

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

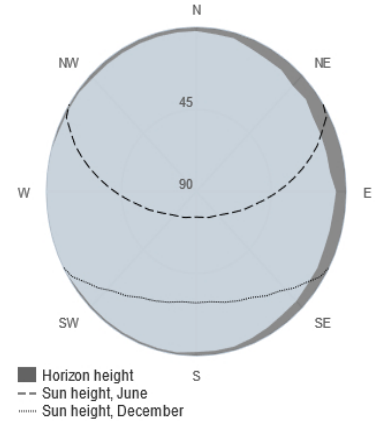
Provided inputs:

Latitude/Longitude: 37.183,-3.602
 Horizon: Calculated
 Database used: PVGIS-SARAH2
 PV technology: Crystalline silicon
 PV installed: 10 kWp
 System loss: 14 %

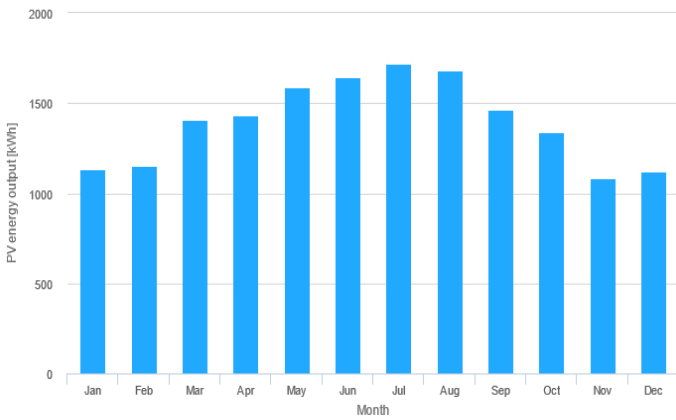
Simulation outputs

Slope angle: 30 °
 Azimuth angle: 0 °
 Yearly PV energy production: 16765.2 kWh
 Yearly in-plane irradiation: 2174.24 kWh/m²
 Year-to-year variability: 541.45 kWh
 Changes in output due to:
 Angle of incidence: -2.57 %
 Spectral effects: 0.68 %
 Temperature and low irradiance: -8.6 %
 Total loss: -22.89 %
 PV electricity cost [per kWh]: 0.042 per kWh

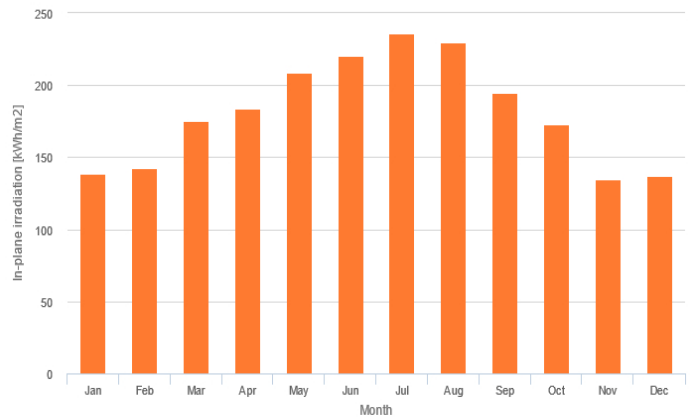
Outline of horizon at chosen location:



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	1134.6	138.8	181.7
February	1151.6	142.2	203.8
March	1405.7	175.6	189.2
April	1434.6	184.0	127.3
May	1589.6	208.5	130.6
June	1641.9	220.4	52.3
July	1719.1	236.2	42.5
August	1681.7	229.5	46.4
September	1464.5	194.6	88.0
October	1337.2	172.6	109.3
November	1083.1	134.6	145.1
December	1121.5	137.4	125.0

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].