

Box 12.1: How Turkey became a role model for geothermal energy within a decade

Between 2009 and 2019, the number of geothermal power plants in Turkey shot up from 3 to 49. This corresponds to a geothermal capacity of 1.5 GWe, placing Turkey fourth in the world for this indicator after the USA, Indonesia and the Philippines, according to the Turkish Energy Market Regulatory Authority.

In the past decade, Turkey has drilled more than 1 000 geothermal wells in Western Anatolia (Kaya, 2017). Thanks to this extensive experience, geologists have managed to drill wells as deep as 4 500 m in the Büyük Menderes Graben, an active rift basin in western Turkey with great geothermal potential that is about 140 km long and up to 14 km wide.

Geothermal exploration has accelerated since the adoption of the Law on Geothermal Resources and Natural Mineral Waters in 2007. This law gave potential private partners the necessary confidence to invest, eliminating some of their concerns with regard to legislative, technical and administrative hurdles. For instance, the law reduced the number of licenses to two.

In parallel, the Renewable Energy Support Scheme of 2010 introduced a new feed-in tariff (US\$ 0.105 per kWh) guaranteeing companies a purchase

price for the energy they generated at a fixed rate for ten years. Investors are currently waiting for news of the new feed-in tariff from 2021 onwards before renewing their commitment to geothermal power production in Turkey.

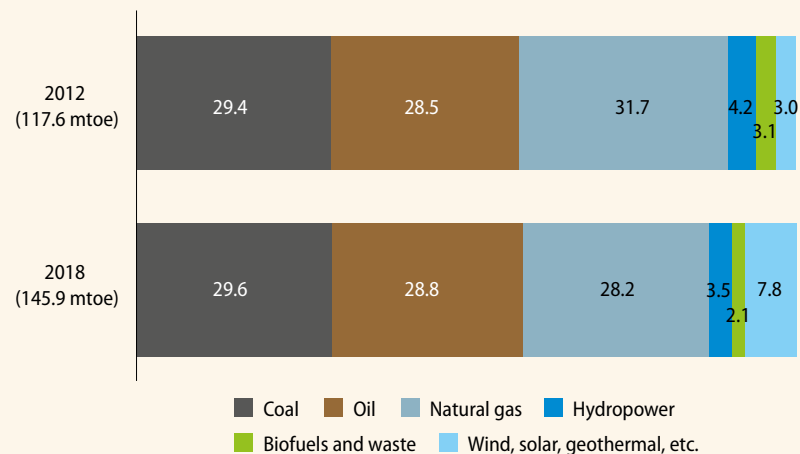
The European Bank for Reconstruction and Development has also supported the development of geothermal energy financially to accompany the decarbonization of Turkey's economy.

Turkish geothermal power companies have participated in the EU's Horizon 2020 programme through

consortia. This has enabled them to interact with technology providers and operating companies in Europe, in particular. Two of these big-budget, multidisciplinary projects are Geosmart and GeoPro. The Turkish hydro-electric power company, Zorlu Energy, has received around € 3.5 million from Horizon 2020 through its participation in six research projects.

Source: compiled by Füsün Servin Tut Hakkidir, Department of Energy Systems, Istanbul Bilgi University

Figure 12.9: Breakdown of Turkey's primary energy supply by source, 2012 and 2018 (%)



Source: International Energy Agency (<https://www.iea.org/countries/turkey>)