

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

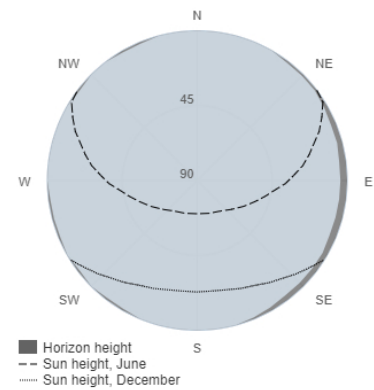
Provided inputs:

Latitude/Longitude: 43.157, 3.047
 Horizon: Calculated
 Database used: PVGIS-SARAH
 PV technology: Crystalline silicon
 PV installed: 3 kWp
 System loss: 2 %

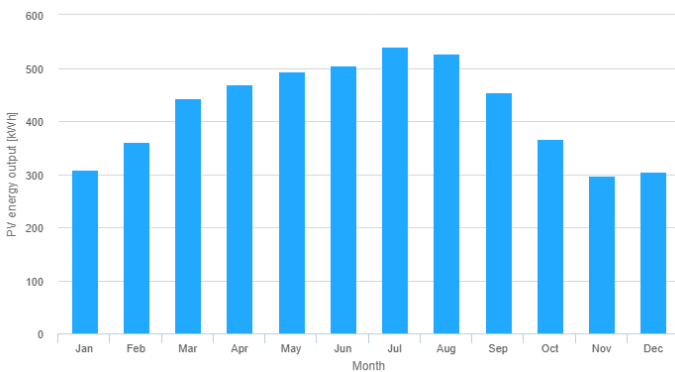
Simulation outputs

Slope angle: 38 (opt) °
 Azimuth angle: 1 (opt) °
 Yearly PV energy production: 5070 kWh
 Yearly in-plane irradiation: 1850 kWh/m²
 Year to year variability: 261.00 %
 Changes in output due to:
 Angle of incidence: -2.6 %
 Spectral effects: 1 %
 Temperature and low irradiance: -5.2 %
 Total loss: -8.6 %

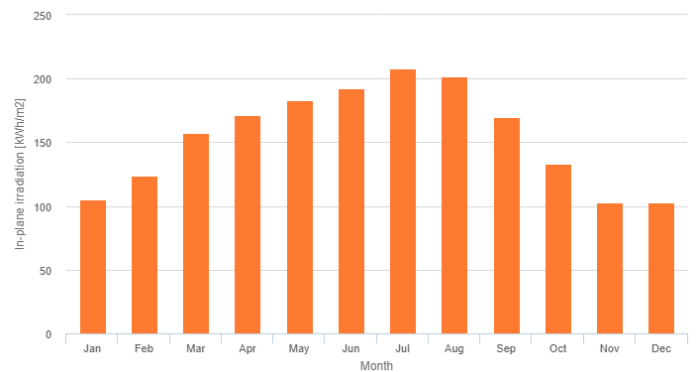
Outline of horizon at chosen location:



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 | 309 | 105 | 67.7 |
| February | 360 | 124 | 65.4 |
| March | 443 | 157 | 52.1 |
| April | 469 | 171 | 49.1 |
| May | 494 | 183 | 38.4 |
| June | 505 | 192 | 35.7 |
| July | 540 | 208 | 25.6 |
| August | 528 | 202 | 29.7 |
| September | 455 | 170 | 42.1 |
| October | 367 | 133 | 49.9 |
| November | 298 | 103 | 68 |
| December | 305 | 103 | 38.3 |

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].