

## SOLAR RESOURCE MAP

# PHOTOVOLTAIC POWER POTENTIAL LEBANON



### DESCRIPTION

This solar resource map provides a summary of estimated solar photovoltaic (PV) power generation potential. It represents the average daily/yearly totals of electricity production from a 1 kW-peak grid-connected solar PV power plant, calculated for a period of 20 recent years (1999-2018).

The PV system configuration consists of ground-based, free-standing structures with crystalline-silicon PV modules mounted at a fixed position, with optimum tilt to maximize yearly energy yield. The optimum tilt ranges from 26° to 33° towards the equator. Use of high efficiency inverters is assumed. The solar electricity calculation is based on high-resolution solar resource data and PV modeling software provided by Solargis. The calculation takes into account solar radiation, air temperature, and terrain, to simulate the energy conversion and losses in the PV modules and other components of a PV power plant. In the simulation, losses due to dirt and soiling was estimated to be 3.5%. The cumulative effect of other conversion losses (inter-row shading, mismatch, inverters, cables, transformer, etc.) is assumed to be 7.5%. The power plant availability is considered to be 100%.

The underlying solar resource database is calculated from atmospheric and satellite data with a 30-minute time step, and a spatial resolution of 1000 m.

### ABOUT

The World Bank Group has published this solar resource map using data from the Global Solar Atlas (GSA), to support the scale-up of solar power in our client countries. This work is funded by the Energy Sector Management Assistance Program (ESMAP), a multi-donor trust fund administered by The World Bank and supported by 18 donor partners. It is part of a global ESMAP initiative on Renewable Energy Resource Mapping that covers biomass, hydropower, solar and wind. This map has been prepared by Solargis, under contract to The World Bank, based on a solar resource database that Solargis owns and maintains.

To obtain additional maps and information, please visit:  
<http://globalsolaratlas.info>

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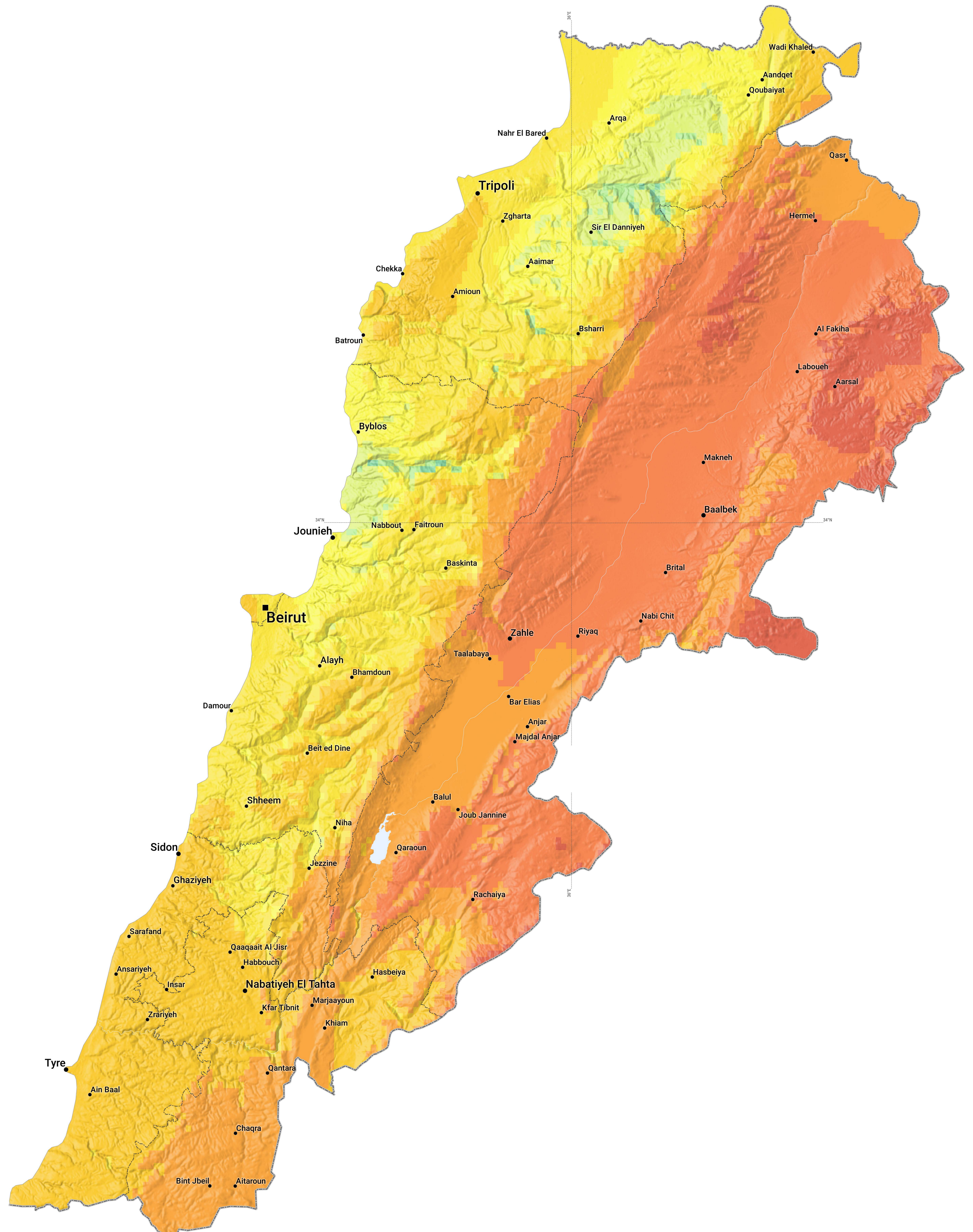
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Map data sources:  
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Source: Global Solar Atlas 2.0 • Solargis database version: 2.1 • Map issue date: 2019-10-17



0 10 km

