

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

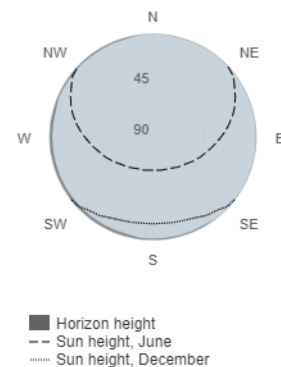
## Provided inputs:

Latitude/Longitude: 52.408, 16.930  
Horizon: Calculated  
Database used: PVGIS-CMSAF  
PV technology: Crystalline silicon  
PV installed: 6.8 kWp  
System loss: 14 %

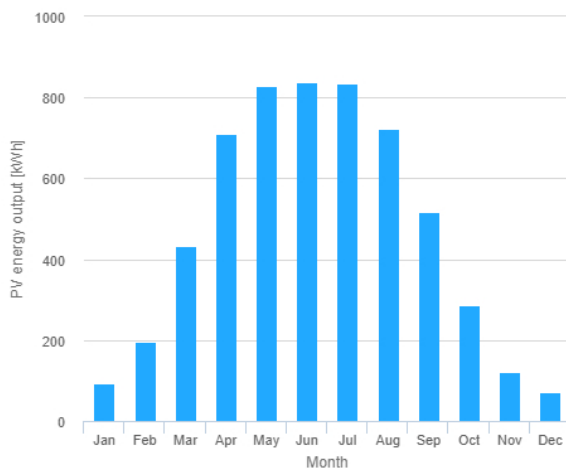
## Simulation outputs

Slope angle: 35 °  
Azimuth angle: -90 °  
Yearly PV energy production: 5650 kWh  
Yearly in-plane irradiation: 1070 kWh/m<sup>2</sup>  
Year to year variability: 201.00 %  
Changes in output due to:  
Angle of incidence: -3.6 %  
Spectral effects: 1.6 %  
Temperature and low irradiance: -8 %  
Total loss: -22.5 %

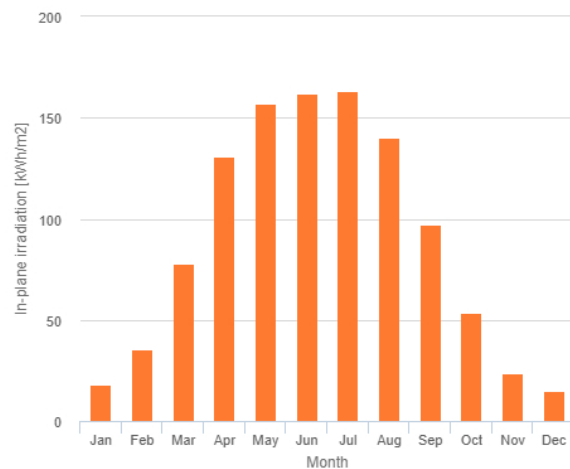
## Outline of horizon at chosen location:



## Monthly energy output from fix-angle PV system:



## Monthly in-plane irradiation for fixed-angle:



## Monthly PV energy and solar irradiation

Month	Em	Hm	SDm
January	93.5	18.2	9.34
February	197	35.5	44.4
March	433	77.7	51.5
April	710	131	77.7
May	828	157	108
June	839	162	74.3
July	834	163	98.2
August	722	140	52.6
September	518	97.4	46.8
October	287	53.6	48.6
November	120	23.5	27.4
December	72.1	14.8	12.1

Em: Average monthly electricity production from the given system [kWh].

Hm: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m<sup>2</sup>].

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