



Turkey: Geothermal Power Market in Turkey

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Geothermal Energy in Turkey

The Turkish Mineral Research and Exploration agency (MTA) estimates a theoretical geothermal direct use potential of 31,500 MW thermal. Today, the country ranks number 7 in the world in the utilization of geothermal energy for direct use (using heat directly, e.g. for heating, which excludes power generation), and number 1 in Europe.

The installed capacity for geothermal direct use is 4,813 MW thermal by the end of 2012, having grown by 46 percent over the past 7 years. There are 225 identified geothermal areas in the country with more than 1,300 (geothermal reservoirs. More than 145,000 meters have been drilled in those regions.

The overall heat generation capacity in Turkey is 7,000 MW thermal (a growth by 130 percent). The heating of greenhouses has increased from 500 acres in 2002 to 3,000 acres by the end of 2012, an increase of nearly 500 percent. The heating of houses with geothermal heat has increased from 30,000 houses in 2002 to 90,000 houses at the end of 2012.

In 2002, Turkey had an installed geothermal power generation capacity of 15 MW electric. By 2012 the geothermal power generation capacity has reached 162.2 MW electric.

At this point in time about 90 percent of its geothermal energy potential for power generation remains untapped. Utilizing the geothermal heating potential of 31,500 MW thermal would provide annual savings of \$10 billion for Turkey.



Turkish companies require more drilling equipment and services, geological and geophysical survey services, as well as insurance and financing for such geothermal production. Virtually no local production in Turkey is utilized—all parts are imported, with a strong U.S. brand identification. Engineering and survey firms for geothermal energy, as well as design firms and geothermal power plant equipment suppliers, will find a fertile market in Turkey for their business.

In addition, the Turkish government has set Targets for Renewables in the electricity generation mix by the year 2023 (Centennial of the Turkish Republic). Thirty percent (30%) of electricity generation will come from renewable energy sources (currently 26% of the mix is from renewables including large hydroelectric power plants), and geothermal installed capacity for production will be 600 MW (currently installed capacity is over 160 MW).

Investment Incentives for new Geothermal Power

Many incentives are provided for firms entering the market, including a feed-in tariff of 10.5 US cents per kWh for geothermal energy production.

VAT Exemption, Customs Duty Exemption, Tax Reduction, Social Security Premium Support, Income Tax Withholding Allowance, Interest Rate Support, Land Allocation and VAT Refund are the basic incentives provided depending on the investment region.

Additionally, the following feed-in tariff incentives are provided if locally manufactured equipment is used in addition to 10.5 US cents per kWh:

- Steam and Gas turbine: 1.3 U.S. cents per kWh
- Generator and power electronics: 0.7 U.S. cents per kWh
- Steam Injector or Vacuum Compressor: 0.7 U.S. cents per kWh

Legal Framework:

Geothermal energy is regulated by the Law numbered 5686 (3rd Jun, 2007) Law on Geothermal and Mineral Resources along with the Geothermal and Mineral Resources Law Implementation Regulation numbered 26727. The Geothermal Energy Law in Turkey regulates geothermal resources along with natural mineral water resources and geothermal-related gases. It covers the procedures of usage rights, licenses and their assignment or transfer. The relevant authority is the Ministry of Energy and Natural Resources ("**MENR**" or "**Ministry**") and the relevant head state entity is the Provincial Special Administration ('**Administration**').

Pursuant to Article 4 of the Geothermal Energy Law, ownership of above-mentioned resources is deemed to belong to the State rather than to private property-owners where the resources are located. Any activity relating to the resources will be subject to parties first obtaining the necessary licenses set out into the same law. Turkish citizens or legal entities duly incorporated under Turkish Law are entitled to apply for the related licenses.

There are two types of licenses; namely prospecting license and operating license. The former enables its holder to carry out prospecting activities in a specific area based on the project notified to the Administration; the latter enables its holder to produce geothermal related-water, gas and steam and use them for energy production, heating or for industrial purposes.

(Source: Senguler & Senguler Law Office)

Under the Renewable Energy Law No. 6094, retail sellers are obligated to purchase an amount of energy equal to a certain percentage of the electricity that they sold in the previous year from the entities holding a RER certificate. To perform this obligation, retail sellers are required to sign bilateral energy purchase agreements. Although the term "bilateral agreements" was removed from the Renewable Energy Law by an amendment dated 2 May 2007, the current version of the Renewable Energy Law does not provide for any alternative to the bilateral agreements for the retail sellers to perform their purchase obligation.

The subject Law sets forth a new method for the performance of the purchase obligation of the suppliers. According to the Law 6094, the purchase obligation will be performed through a program, in which all suppliers subject to purchase obligation and all RER certificate holders will

participate, rather than executing separate bilateral agreements for each sale transaction between each supplier and RER certificate holder.

The RER certificate holders are eligible to participate in the feed-in tariff program on an annual basis; i.e., once participated they cannot leave the program during the year and participation in the program is allowed only at the beginning of each calendar year. RER certificate holders are not required to participate in the program. Those who do not wish to participate in the program sell electricity to the liberal market and may sign bilateral energy sale/purchase agreements. In such cases, however, they would not be entitled to benefit from the purchase and feed-in tariff price guarantee incentives of the Renewable Energy Law.

(Source: Cakmak Law Firm)

Competition:

U.S. companies such as Gardner Denver, Geothermal Development Associates, ORMAT USA, Power Engineers, Pratt & Whitney, Shaw Group, SPX, Yuba and U.S. Geothermal are active in Turkey; competition exists with Israeli (ORMAT) and German(Siemens) companies.

Best Prospects:

Subsector Best Prospects in the Geothermal Energy Market include

- Geothermal power plant equipment
- Engineering and design of geothermal power plants
- Geological and geophysical survey services for geothermal resources

Resources: MENR, EMRA, ISPAT, MTA, ITU, Senguler & Senguler Law Office, Cakmak Law Firm, etc.

For More Information:

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