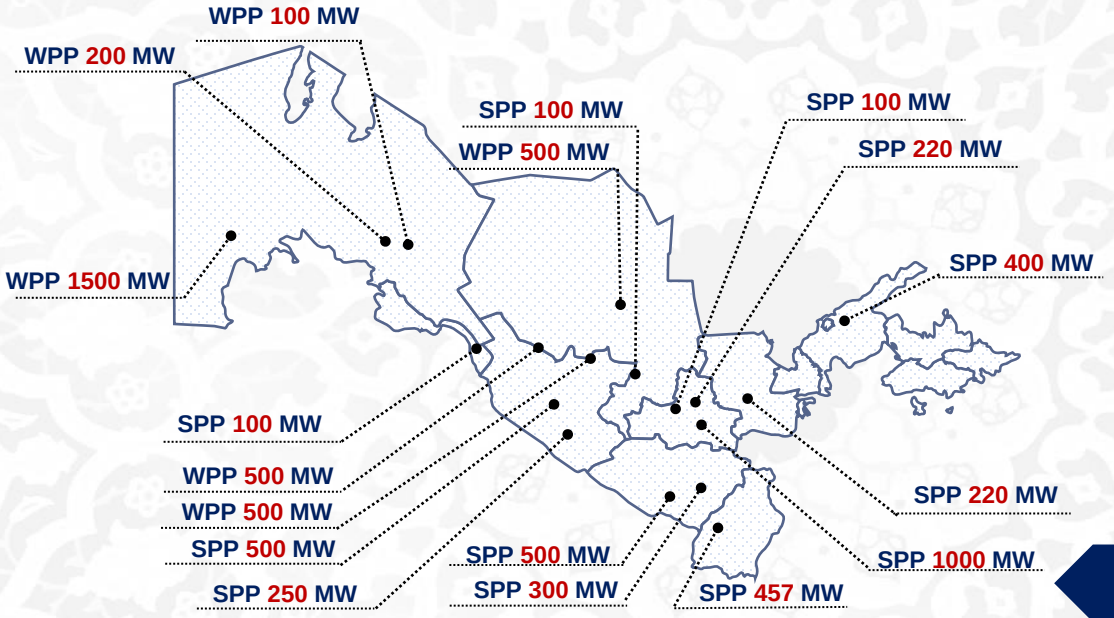
Number of announced tenders	7
Number of projects	19
Number of agreements signed	19
Capacity of signed projects	6 947 MW
Adopted legal documents on projects	10
The cost of signed projects	8 billion dollar

Commissioned solar power plants

Investors	Masdar (UAE) Total Eren (France)
Total capacity of projects	200 MW
Electricity generation per year	500 million kWh
Saving natural gas per year	150 million cubic m
Reducing greenhouse gas emissions per year	200 thousand tons
Funds raised by investors within the project	200 million dollar

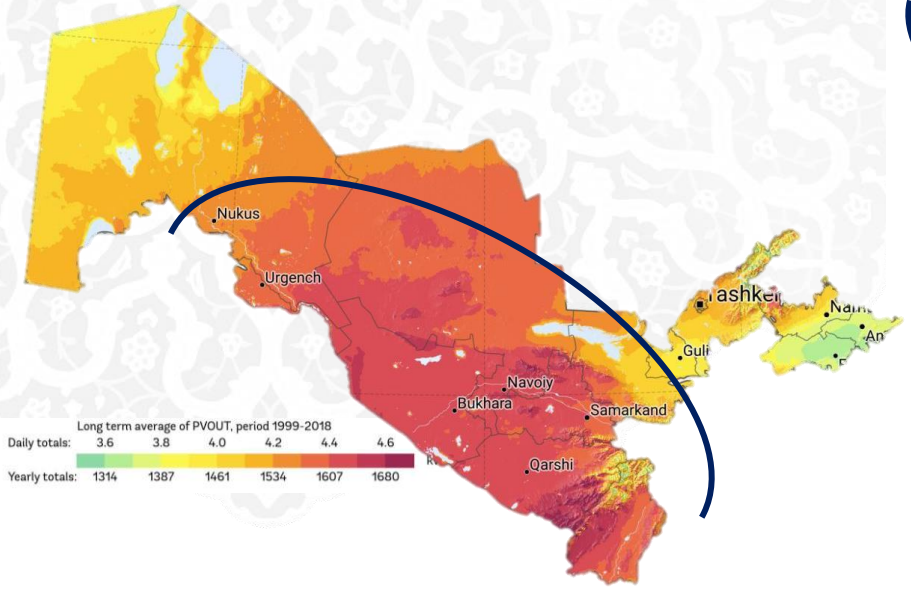
Plans till 2030

Total RES capacity	15 000 MW
Solar photovoltaic stations	10 000 MW
Wind farms	5 000 MW
Total annual output	40 billion kWh
Total annual gas savings	11,4 billion cubic meters
Total cost of investment	14 billion dollar
Permanent jobs created	3 000
Prevention of CO2 emissions	16 million tons

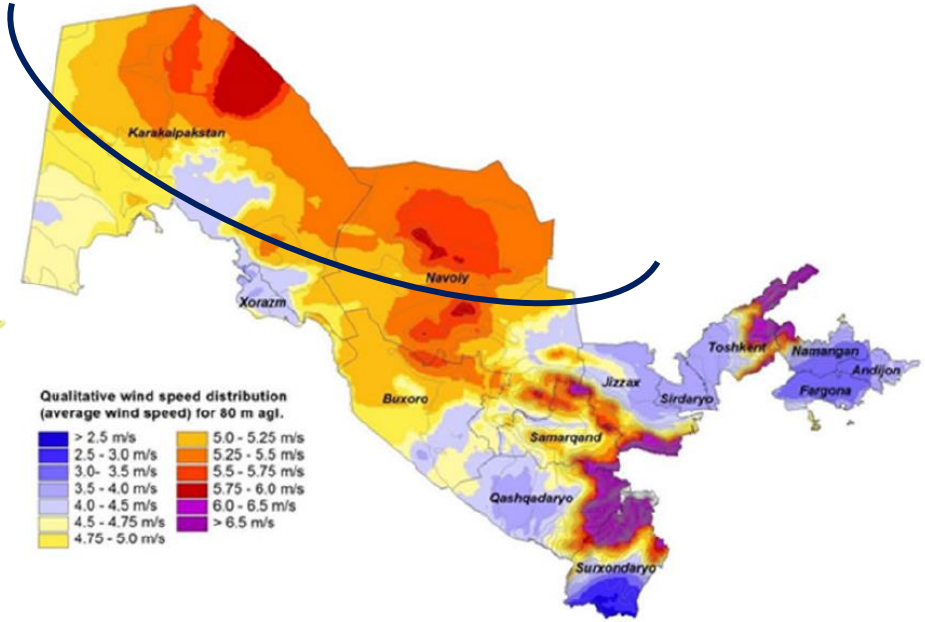


UZBEKISTAN RENEWABLE ENERGY POTENTIAL

Solar potential



Wind potential



Diversification of energy supply by sources

HPP

$6,2 billion investment in 2023-2030 to develop 60 new projects and upgrade 18 existing stations

PPP

51 billion tons of oil equivalent

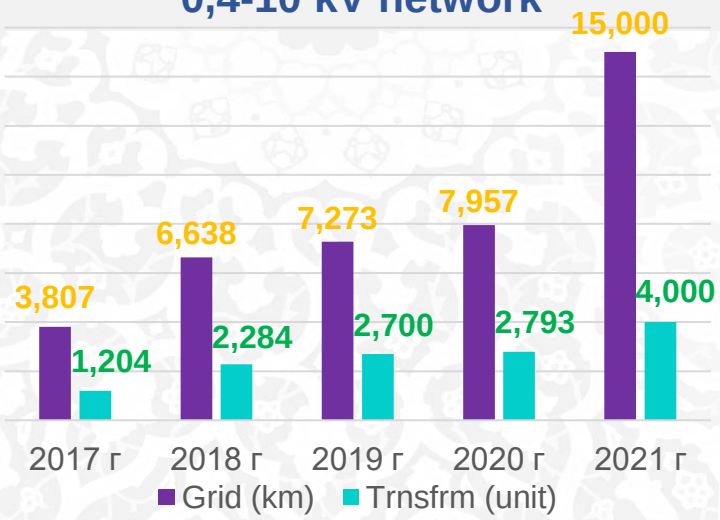
WPP

360 million tons of oil equivalent

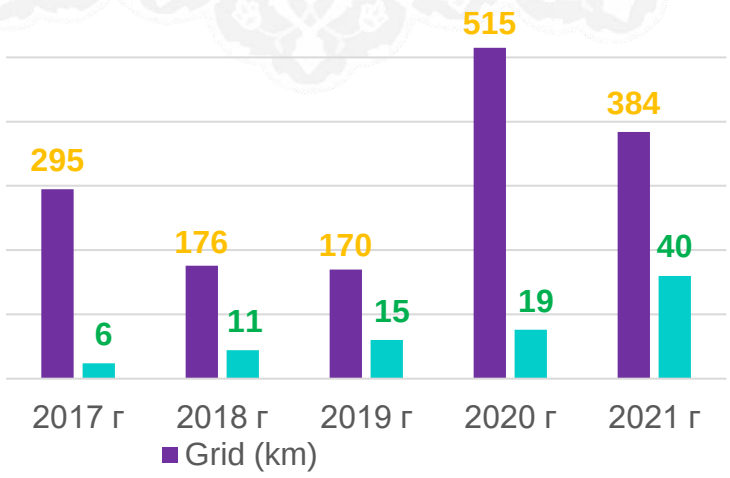
POWER GRID

Works done in 2017-2021 years

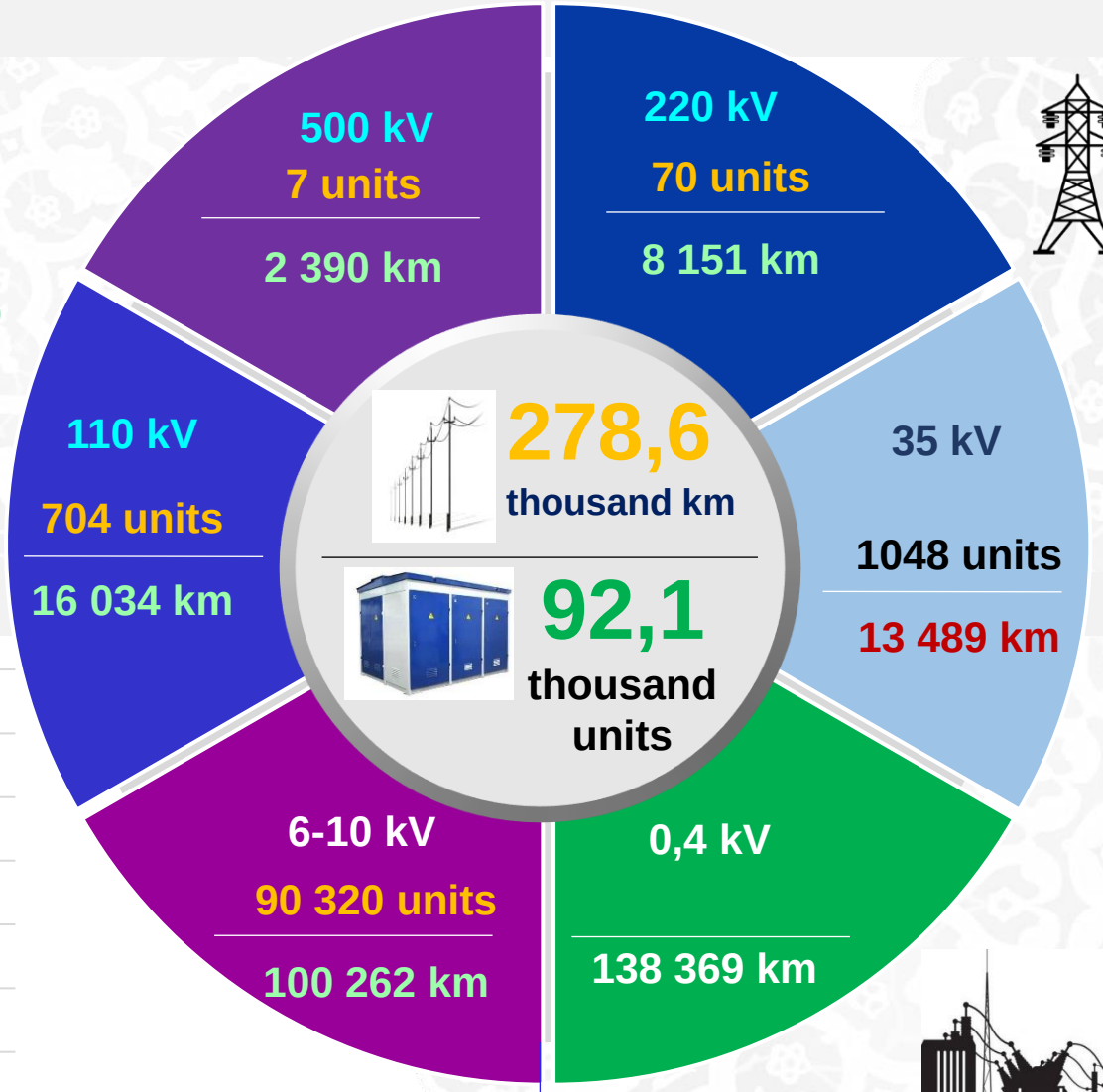
0,4-10 kV network



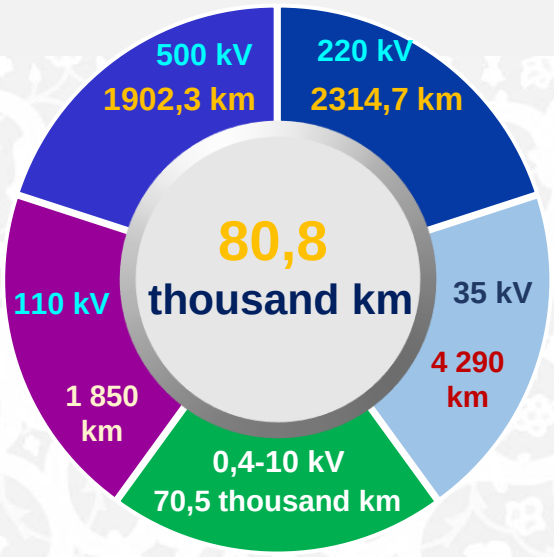
35-500 kV network

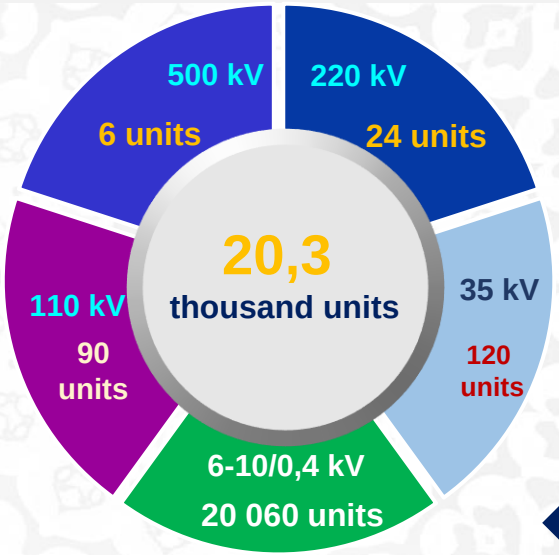


ACTIVE VOLUME



Perspective work to be done until 2026 year





GENERAL ISSUES IN ENERGY SYSTEM OF UZBEKISTAN

Loses in production (up to 15%)

Renovation and modernization of existing power plants: introduction of new technologies and equipment upgrades to improve efficiency and reliability.

Low efficiency of old technologies

Implementing new technologies and energy efficiency methods: applying innovative solutions to reduce energy consumption and optimize processes.

Risks with development of renewable energy plants

Utilization of solar and wind energy: development and increase of the share of solar and wind power plants for the production of clean energy sources.

Risks of development of hydro power plants

Development of hydropower potential: Research and development of hydropower resources to increase the share of hydropower plants.

Diversity of energy sources to reduce import dependence

Diversity of energy sources to reduce import dependence: developing different energy sources to reduce the risks associated with import dependence.

Development of energy cooperation with other countries

Developing energy cooperation with other countries: Partnering and cooperating with other countries in the energy field to share expertise and resources.

Loses in electricity grids (up to 14%)

Renovation and modernization of grids: introduction of new technologies and equipment upgrades to improve efficiency and reliability.

One of the biggest problem on energy system is that 40% of generation consist of old Soviet technologies, even the Government trying step by step modernizing and build up new generation capacities, the system has much loses in fuel and electricity. I hope due to exchange program I learn up about ways of minimizing the loses.