Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

Provided inputs:

Latitude/Longitude:	45.159, 5.846
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed:	3 kWp
System loss:	14 %

Simulation outputs

Slope angle:	18 °
Azimuth angle:	40 °
Yearly PV energy production:	3183.42 kWh
Yearly in-plane irradiation:	1398.75 kWh/m²
Year to year variability:	183.69 kWh
Changes in output due to:	
Angle of incidence:	-3.31 %
Spectral effects:	1.32 %
Temperature and low irradiance:	-9.95 %
Total loss:	-24.14 %

Outline of horizon at chosen location:

- ■ Horizon height
- – – Sun height, June
- ⋯⋯ Sun height, December
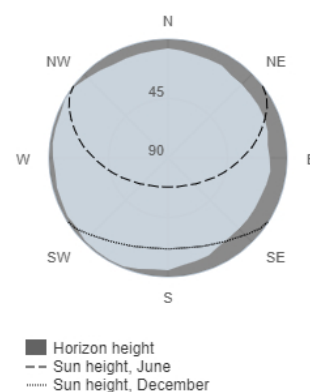
Monthly energy output from fix-angle PV system:
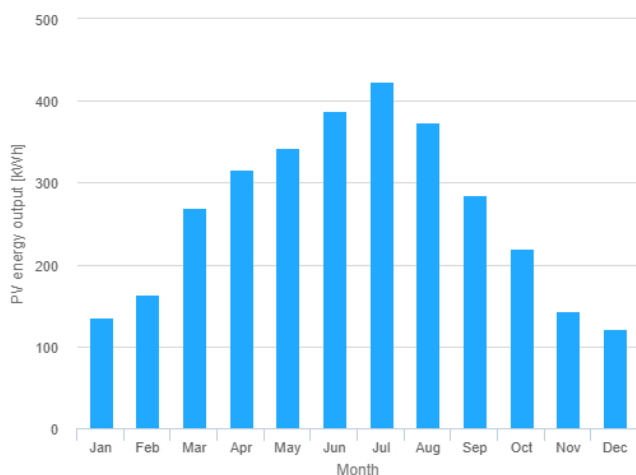
Monthly in-plane irradiation for fixed-angle:
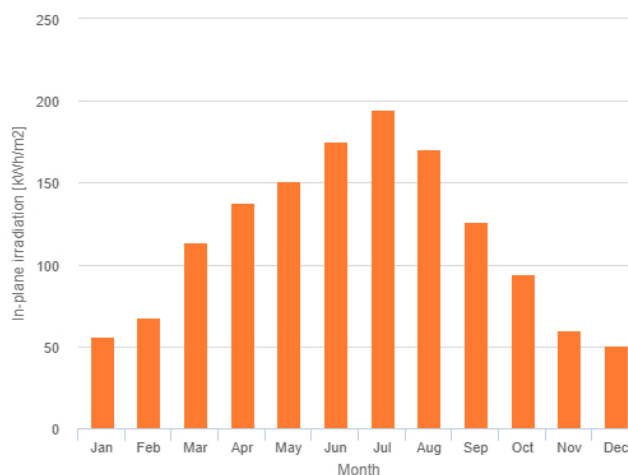
Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	136.1	55.9	20.7
February	163.2	67.4	37.3
March	268.8	114.0	44.8
April	316.6	138.1	45.2
May	342.9	151.1	53.5
June	388.5	175.4	45.5
July	423.7	194.9	49.2
August	374.0	170.5	36.3
September	284.4	126.5	22.4
October	219.4	94.2	37.3
November	143.8	60.2	31.4
December	121.8	50.6	36.2

E_m: Average monthly electricity production from the given 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].

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Joint Research Centre