# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

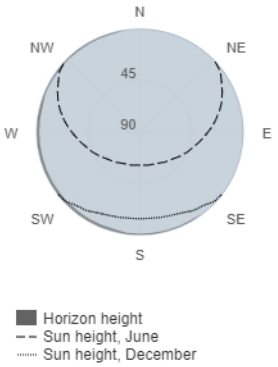
**Provided inputs:**

| | |
|---|---|
| Latitude/Longitude: | 52.408, 16.930 |
| Horizon: | Calculated |
| Database used: | PVGIS-CMSAF |
| PV technology: | Crystalline silicon |
| PV installed: | 4.42 kWp |
| System loss: | 14 % |

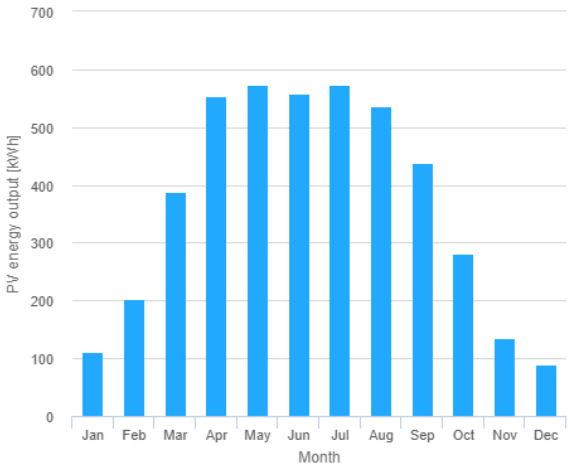
**Simulation outputs**

| | |
|---|---|
| Slope angle: | 35 ° |
| Azimuth angle: | 0 ° |
| Yearly PV energy production: | 4440 kWh |
| Yearly in-plane irradiation: | 1290 kWh/m² |
| Year to year variability: | 232.00 % |
| Changes in output due to: | |
| Angle of incidence: | -3.1 % |
| Spectral effects: | 1.8 % |
| Temperature and low irradiance: | -8.2 % |
| Total loss: | -22.2 % |

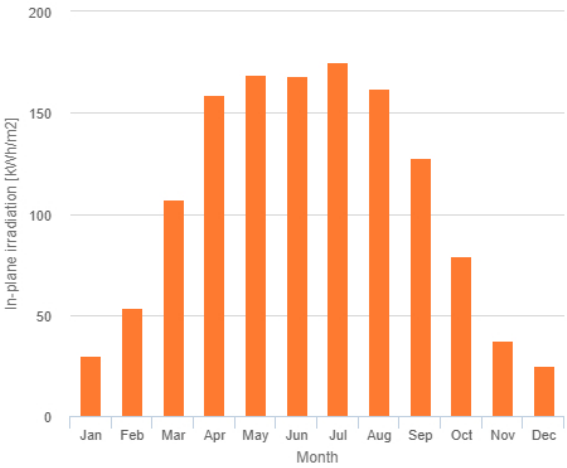
**Outline of horizon at chosen location:**




**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 | 111 | 29.7 | 16.4 |
| February | 203 | 53.8 | 61.2 |
| March | 388 | 107 | 69.6 |
| April | 553 | 159 | 80 |
| May | 573 | 169 | 77.9 |
| June | 558 | 168 | 45.6 |
| July | 574 | 175 | 60.2 |
| August | 537 | 162 | 52.7 |
| September | 439 | 128 | 55 |
| October | 282 | 79.1 | 61 |
| November | 136 | 37.6 | 44.7 |
| December | 90.4 | 25 | 20.7 |

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/m²].

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



Joint Research Centre



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