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The Energy Security of Turkey: Problems and Proposals

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Abstract: Energy security is defined that the provision of reasonably priced, reliable and environmentally friendly energy. According to the International Energy Agency's 2014 report, the world energy demand is estimated to increase by 1.1% annually and 37% in total by 2040. In 2013, Turkey's energy demand was 120.3 TEP. 73.5% of energy demand was imported. The largest portion of the demand (31.3%), almost all (98%) are covered by imported natural gas. Oil's share in imports is 93%. In coal, the share of imports is increasing rapidly. In Turkey, the distribution of installed power by sources as of the end of July 2017; 33.6 percent of hydraulic energy, 28.1 percent of natural gas, 21.5 percent of coal, 7.7 percent of wind, 1.1 percent of geothermal and 7.4 percent of other resources. In this study, Turkey's energy security has been examined with the latest data.

Keywords: Energy security, Energy demand problems and proposals

Introduction

Energy is an important driving force of economic activity around the world, and therefore is one of the most important issues of discussion in today's global society. The question of how to secure energy is a critical problem especially for countries that import energy (especially fossil fuel consumption) (Matsumoto et al., 2018).

The International Energy Agency (IEA) defines energy security as “the uninterrupted availability of energy resources at an affordable price”. Energy security has many dimensions: long-term energy security is concerned with timely investments in order to supply energy in line with economic developments and sustainable environmental needs. Short-term energy security focuses on the ability of the energy system to react immediately to sudden changes in supply-demand balance. Therefore, lack of energy security is linked to either lack of physical energy, or to the negative economic and social effects of prices that are not competitive and are extremely volatile (https://www.iea.org/topics/energysecurity/whatisenergysecurity/).

Energy security is one of the key parameters to provide a stable value for the development of countries and regions. Nowadays, especially in developing countries, energy demand is growing faster than ever. Ensuring energy security is an integral part of national security. Energy security is also an important element and interdependence source in international relations (Proskuryakova, 2018). Energy security is an important element in the planning and development of the energy system in terms of technical, economic, social, environmental and political aspects. Recently, the energy security argument has been largely reflected in most official energy policy documents across Europe and the world (Augutis et al., 2017).

Turkey's energy consumption has seen an increase in Gross Domestic Product (GDP) growth in recent years. Due to the lack of fossil fuel resources, Turkey has become one of the most densely importing countries with over 70% long-term dependence levels. Turkey's energy import dependency rate, which is an EU candidate country, is higher than 53% of the EU average in 2013 (Birsellioglu et al., 2017). In this study, taking into consideration the world energy situation, an overview of Turkey's energy security has been made.

In recent years, bioenergy production has continued to increase in some countries in line with energy demand and environmental objectives. Biomass energy, which is used in many fields such as heating, energy and transportation, constitutes 14 percent of the total energy consumed on earth. This ratio is four percent vegetable oils treated with hydrogen, biodiesel fuels and 74 percent ethanol fuels constitute.

Turkey's Energy Outlook

It is located on three continents of Turkey, Asia, Europe and Africa with an area of 783.502 km^2 (Dombayci et al, 2017). Turkey, despite its hydraulic and coal reserves of 16 billion tons, is largely dependent on foreign energy (Herkese Bilim ve Teknoloji, 2010), except for coal reserves made up of low quality lignite. In 2013, Turkey's demand for energy was 120.3 mtep (million equivalent oil). Compared to 1990 data, an increase of 127% was observed. When domestic production share was removed, nearly 74% of primary energy needs were imported (Pamir, 2015). Turkey's energy imports were 55.1 mtep in 2000, 84.6 mtep in 2010 and 96 mtep in 2016. In 2016, the amount of resources in Turkey's energy production is shown in Fig.1.

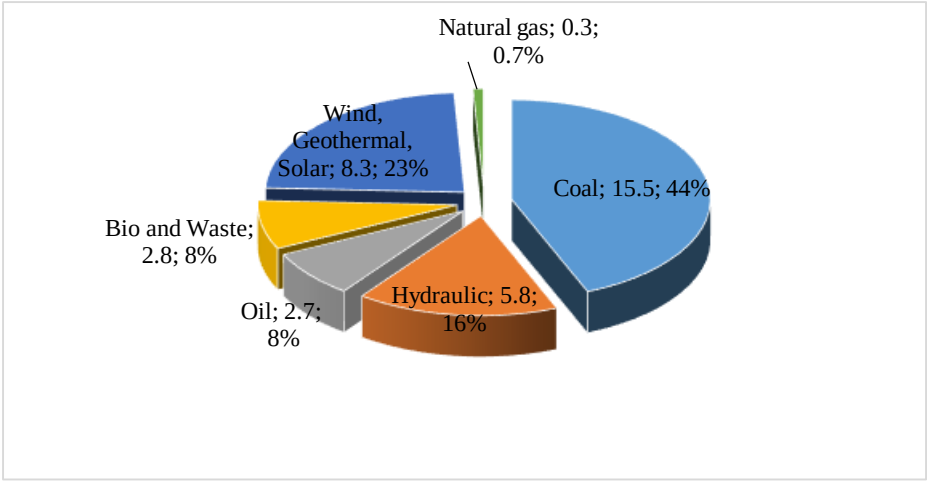

Figure 1. The amount of resources (Mtep) and percentage share (%) in Turkey's energy production in 2016. (Türkiye'nin Enerji Görünümü, 2018).

Turkey is a transit country in a region close to rich reserves, as seen in Figure 2. Turkey's position eliminates its dependence on a single country or a single region in terms of energy supply and makes it advantageous in terms of energy security compared to other dependent countries.

Figure 2. Oil and natural gas pipelines (ceftus.org)

Results and Discussion

Turkey has to meet most of the energy demand through imports. Geopolitical and geostrategic position is located in the centre of countries rich in energy resources. In this respect, Turkey can use the energy bridge function in favor of it and in terms of energy security, there is no obligation to depend on a single country or region. In this context, Turkey can develop cooperation with the producer countries. Turkey has a rich potential in terms of renewable energy sources; with the efficient use of these potential, import dependency can be reduced.

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