

Knowledge Co-Creation Program
(Group & Region Focus)
ENERGY POLICY
Japan International Corporation Agency (JICA)

Turkmenistan Country Report
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MAP OF CENTRAL ASIA



General Information about Turkmenistan

- * **Turkmenistan is located in the Central Asia.**
- * The area of Turkmenistan is 488,1 square kilometers and population is about 6 million people.
- * Turkmenistan is the country of deserts and oases.
- * The main rivers “Karakum darya” and “Amudarya”.
- * Main mountains "Kopetdag" and "Koytendag"
- * Climate Turkmenistan inherent sharp temperature fluctuations during the day, a hot summer and cold winter, high dryness of the air in the summer and the scarcity of atmospheric precipitation.
- * In the former Soviet Union, Turkmenistan was the sunniest and hottest republic. It was a record temperature of the former Soviet Union was marked here on Repetek weather station - up to 50 degrees in the shade, the surface sand is heated to +75 - +80 °C degrees. At this temperature, you can easily bake the chicken egg or the cake.
- * Summer is dry, extremely hot. Low rarely passes the mark of 40 °C, and almost every year and up to 45 °C. Maximum is up to 45 - 50 °C degrees. In some areas, the summer rains almost did not happen.
- * The winter is cold and wet enough. The temperature not infrequently reaches 20°C.
- * Turkmenistan has huge gas and oil resources. In terms of natural gas reserves, it is ranked 4th place in the world list. As a state rich in energy resources, Turkmenistan actively participates in global economic processes and in the power sector in particular.

The national heritage of Turkmenistan:





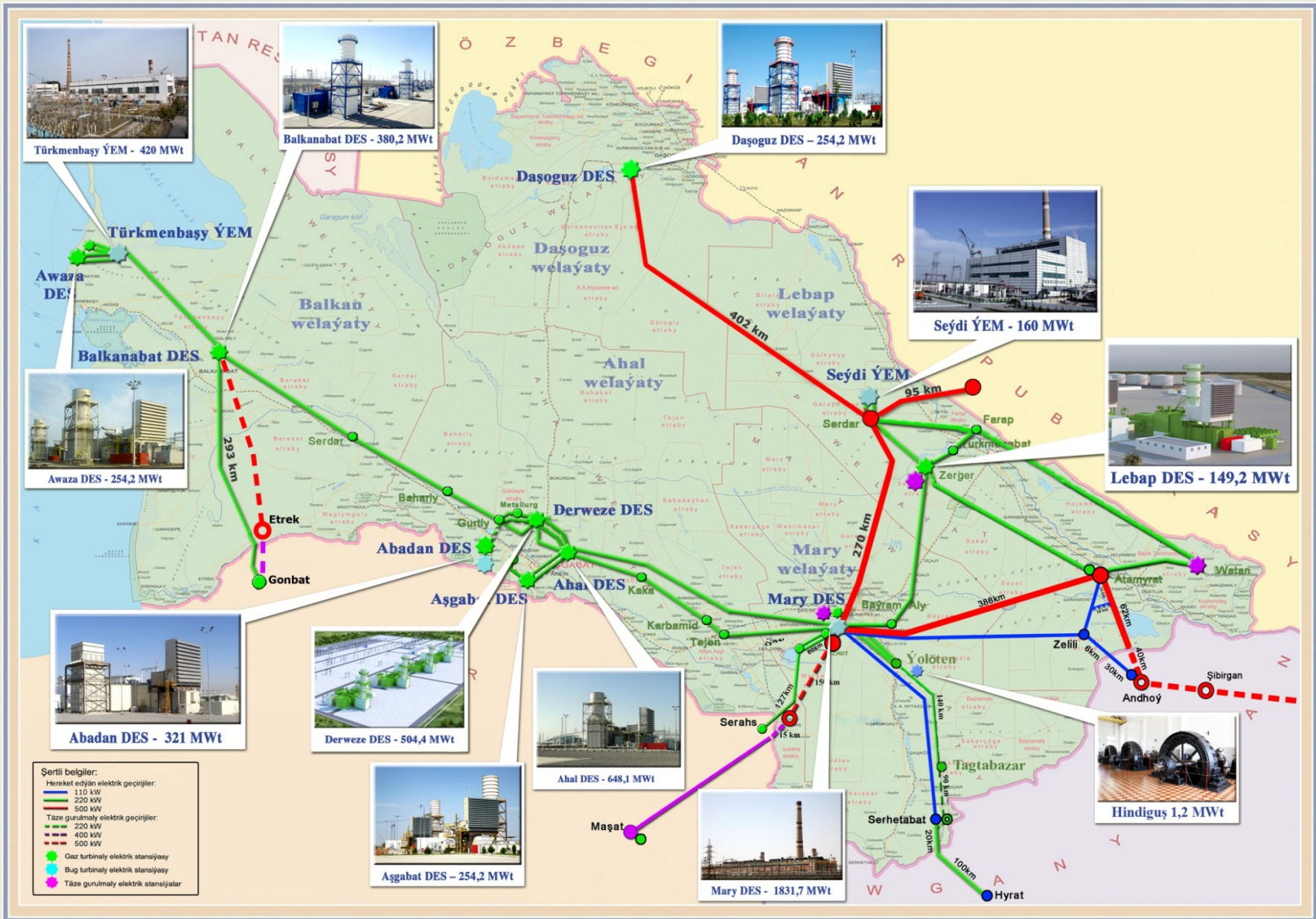
Среднеазиатская Овчарка

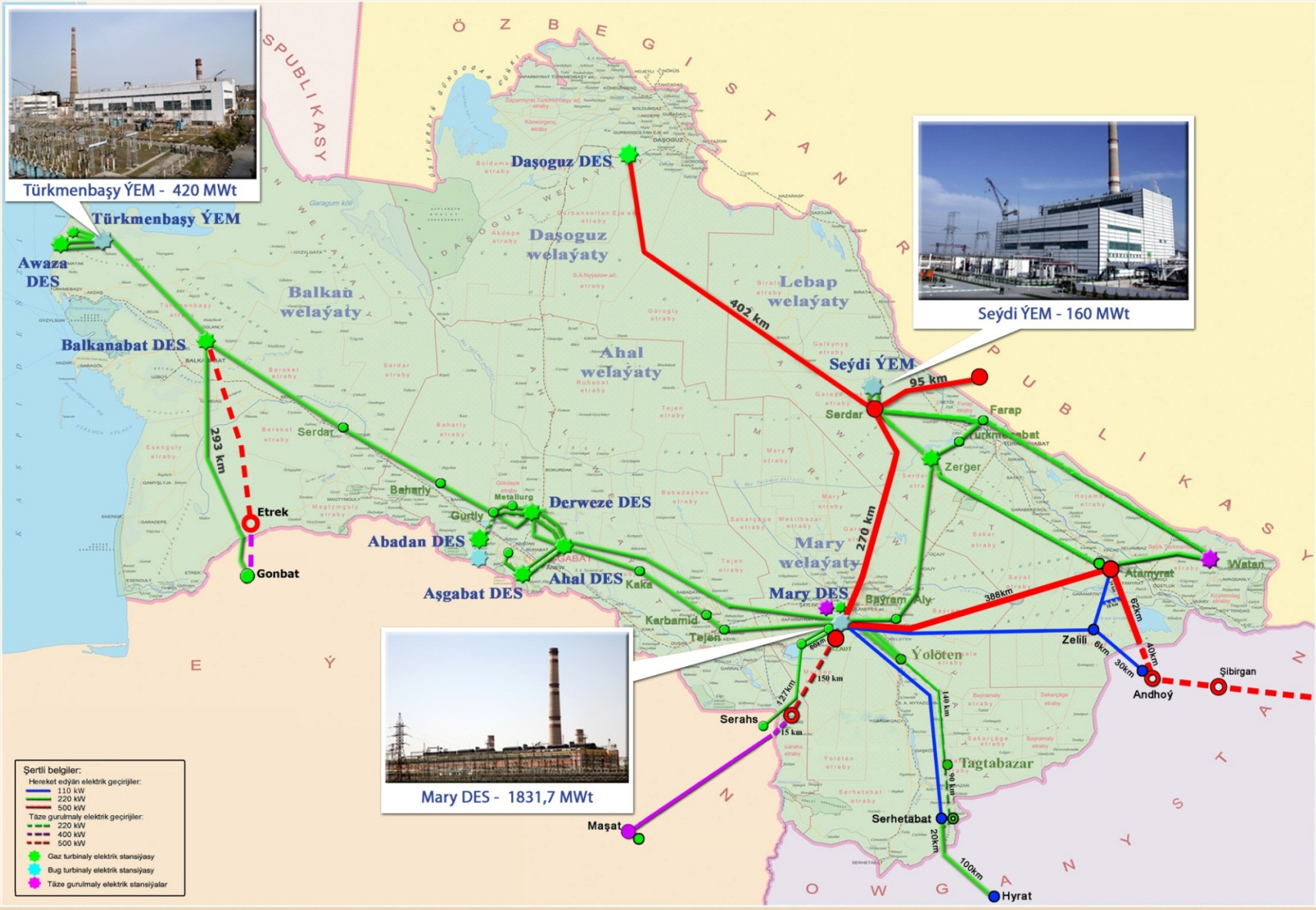


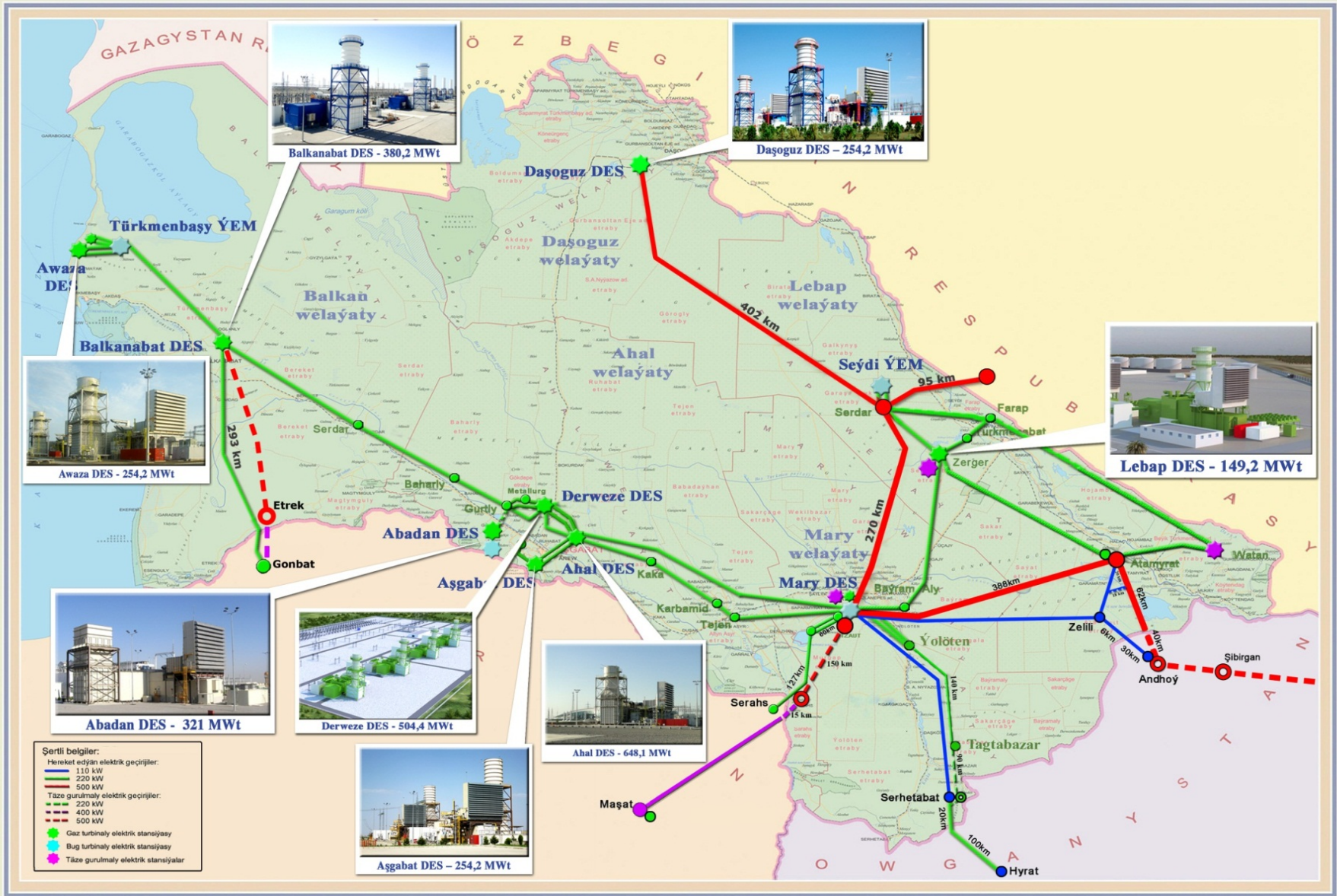
Current Energy Policy and Measures of Turkmenistan

Due to the consistent improvement of social and living conditions of the population, the construction of energy-intensive industrial production in our country energy production grows, improvement of the quality of power supply to domestic consumers, electricity exports to other countries are priority areas of energy policy of Turkmenistan.

- * Over the past few years, thanks to the measures to improve the electricity sector, improve its material and technical base, which are implemented under the leadership of the Esteemed President of Turkmenistan Gurbanguly Berdimuhamedov in the country for a short time built five gas turbine power plants. This contributes to the successful solution of problems facing the industry.
- * Currently, according to the "National Program of President of Turkmenistan on the transformation of social and living conditions of the population of villages, districts and the district centers for the period up to 2020" and "National socio-economic development in 2012-2016" in Turkmenistan launched large-scale construction of power lines, transformer substations, distribution networks and more.
- * Based on the above, let me familiarize you with the power industry of our country.
- * Currently, in Turkmenistan has 12 power plants, which is operate 14 steam turbine and 30 gas turbine units. The power plants are listed below:
 - * 1. Mary State Power Plant: 7 steam turbines and 3 gas turbines.
 - * 2. Abadan State Power Plant: 2 gas turbines.
 - * 3. Turkmenbashi Power Plant: 2 steam turbines.
 - * 4. Seydi State Power Plant: 2 steam turbines.
 - * 5. Ahal State Power Plant: 7 gas turbines.
 - * 6. Ashgabat State Power Plant: 2 gas turbines.
 - * 7. Derweze State Power Plant: 4 gas turbines.
 - * 8. Awaza State Power Plant: 2 gas turbines.
 - * 9. Balkanabat State Power Plant: 5 gas turbines.
 - * 10. Dashoguz State Power Plant: 2 gas turbines.
 - * 11. Lebap State Power Plant: 3 gas turbines.
 - * 12. Hindigush hydro power plant: 3 hydro turbines. Constructed in 1913year.







Past energy demand and supply of Turkmenistan. Outlook of energy demand and supply of Turkmenistan.

- * During the years of independence (1991-2016), Turkmenistan commissioned 2.997,2 MW of new capacity. Total power capacity of the gas turbine plants of the Ministry of Energy are 2.837,19 MW in general, or 52% of total installed capacity, which is equal to 4.674 MW.
- * 22.230 billion kWh of electricity was produced in 2014 year.
- * 22.534 billion kWh of electricity was produced in 2015 year.
- * Domestic consumption amounted to 19 billion 294 million kWh in 2014. Electricity exports amounted to 2 billion 968 million kWh in 2014.
- * Domestic consumption amounted to 19 billion 333 million kWh in 2015. Electricity exports amounted to 3 billion 201 million kWh in 2015.
- * In 2020, the estimated level of electricity production in Turkmenistan will reach 26 billion 380 million kWh. Until 2020, electricity exports will increase up to 6 billion 90 million kWh.
- * Estimated level of domestic consumption in 2020 will be 20 billion 290 million kWh. To ensure timely demand cover for electricity advanced grows of capacity and grid is planned.

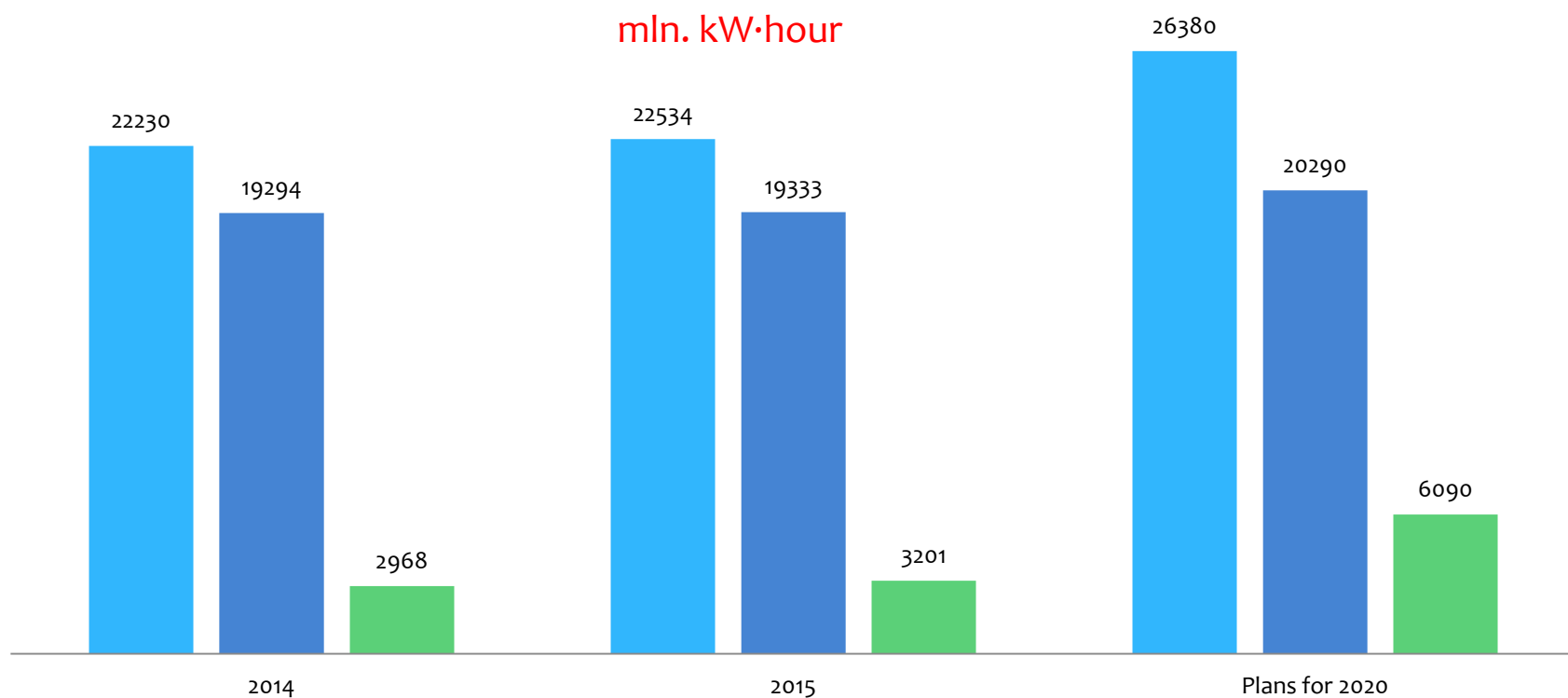
Past energy demand and supply of Turkmenistan.

Outlook of energy demand and supply of Turkmenistan.

- * To increase the power generation, which is planned in accordance with the "Concept of development of electric power industry of Turkmenistan in 2013-2020" construction of 14 gas turbine power plants with a total capacity of about 4 thousand megawatts are scheduled.
- * In particular, already have been built and put into operation gas turbine power plants with capacity of about 149 MW each in Ahal, Mary and Lebap provinces. Also has been built a gas turbine power plant with capacity of 252.2 MW in Ak-bugday (project Ahal-2) districts and a gas turbine power plant with capacity of 504.4 MW in Derweze district of Ahal province. And ends with the construction of gas turbine power plant with capacity of 254 MW in the eastern region of the province Lebap.
- * The further development of electricity distribution networks are in the plans of the Ministry of Energy. Objects under construction on the project "Improving the reliability of power supply of Ashgabat" provides a complete renovation and modernization of the entire electric grid of the capital from 220 kV substations to electrical boxes of apartments, the entire system of street lighting, the transfer of all overhead lines in the city to cable lines as well as construction of new energy facilities.
- * Construction of the 220 kV ring transmission line around the city of Ashgabat will allow improving of power supply to consumers of the capital.
- * In connection with the development of new gas fields in Mary province and the growing demand for electricity, started construction of a gas turbine power plant with total capacity of 1.574 MW in Mary province in two stages.
- * Due to the great attention of the President of Turkmenistan in the development of the industrial sector in the province of Lebap, a contract was signed with the Japanese company "Sumitomo Corporation" for the construction of gas turbine power of 432 MW in the region. Will be installed 3 gas turbines model of M701DA with system DLN of production company "Mitsubishi-Hitachi".
- * To enhance the throughput capabilities of power lines for export of electricity to neighboring countries planned to build a high-voltage overhead transmission lines 400 kV in the directions Balkanabad-Aliabad (Iran) and Mary-Mashhad (Iran).

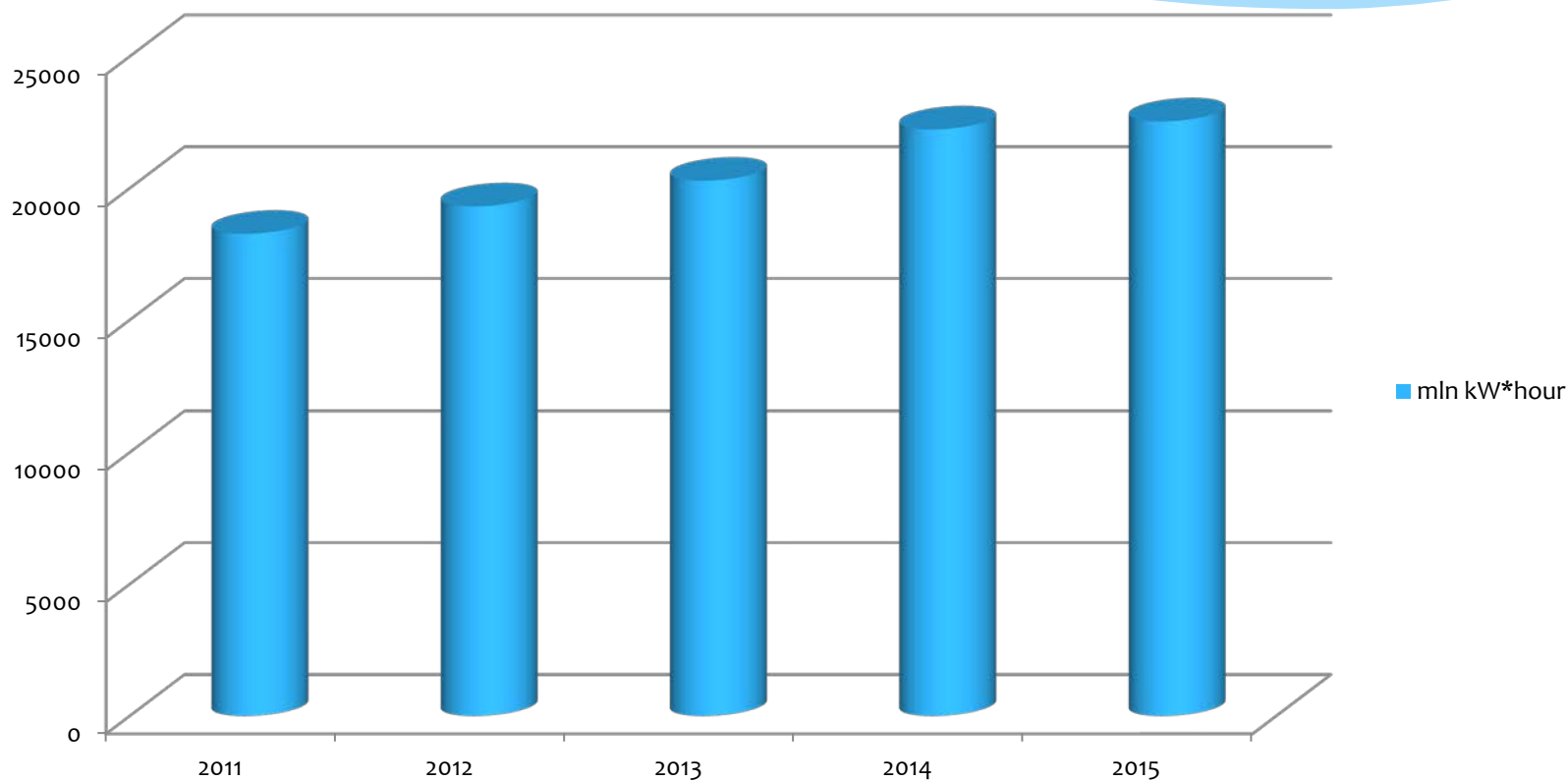
Electric energy demand and production

■ Production of electricity ■ Electricity consumption ■ Export of electricity



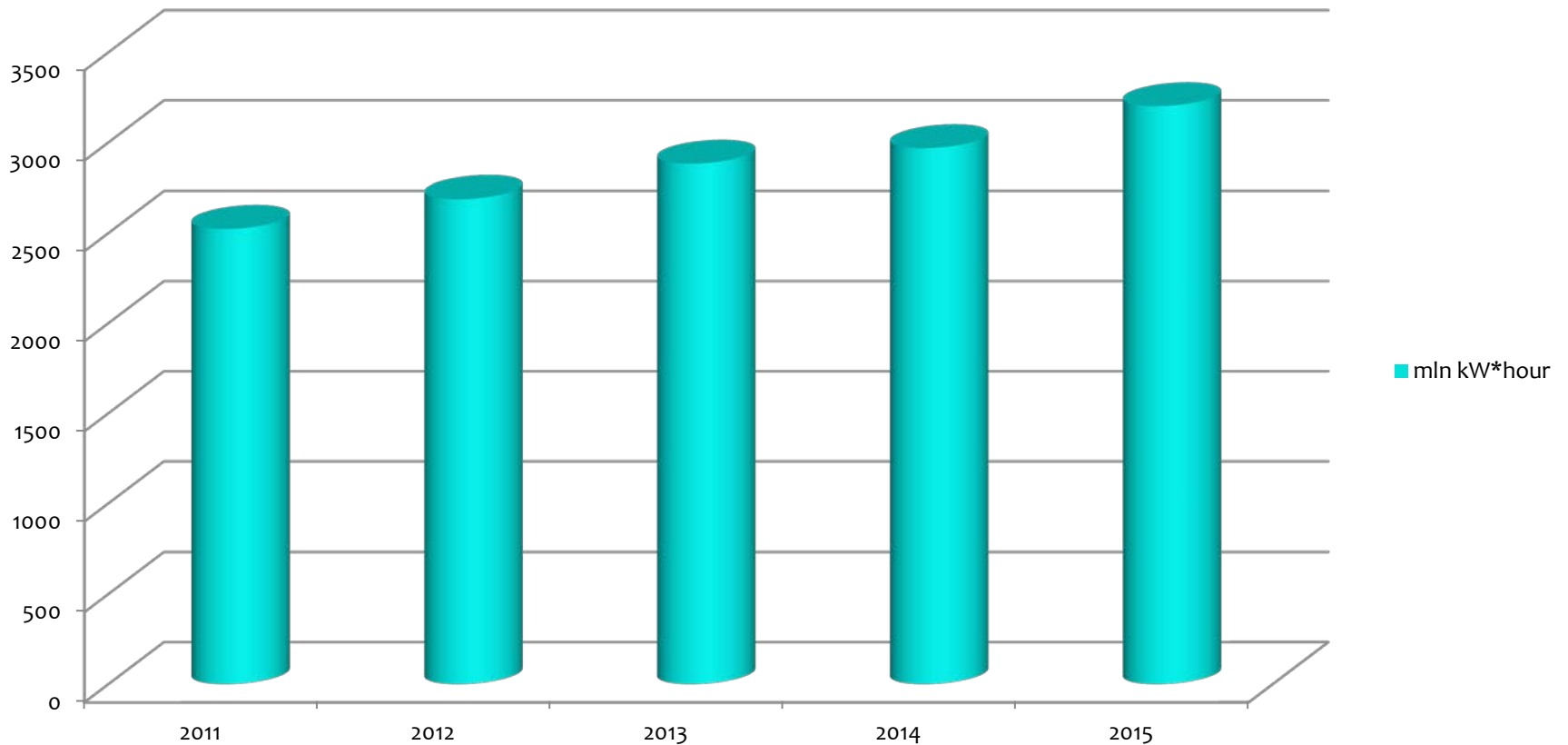
Production of electric energy

mln kW*hour



Exported electric energy

mln kW*hour



Subjects I would like to study

- * Environmental issues, the development of environmentally friendly and cost-effective electricity are one of the priorities of our industry. In this regard, the State Energy Institute of Turkmenistan introduced a new discipline - "Alternative energy sources."
- * Solving of these problems will strengthen energy security and independence of country, efficiency of production, consumption and export of electricity and will contribute to further boosting the economy of the country.
- * I would like to study about energy efficiency, renewable energy and energy demand forecasting. Turkmenistan has inexhaustible reserves of natural energy, such as sun and wind. The transition to alternative energy produced by the renewable energy sources will be an important contribution to sustainable economic development and, moreover, will allow reducing an adverse industrial impact on the quality of the environment and the health of people and help to address global challenges of the modern world such as climate change. Turkmenistan is the fast growing country and energy demand forecasting is very important to solve the future problems with covering energy consumption.

Thank you !