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Turkey's natural gas necessity, consumption and future perspectives

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Abstract

Turkey is an important candidate to be the ''energy corridor'' in the transmission of the abundant oil and natural gas resources of the Middle East and Middle Asia countries to the Western market. Furthermore, Turkey is planning to increase its oil and gas pipeline infrastructure to accommodate its increased energy consumption. Naturally, Turkish natural gas usage is projected to increase remarkably in coming years, with the prime consumers, expected to be industry and power plants. Energy demand of Turkey is growing by 8% annually, one of the highest rates in the world. In addition, natural gas consumption is the fastest growing primary energy source in Turkey. Gas sales started at 0.5 bcm (billion cubic meters), in 1987 and reached approximately 22 bcm in 2003. This article deals with energy policies and natural gas consumption of Turkey. Besides modernization of present lines and realization of capacity increase, new lines will also be needed. In this context, Turkey, due to its geographical location is, in an important position to vary European supply. Therefore, Turkey's role as a transitory area gains importance.

Keywords: Energy; Natural gas; Energy source; Projects; Strategic importance; Turkey

1. Introduction

Energy is considered to be a prime agent in the generation of wealth and significant factor in economic development. The importance of energy is recognized almost universally. And the historical data attest to a strong relationship between the availability of energy and economic activity (Demirbaş, 2000). Personally, energy consumption becomes a major factor for developing world technology. Much of the world's energy, however, is currently produced and consumed in ways that could not be sustained it technology were to remain constant and if overall quantities were to increase substantially (Demirbaş, 2001).

The organizations directing the world's oil policy are; OPEC (Organization of Petroleum Exporting Countries), UEA (United Energy Associates) and also multinational oil companies. It can be said that the political and economical events happening in the world within the last years have also played an effective role on oil and natural gas searching and producing activities. After the Gulf War, the conditions between the Middle East and the OPEC countries being changed in a negative sense, which affected world oil and natural gas industries. On the other hand, the most important event in oil and natural gas industry occurred with the collapse of The Union of Soviet and Socialist Republics. And the endeavors of the independent republics to transform themselves into liberal economic states caused changes in oil and natural gas demand and production models (DPT, 2000).

Most of the increase in demand is expected to come from developing countries, where the demand is expected to grow from 0.5 tcm (trillion cubic meters) in 1999 to 4.5 tcm in 2020. The use of natural gas in OECD countries is projected to grow by 2.4% annually, (compared with 1.1% for oil). This would account for 49% of the projected increase in total energy consumption of these countries (Fig. 1).

World primary energy consumption grew by a relatively strong 2.6% in 2002, well ahead of the 10

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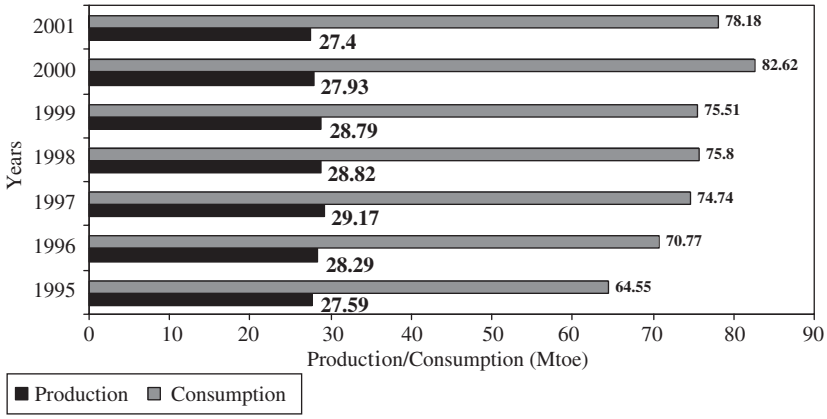

Fig. 1. Turkey's primary energy production and consumption during 1995–2001.

Table 1
Primary energy mix-world (IEA, 2003)

	2001		2002	
	Mtoe	%	Mtoe	%
Oil	3517.1	38.37	3522.5	37.45
Natural gas	2219.5	24.22	2282.0	24.26
Coal	2243.1	24.47	2397.9	25.49
Nuclear	601.0	6.55	610.6	6.49
Others	584.7	6.37	592.1	6.29
Total	9165.4	100.0	9405.1	100.0

Table 2
Natural gas-growth in reserves, tcm (IEA, 2003)

	1982	1992	2001	2002
North America	10.67	9.45	7.55	7.15
South and Central America	3.14	5.34	7.16	7.08
Europe and Eurasia	39.96	61.02	61.0	61.04
Middle East	21.78	43.05	55.91	56.06
Afric	5.36	9.82	11.74	11.84
Asia Pacific	4.99	9.66	12.27	12.64
Total world	85.90	138.34	155.63	155.78

years growth trend of 1.4% per annum. In terms of primary energy mix, coal increases its share from 24.5% in 2001 to 25.5% in 2002, entirely at the cost of oil, whose share dropped to 37.4% in 2002. Share of other fuels, natural gas, nuclear, and other energy remained more or less the same, at 24.3%, 6.5% and 6.3% in 2002 (Table 1).

World natural gas reserves have risen from 85.9 tcm at the end of 1982 to 155.64 tcm at the end of 2001 and 155.78 tcm at the end of 2002 (BP, 2003). At end 2002, Europe, Eurasia and the Middle East account for more than 75% of the world's natural gas reserves. Russia, Iran and Qatar together accounted for 54.5% of the total reserves (Table 2).

World consumption of natural gas grew by 2.8% in 2002 on account of a 3.9% increase in US consumption and robust growth in Non-OECD (Organization for Economic Co-operation and Development) Asia Pacific of more than 7%. According to IEA (International Energy Agency) estimates, the share of natural gas in total primary energy consumption is projected to rise up to 3.2% during the first decade of the 21st century. In absolute terms, natural gas consumption is expected to almost double from 2.4 tcm in 1999 to tcm in 2020.

Turkey's strategic location makes it a natural "Energy Bridge" between the major natural gas production areas in the Middle East and Caspian Sea regions on the one hand and consumer markets in Europe on the other. Furthermore, one of the pillars of Turkey's energy strategy is to become an energy corridor between the energy-rich countries of the Caspian, Central Asian and Middle Eastern regions and the European markets. The ongoing deregulation process of the Turkish energy market will give Turkey a pivotal role in the energy fields particularly in the gas sector and make her a major consumer and transit country in the region.

2. Turkey's energy potential

Petroleum, coal and natural gas come into mind first when energy resources mentioned, Turkey has various primary energy resources. Primary energy sources include lignite, hard coal, oil, natural gas, hydroelectricity, geothermal, wood, animal, plant wastes, solar, and wind. However, these energy resources seem to be limited (Oğulata, 2002).

Domestic coal, geothermal and hydropower reserves of Turkey are approximately 1% of the world's total (DPT, 2000; Demirbaş, 2001). The primary energy sources in Turkey are shown in Table 3 (Demirbaş, 2001; MENR, 2002).