

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

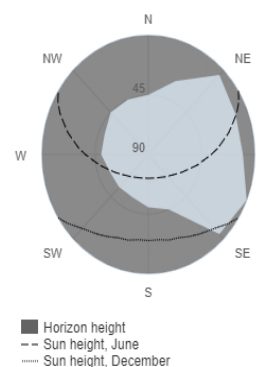
## Provided inputs:

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

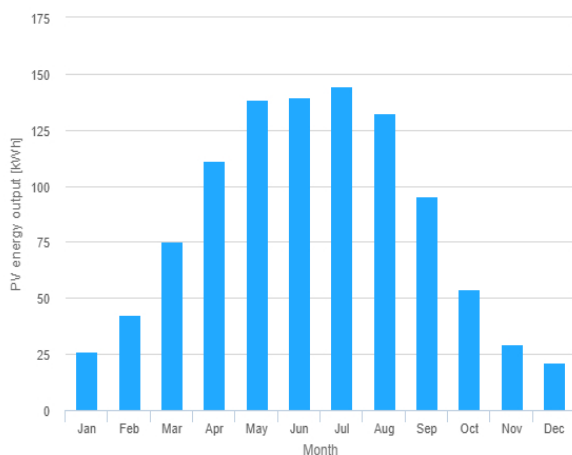
## Simulation outputs

Slope angle: 22 (opt) °  
Azimuth angle: -54 (opt) °  
Yearly PV energy production: 1011.12 kWh  
Yearly in-plane irradiation: 1304.79 kWh/m<sup>2</sup>  
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 %

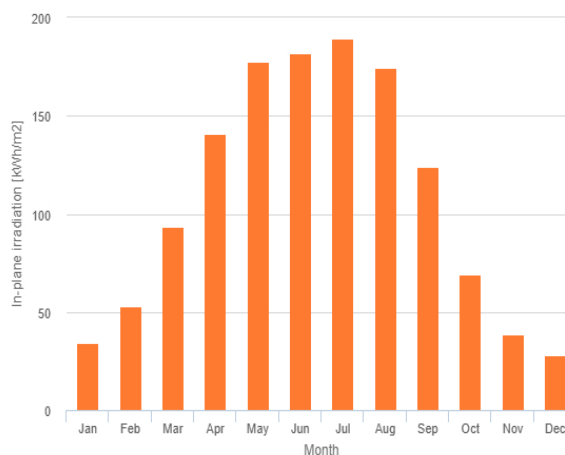
## Outline of horizon at chosen location:



## 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].