

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

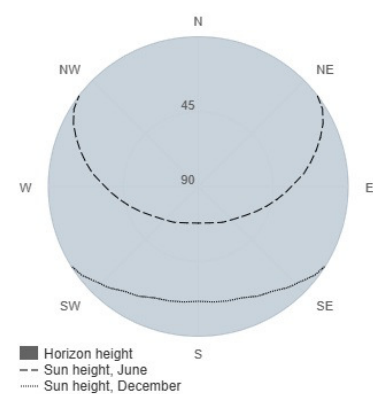
## Provided inputs:

Latitude/Longitude: 45.395,21.215  
Horizon: Calculated  
Database used: PVGIS-SARAH3  
PV technology: Crystalline silicon  
PV installed: 10 kWp  
System loss: 14 %

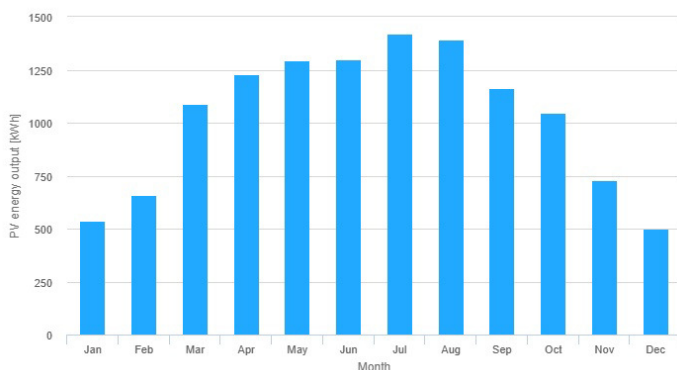
## Simulation outputs

Slope angle: 45 °  
Azimuth angle: 10 °  
Yearly PV energy production: 12356.61 kWh  
Yearly in-plane irradiation: 1583.42 kWh/m<sup>2</sup>  
Year-to-year variability: 567.47 kWh  
Changes in output due to:  
Angle of incidence: -2.74 %  
Spectral effects: 1.26 %  
Temperature and low irradiance: -7.86 %  
Total loss: -21.96 %

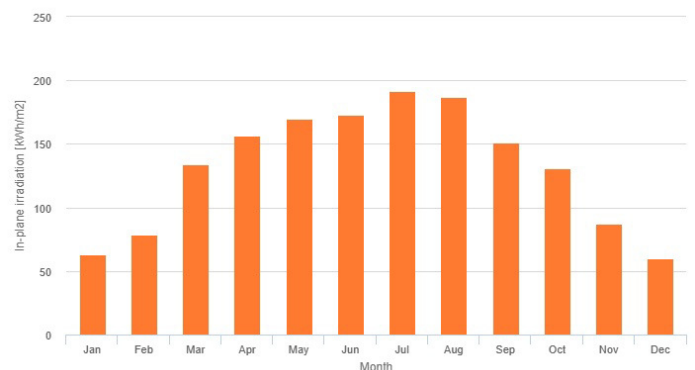
## Outline of horizon at chosen location:



## 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	537.2	63.2	111.5
February	658.9	78.6	245.0
March	1089.4	133.9	211.4
April	1228.3	156.9	161.8
May	1295.9	169.6	138.0
June	1299.0	173.2	113.4
July	1419.7	191.7	86.8
August	1390.5	186.9	122.5
September	1161.8	151.2	153.8
October	1047.8	131.2	149.5
November	727.1	87.5	125.7
December	500.8	59.6	132.0

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/m<sup>2</sup>].

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