

Management summary: Analysis of the current situation and energy saving capacities in electricity sector

According to the information published by Tavanir Company, the nominal capacity of the country's power plants at the end of year 1394 was 74,103 MWe. The total nominal capacity of the country's power plants includes 36.2% (26830 MWe) from the gas plants, 24.9% (18494 MWe), from the combined cycle power plants, 21.3% (15830 MWe) from the fossil power plants, 15.3% (11278 MW) from the hydroelectric power plants, 1.6% (1193 MWe) from the nuclear power plant and 0.6% (439 MWe) from the diesel power plants.

From the total nominal installed capacity of the country in 1394, about 47 percent (34,945 Megawatts electric) was in the scope of activities of the Ministry of Energy, and about 53 percent (39,158 Megawatts) was due to the activities outside the Ministry of Energy.

The share of production of electricity from different power plants in 1394 is as follows:

- The electricity production from the steam power plants is 86,968 million kWh, equivalent to 31% of total production
- The electricity from the production of gas power plants is 75,424 million kwh, equivalent to 26.9 percent of total production
- Production of electricity from the combined cycle power plants is 100,936 million kWh equivalent to 36% of total production
- The production of electricity from the hydroelectric power plants is 14087 million kWh, equivalent to 5% of total production
- The production of electricity from the diesel electric power and new energies power plants are 324 million kWh equivalent to 0.1% of total production
- The production of electricity from the nuclear power plant is 2950 million kWh, equivalent to 1.1% of total production

Statistics show that the average efficiency of private power plants, which are mainly small gas power plants, is 32%, and the average efficiency of large power plants, which are mainly gas and steam power plants, is 29.6%. As the lowest efficiency

among the thermal power plants belongs to gas power plants, one of the most effective actions in increasing the efficiency of power plants is conversion of the gas power plants into combined cycle ones. In addition it worth's to mention that the share of transmission losses in 1394 is 12.3%.

According to the statistics of 1394, about 33 percent of the country's electricity is consumed in the household sector, and 32 percent of the country's electricity consumption is related to the industry sector.

The construction of power plants and electricity transmission networks requires a lot of investment. The cost of electricity production, transmission and distribution facilities for each kilowatt-hour is about \$ 800. In addition to the costs, the time required to build a power plant is 3 to 8 years. Furthermore, current and fixed annual operation costs of power plants are sometimes up to 20% of initial investment. Hence, significant reduction in electric energy consumption is crucially effective in preserving the national resources. Considering the potential of saving in the industry sector, it is possible to save annually 670 billion USD in this sector. In the household sector, using the best-practices of energy-efficient home appliances can greatly prevent the loss of national capital. It should be noted that in our country at household and commercial sectors, equivalent to about 200 million barrels of crude oil is consumed annually for the provision of heating and cooling. If only we annually reduce 10% of our energy consumption in devices for heating and cooling, we will save about 20 million barrels of crude oil, which worth's about \$ 900 million (taking into account the average price of a barrel of crude oil as about \$ 45) which is a significant amount.