Lebanon solar thermal energy

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Country Background GeographyThe Lebanese Republic is a sovereign state located in Western Asia adjoining the eastern edge of the Mediterranean region from the south along a 79 km border. It has a total territory of 10 452 km2, with a 225 km coast along the Mediterranean Sea that features a narrow coastal plain that is 6.5 km at its widest point and lies below the Lebanon Mountains, which rise to a maximum elevation of 3088 meters. The Bekaa Valley separates the Lebanon and Anti-Lebanon Mountains, with the latter rising to 2 814 m.

Primary energy supplyLebanon relies on imports to satisfy its energy demand. In terms of primaryenergy, consumption is met using the following six major components:o liquid petroleum gas (LPG);o gasoline;o gas oil;o kerosene;o fuel oil; ando bitumen

The only sources of energy produced domestically include solar water heaters (SWHs), hydro power plants and a minor solar PV contribution. In 2010, energy imports accounted for approximately 96.8% of primary supply, and only 3.2% was locally produced from hydroelectric power plants and SWHs. The share of primary energy imports did not change significantlybetween 2010 and 2015, as political instability in the region prevented uninterrupted imports of natural gas, thus forcing various plants to rely on fuel oil.

Electricity demand was estimated in 2016 to be around 22 000 GWh (Electricit? du Liban (EDL), 2018), marking an increase of 54.8% since 2010, when demand was estimated at 15 934 GWh (LCEC, 2010). However, annual electricity demand data adopted by the MEW vary between 3.8% and 5%; the difference is essentially caused by the demand calculation methodologyemployed by EDL and the demand consequences of the significant increase in population over a short period. For consistency with MEW data, the updated policy paper estimates a demand increase of 3% by 2020.

Overview Renewable energy sources have largely been limited to biomass heating inrural areas and hydroelectric power plants installed before the 1970s that represented more than 75% of the electricity produced in Lebanon at that time.

Renewable energy targets and policy frameworkTargets In 2018, the Prime Minister announced a renewable target of 30% of electricity consumed by 2030, as reflected in the latest electricity reform paper adopted by the Lebanese government in 2019.

Renewable energy potential, status and driving policy instrumentsHydropower was the first form of renewable energy to be deployed in Lebanon and plays a major role in supplying renewable electricity to the country. However, low contracted prices and lack of maintenance and/ or refurbishment of hydropower plants have led to a continuous drop in the share of hydropower in the energy mix.

The previous sections have outlined the energy context in Lebanon and provided a view of how the country"s

energy landscape is likely to evolve over the coming years based on government plans and targets and the country"s energy strategy, including the NREAP (both 2016-2020 and 2016-2020 editions). IRENA"s REmap analysis, which is the focus of this section, provides an outlook for the potential of renewable energy in the country to 2030. It also highlights areas or sectors where the use of renewables could be scaled up.

The steps involved in the REmap analysis for Lebanon presented in this chapter include:o The definition of a base year selected to be the year 2014 due to data availability.o The definition of a reference case 2030.o The definition of a REmap case 2030.

Buildings In the buildings sector, final energy consumption grows from 72 petajoules (PJ) in the base year to 128 PJ in the reference case, mainly driven by electricity consumption which grows from 55 PJ in the base year to 95 PJ in the reference case. Oil and oil products comein second place and grow from 16 PJ in the base year to 26 PJ in the reference case.