Dubbed the “Tiger of the Mediterranean,” Turkey has benefited from political stability, falling inflation, and the strengthening of the private sector. Despite recent turbulence, the country is still projected to grow healthily: 4 percent in 2013, according to the IMF (compared to 0.2 percent for the Eurozone). However, Turkey’s economy is experiencing pressure due to the country’s large current account deficit, which can be explained almost entirely by necessary energy imports of oil and gas. This is a key driver for the country to push for domestic energy (renewables, but also coal and nuclear) and energy efficiency, and this fact moves these strategic sectors towards the centre stage of Turkey’s economic policy.

By 2023 Turkey’s 55 GW capacity must double, to accommodate rises in demand by 6.3 percent in the next two decades. By 2023 Turkey’s 55 GW capacity must double, to accommodate rises in demand by 6.3 percent in the next two decades. By 2023 Turkey’s 55 GW capacity must double, to accommodate rises in demand by 6.3 percent in the next two decades. By 2023 Turkey’s 55 GW capacity must double, to accommodate rises in demand by 6.3 percent in the next two decades.

To reduce its exposure to supply and price fluctuations, which could jeopardize economic growth, Turkey has expressed a desire to reduce fossil fuel imports, which account for 60 percent of power generation.\(^{31}\) Regarding water, Turkey faces a geographical mismatch between resources, population, and industrial centers that calls for an integrated water resources management approach.

Fortunately, what’s good for Turkey’s economy could also be good for the global environment. If ambitious government targets are met, Turkey’s energy supply will be 30 percent renewable by 2023, despite significant planned investments in coal power. This implies huge investments in the clean energy sector, including wind, solar, hydropower, biomass, and geothermal energy. With abundant potential, high spot-market power prices and reasonable feed-in tariffs\(^{32}\) in place, the renewables sector is ready for growth. Solidly rising demand, a grid that can accommodate further capacity, and favourable policies are focused in particular on nurturing hydropower and wind, the poster children of Turkey’s slowly maturing renewable energy market.

These framework conditions support our estimate of Turkey’s commercial investment potential of almost $42 billion in energy generation, (see figure 8), with renewables representing $22 billion of this total. There is also $16 million of investment potential in transmission and distribution (T&D) infrastructure upgrade and repair, substantiated through electricity losses of 14 percent running across 46,000 km of lines, with a commercial potential of over $16 billion.

By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades. By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades. By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades. By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades. By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades. By the Turkish Republic’s centennial in 2023, its 55-GW capacity must double to accommodate rises in demand by 6.3 percent in the next two decades."
five percent of its wind potential - estimated at about 40 GW, onshore12 – has been harnessed. In early 2013, the sector attracted the turbines of General Electric Co. and Siemens AG for combined orders exceeding 150 MW. GE has announced potential investments into the sector of $900 million13 and is operating several projects (the 22.5-MW Sares, 10-MW Karadag, and the 35-MW, 13-turbine Gok ll in Izmir) through joint venture Gama Enerji, along with Gama Holding. Some 20 GW are needed to meet Turkey’s 2023 target. The main hurdle will be administrative: the Turkish Energy Market Regulatory Authority (EMRA) has reportedly struggled to keep its project screenings on pace with the rate of project submissions.14

Hydropower is also going strong, dominated by local developers such as Enerjisa and SPC Kaleshan Enerji Uretim, with capacities ranging between the 236-MW plant on the Coruh River in Arkkun and 1100 MW of power on the Murat River. Equipment, engineering, and construction contracts have generally been awarded to international players, such as Alstom, Pöyry, and Andri. White costs vary, it is known that the Cetin storage project for 517 MW of hydropower estimated the required investment at $680 million. Owned by Statkraft of Norway, this plant is a good example of foreign involvement in the Turkish hydropower sector.

The sun is beginning to boost more than Turkish tourism and agriculture (see box). Assuming the availability of attractive long-term debt financing, which is still scarce, the country’s solar power capacity could reach 3,000 MW by 2023. Although there are certain restrictions on land use and minimum radiation levels, license holders may choose either photovoltaic or concentrating solar power technologies. Turkey’s first feed-in tariff scheme is starting with a first round of licensing of 600 MW across 27 regions, to be completed in early 2014.

Recent developments have also boosted Turkey’s two traditional renewable energy sources, geothermal and bio-energy. The emerging trend is the application of these resources in industrial settings. The first large-scale biogas plants based on energy generation from chicken and cow manure could provide up to 750 MW of electrical power. In the next decade this initiative could result in as many 2000 biogas plants, each with 500-kWel of capacity, according to the Turkish R&D organisation Tübitak.

Energy efficiency is very much seen nationally as a tool for boosting the competitiveness of domestic businesses and companies – with high power prices there is a good foundation for energy efficiency

Geothermal energy, in contrast, is mainly receiving attention for its power generation potential, with explorations underway for 600 MW of geothermal power by 2015. Two plants have been commissioned by Celikier Joeteltrik Elektrik Uretim A.S, with four geothermal power trains and a total gross capacity of 80 MW, serving the expansion of power plants near Pamukkoren and Sultanhisar. Sweden’s Atlas Copco and the Italian firm EXERGY are part of the consortium delivering the project, at a half-order value of $22 million for two trains.

Nationally, energy efficiency is very much seen as a tool for boosting the competitiveness of domestic businesses. Relatively high power prices (industrial tariffs of $0.136 per kWh and consumer tariffs of $0.156 per kWh) provide a solid foundation for energy efficiency. In addition, the government has committed to reduce primary intensity 20 percent by 2023. A promising sign of government commitment are the financial incentives made available under Turkey’s energy efficiency law and its Energy Market Regulatory Authority, to sanction rises in retail prices for electricity and gas by almost 10 percent in October 2012. The exact implications of these developments have not yet been

Solar energy in Turkey benefits from FIT scheme

Turkey’s new renewable energy policy has already had practical results. Adana Cement Inc., which is part of OYAK, recently built a 499-kW photovoltaic plant. This is the first solar power plant approved by Turkey’s distribution grid operator TEDAS, with the bid for the plant having been conducted in July 2012 and operations beginning in May 2013. The project, with an annual production capacity estimated at 775 MWh, is expected to meet a significant portion of the electricity needs for the administrative functions of Adana Cement. A total of 2088 polycrystalline modules manufactured by Zhejiang University Sunny Energy and 30 SMA inverter units are used in the plant. The system is connected to the Adana Cement Plant line and the cost of electricity generation is approximately $0.013/kWh, with a payback estimated at 11 years.


Figure 9: Estimated commercial investment potential in selected industrial sectors in Turkey

Investment potential

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