

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

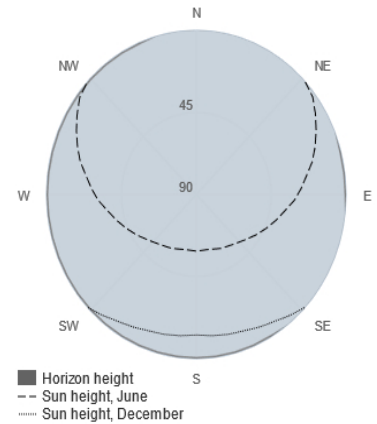
Provided inputs:

Latitude/Longitude: 53.544,10.010
 Horizon: Calculated
 Database used: PVGIS-SARAH2
 PV technology: Crystalline silicon
 PV installed: 10 kWp
 System loss: 14 %

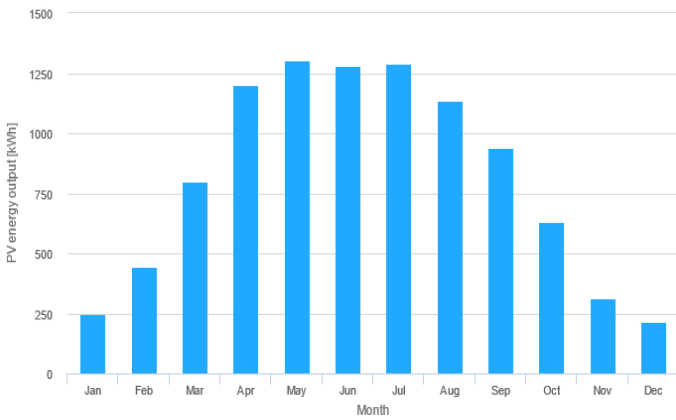
Simulation outputs

Slope angle: 30 °
 Azimuth angle: 0 °
 Yearly PV energy production: 9797.71 kWh
 Yearly in-plane irradiation: 1222.58 kWh/m²
 Year-to-year variability: 441.37 kWh
 Changes in output due to:
 Angle of incidence: -3.21 %
 Spectral effects: 1.75 %
 Temperature and low irradiance: -5.38 %
 Total loss: -19.86 %
 PV electricity cost [per kWh]: 0.071 per kWh

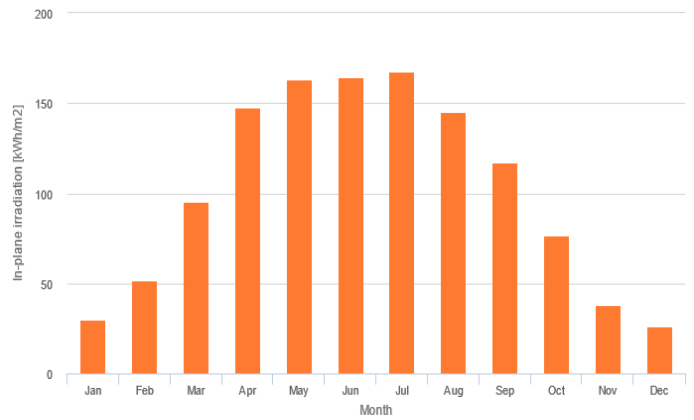
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	249.7	29.8	26.4
February	442.2	51.9	116.2
March	798.6	95.3	143.7
April	1199.4	147.7	201.7
May	1303.0	163.3	192.9
June	1282.1	164.2	96.1
July	1291.7	167.4	188.3
August	1133.5	145.3	106.3
September	939.7	117.0	104.0
October	629.8	76.8	117.8
November	312.5	37.8	49.3
December	215.3	26.0	32.3

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].