

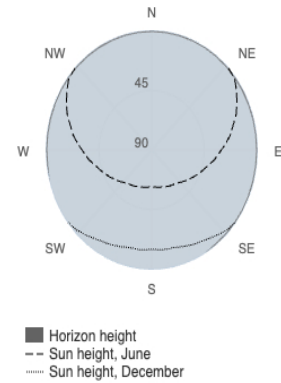
Performance of off-grid PV system

PVGIS-5 estimates of solar electricity generation

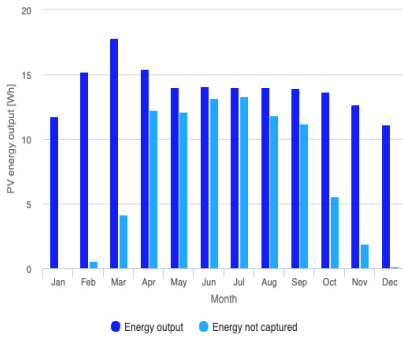
Provided inputs

Latitude/Longitude:	51.416,-0.929	Slope angle:	70 °
Horizon:	Calculated	Azimuth angle:	0 °
Database used:	PVGIS-SARAH3	Simulation outputs	
PV installed:	10 Wp	Percentage days with full battery:	47.3 %
Battery capacity:	600 Wh	Percentage days with empty battery:	0.2 %
Cutoff limit:	20 %	Average energy not captured:	15.26 Wh
Consumption per day:	14.016 Wh	Average energy missing:	5.4 Wh

Outline of horizon at chosen location:



Power production estimate for off-grid PV:

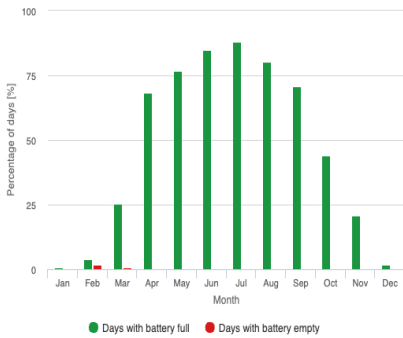


Monthly average performance

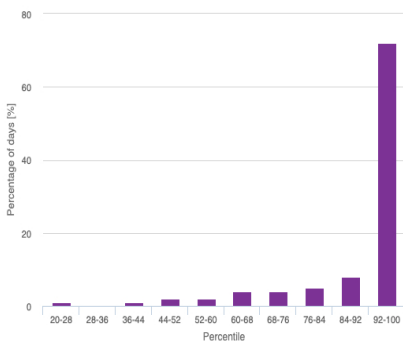
Month	E_d	E_l	f_f	f_e
January	11.8	0.1	0.7	0.0
February	15.2	0.5	3.8	1.9
March	17.8	4.2	25.5	0.7
April	15.4	12.3	68.3	0.0
May	14.0	12.1	76.9	0.0
June	14.1	13.2	84.7	0.0
July	14.0	13.3	88.1	0.0
August	14.0	11.9	80.1	0.0
September	13.9	11.2	70.7	0.0
October	13.7	5.5	44.1	0.0
November	12.7	1.9	20.9	0.0
December	11.1	0.1	1.7	0.0

E_d: Average energy production per day [Wh/day].
 E_l: Average energy not captured per day [Wh/day].
 f_f: Percentage of days when battery became full [%].
 f_e: Percentage of days when battery became empty [%].

Battery performance for off-grid PV system:



Probability of battery charge state at the end of the day:



Cs	Cb
20-28	1.0
28-36	0.0
36-44	1.0
44-52	2.0
52-60	2.0
60-68	4.0
68-76	4.0
76-84	5.0
84-92	8.0
92-100	72.0

Cs: Charge state at the end of each day [%].
 Cb: Percentage of days with this charge state [%].