

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

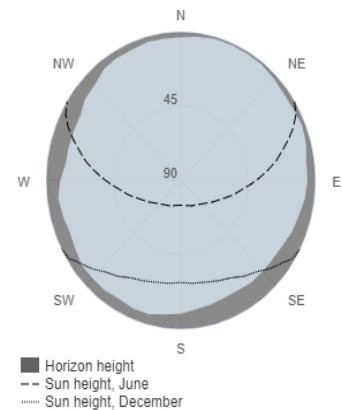
Provided inputs:

Latitude/Longitude: 38.495, 22.753
Horizon: Calculated
Database used: PVGIS-SARAH
PV technology: Crystalline silicon
PV installed: 280.8 kWp
System loss: 14 %

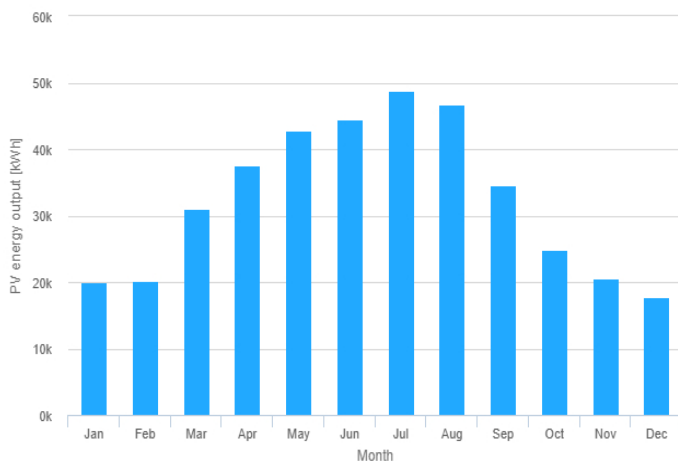
Simulation outputs

Slope angle: 20 °
Azimuth angle: 0 °
Yearly PV energy production: 389168.59 kWh
Yearly in-plane irradiation: 1779.79 kWh/m²
Year-to-year variability: 10355.14 kWh
Changes in output due to:
Angle of incidence: -2.83 %
Spectral effects: 0.57 %
Temperature and low irradiance: -7.35 %
Total loss: -22.13 %

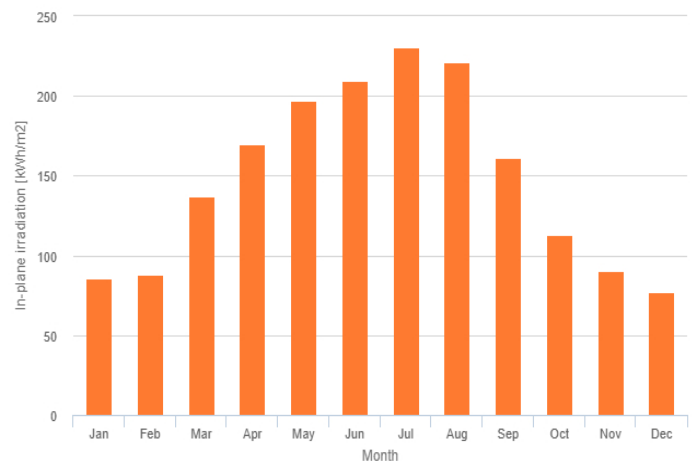
Outline of horizon at chosen location:



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	19925.385.9	4086.1	
February	20213.088.0	3375.3	
March	31023.3136.9	3770.7	
April	37654.2169.8	3134.0	
May	42734.9197.4	2600.1	
June	44435.5209.3	3065.0	
July	48768.5230.6	2454.3	
August	46746.6220.8	1431.8	
September	34633.7160.9	3291.9	
October	24874.0113.1	3337.2	
November	20467.990.2	3532.6	
December	17691.676.8	2638.3	

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].