

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

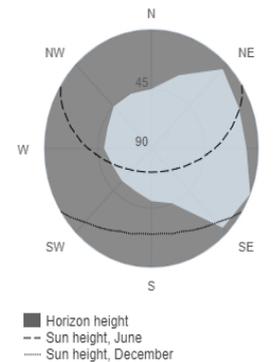
Provided inputs:

Latitude/Longitude: 41.159, -8.597
 Horizon: User defined
 Database used: PVGIS-SARAH
 PV technology: Crystalline silicon
 PV installed: 1 kWp
 System loss: 14 %

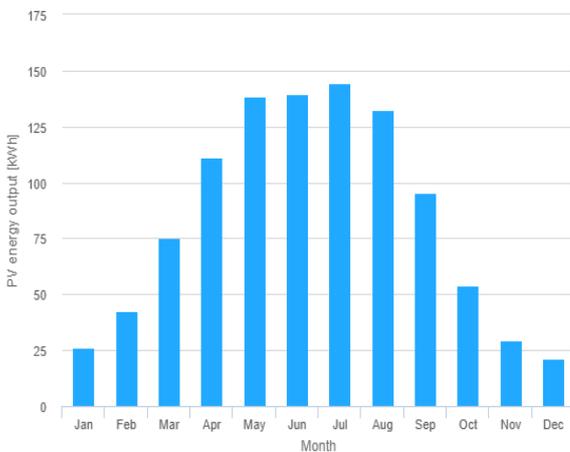
Simulation outputs

Slope angle: 22 (opt) °
 Azimuth angle: -54 (opt) °
 Yearly PV energy production: 1011.12 kWh
 Yearly in-plane irradiation: 1304.79 kWh/m²
 Year-to-year variability: 33.49 kWh
 Changes in output due to:
 Angle of incidence: -2.45 %
 Spectral effects: 0.56 %
 Temperature and low irradiance: -8.15 %
 Total loss: -22.51 %

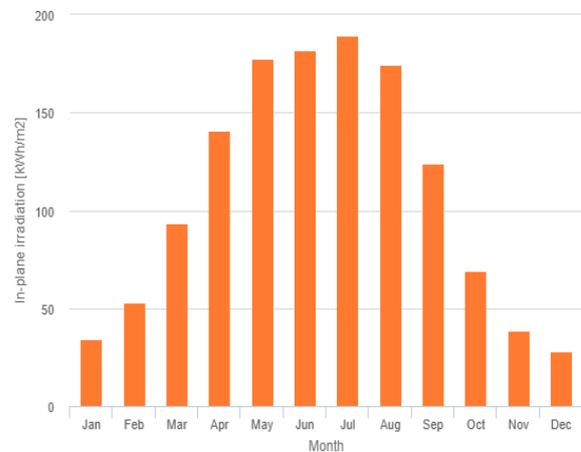
Outline of horizon at chosen location:



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	26.3	34.0	3.0
February	42.6	53.3	4.7
March	75.1	93.4	9.7
April	111.4	140.9	8.7
May	138.6	177.8	13.0
June	139.8	181.6	7.9
July	144.7	189.5	7.7
August	132.7	174.3	7.5
September	95.3	124.0	7.3
October	53.9	69.3	4.5
November	29.6	38.5	3.1
December	21.1	28.2	1.4

E_m: Average monthly electricity production from the given 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].