

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

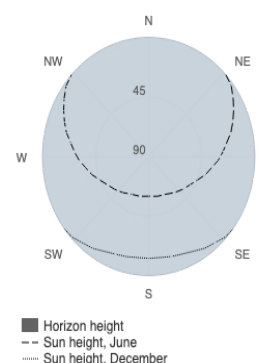
## Provided inputs:

Latitude/Longitude: 53.074,8.832  
Horizon: Calculated  
Database used: PVGIS-SARAH3  
PV technology: Cryst Sil Original  
PV installed: 25 kWp  
System loss: 14 %

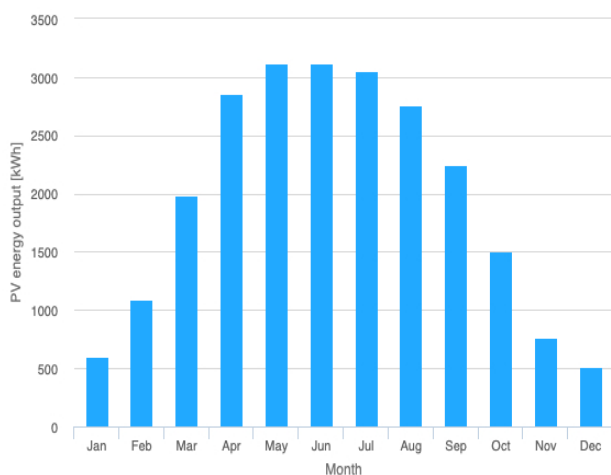
## Simulation outputs

Slope angle: 25 °  
Azimuth angle: 0 °  
Yearly PV energy production: 23599.31 kWh  
Yearly in-plane irradiation: 1220.96 kWh/m<sup>2</sup>  
Year-to-year variability: 1169.84 kWh  
Changes in output due to:  
Angle of incidence: -3.34 %  
Spectral effects: 1.77 %  
Temperature and low irradiance: -8.62 %  
Total loss: -22.69 %

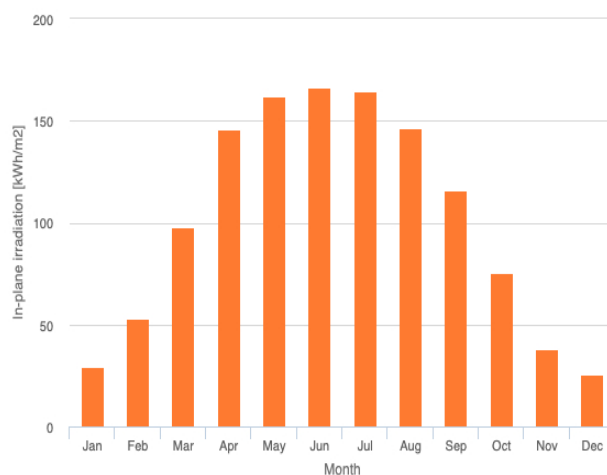
## Outline of horizon at chosen location:



## 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	601.3	29.5	92.0
February	1092.9	52.9	247.3
March	1980.3	98.1	350.7
April	2856.3	146.0	378.5
May	3115.9	162.2	390.0
June	3117.7	166.3	259.4
July	3055.5	164.5	375.9
August	2760.8	146.7	245.2
September	2241.4	115.7	266.5
October	1501.7	75.6	260.2
November	762.3	38.0	135.2
December	513.3	25.6	109.5

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/m²].

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