

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

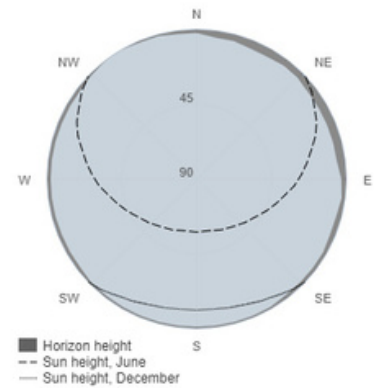
**Provided inputs:**

Latitude/Longitude: XXXXXXXXXX  
 Horizon: Calculated  
 Database used: PVGIS-SARAH2  
 PV technology: Crystalline silicon  
 PV installed: 10 kWp  
 System loss: 14 %

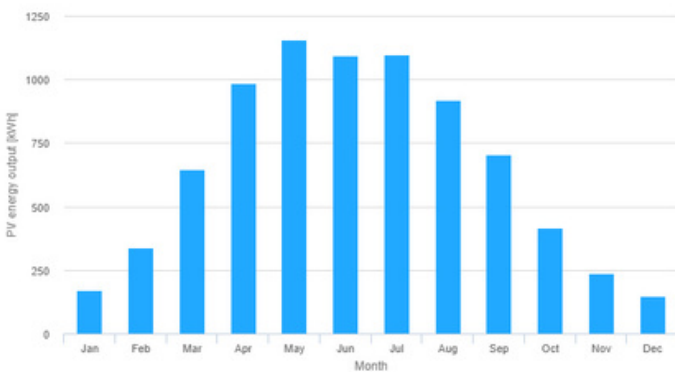
**Simulation outputs**

Slope angle: 15 °  
 Azimuth angle: 7 °  
 Yearly PV energy production: 7918.61 kWh  
 Yearly in-plane irradiation: 1007.11 kWh/m<sup>2</sup>  
 Year-to-year variability: 254.50 kWh  
 Changes in output due to:  
 Angle of incidence: -3.96 %  
 Spectral effects: 1.77 %  
     Temperature and low irradiance: -6.45 %  
 Total loss: -21.37 %

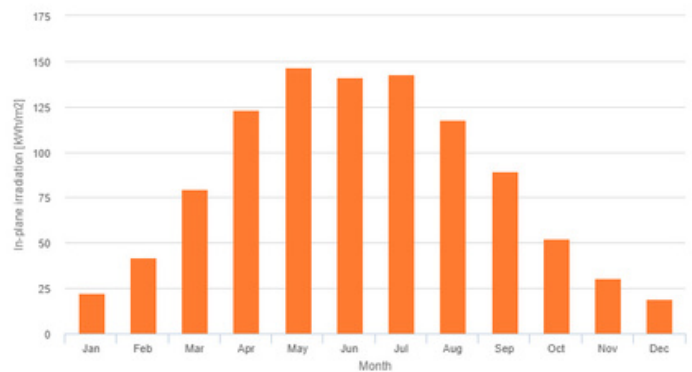
**Outline of horizon at chosen location:**



**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	171.6	22.2	24.8
February	338.4	42.0	61.7
March	647.9	79.6	79.1
April	986.1	123.2	131.8
May	1157.8	146.6	117.2
June	1094.0	141.5	110.0
July	1096.5	142.9	155.5
August	919.1	117.7	79.1
September	705.8	89.5	71.4
October	416.5	52.4	66.0
November	238.7	30.4	34.4
December	146.3	19.3	23.4

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].

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

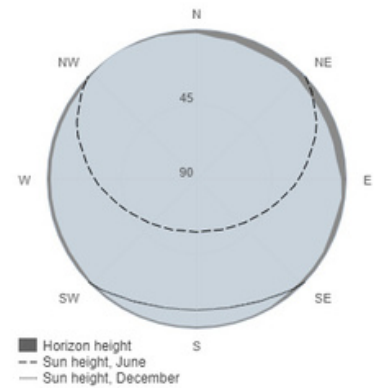
## Provided inputs:

Latitude/Longitude: XXXXXXXXXX  
 Horizon: Calculated  
 Database used: PVGIS-SARAH2  
 PV technology: Crystalline silicon  
 PV installed: 20 kWp  
 System loss: 14 %

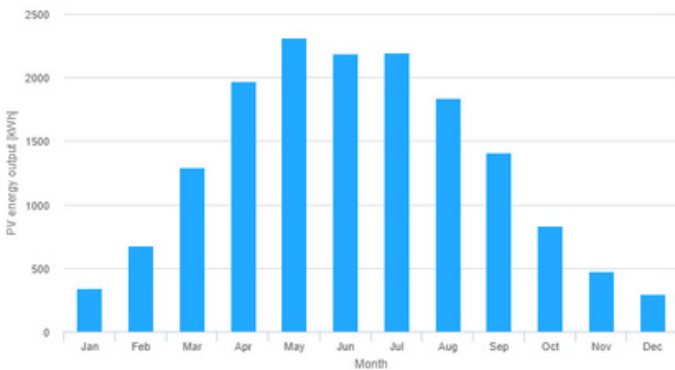
## Simulation outputs

Slope angle: 15 °  
 Azimuth angle: 7 °  
 Yearly PV energy production: 15837.22 kWh  
 Yearly in-plane irradiation: 1007.11 kWh/m<sup>2</sup>  
 Year-to-year variability: 508.99 kWh  
 Changes in output due to:  
 Angle of incidence: -3.96 %  
 Spectral effects: 1.77 %  
 Temperature and low irradiance: -6.45 %  
 Total loss: -21.37 %

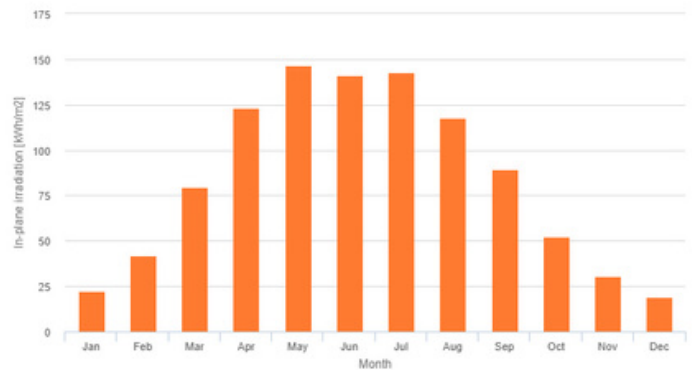
## Outline of horizon at chosen location:



## 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	343.3	22.2	49.6
February	676.8	42.0	123.3
March	1295.7	79.6	158.1
April	1972.2	123.2	263.6
May	2315.6	146.6	234.5
June	2188.0	141.5	219.9
July	2193.0	142.9	311.0
August	1838.2	117.7	158.2
September	1411.6	89.5	142.8
October	833.1	52.4	132.0
November	477.3	30.4	68.7
December	292.5	19.3	46.8

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].

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PVGIS-5 estimates of solar electricity generation:

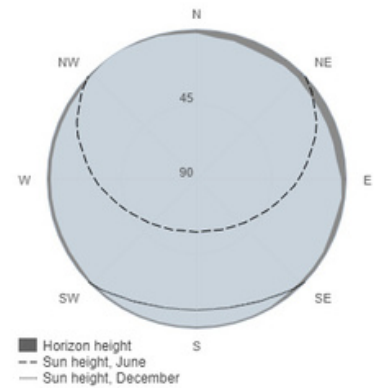
## Provided inputs:

Latitude/Longitude: XXXXXXXXXX  
 Horizon: Calculated  
 Database used: PVGIS-SARAH2  
 PV technology: Crystalline silicon  
 PV installed: 40 kWp  
 System loss: 14 %

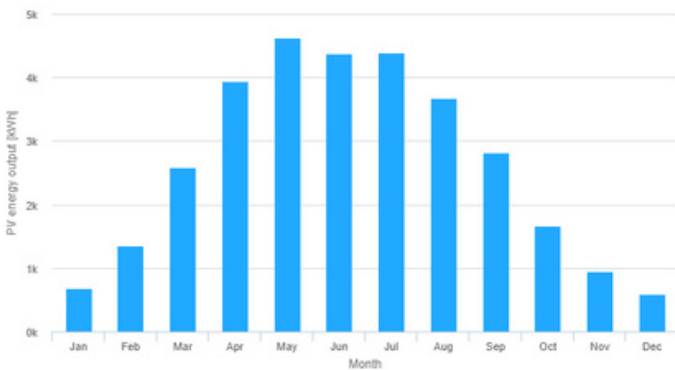
## Simulation outputs

Slope angle: 15 °  
 Azimuth angle: 7 °  
 Yearly PV energy production: 31674.44 kWh  
 Yearly in-plane irradiation: 1007.11 kWh/m<sup>2</sup>  
 Year-to-year variability: 1017.98 kWh  
 Changes in output due to:  
 Angle of incidence: -3.96 %  
 Spectral effects: 1.77 %  
 Temperature and low irradiance: -6.45 %  
 Total loss: -21.37 %

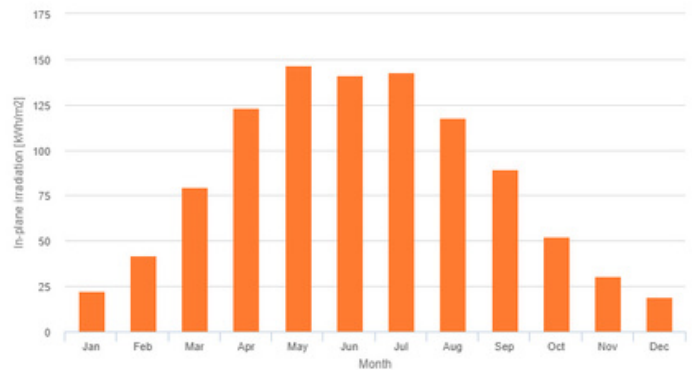
## Outline of horizon at chosen location:



## 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	686.5	22.2	99.1
February	1353.5	42.0	246.7
March	2591.5	79.6	316.3
April	3944.3	123.2	527.3
May	4631.2	146.6	469.0
June	4375.9	141.5	439.8
July	4386.1	142.9	621.9
August	3676.4	117.7	316.5
September	2823.2	89.5	285.7
October	1666.1	52.4	263.9
November	954.7	30.4	137.4
December	585.0	19.3	93.5

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

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