

# GLOBAL SOLAR ATLAS

BY WORLD BANK GROUP

## Tambopata

-12.837912°, -069.290771°

Tambopata, Madre de Dios, Peru

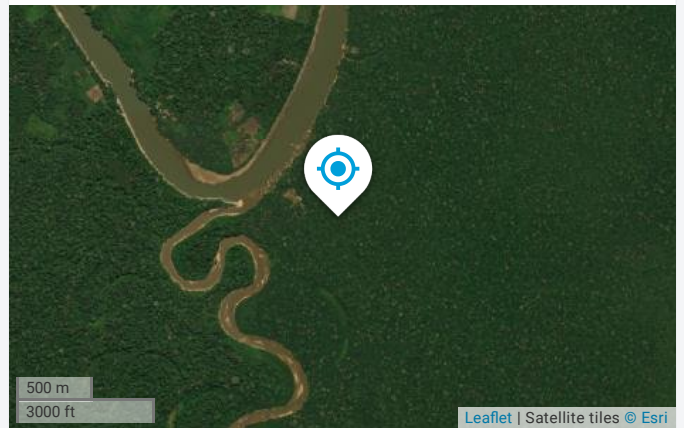
Time zone: UTC-05, America/Lima [PET]

🕒 Report generated: 24 May 2022

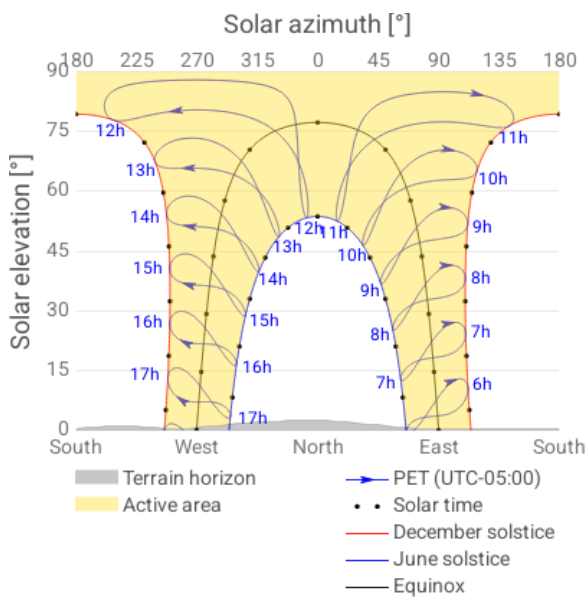
### SITE INFO

Map data		Per year	
Direct normal irradiation	DNI	1352.6	kWh/m <sup>2</sup>
Global horizontal irradiation	GHI	1800.2	kWh/m <sup>2</sup>
Diffuse horizontal irradiation	DIF	851.5	kWh/m <sup>2</sup>
Global tilted irradiation at optimum angle	GTI <sub>opta</sub>	1849.5	kWh/m <sup>2</sup>
Optimum tilt of PV modules	OPTA	15 / 0	°
Air temperature	TEMP	25.1	°C
Terrain elevation	ELE	211	m

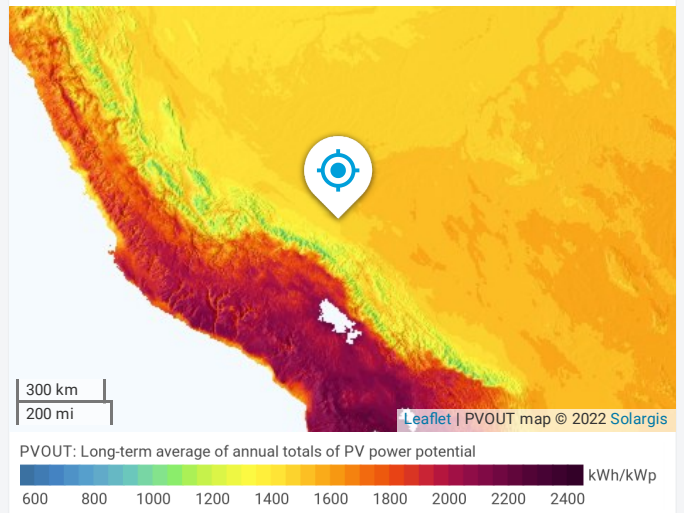
### Map



### Horizon and sunpath



### PVOUT map



# GLOBAL SOLAR ATLAS

BY WORLD BANK GROUP

## PV ELECTRICITY AND SOLAR RADIATION

### PV system configuration



PV system: **Small residential**  
 Azimuth of PV panels: **Default (0°)**  
 Tilt of PV panels: **90°**  
 Installed capacity: **0.2 kWp**

### Annual averages

Total photovoltaic power output and Global tilted irradiation

**123.491**

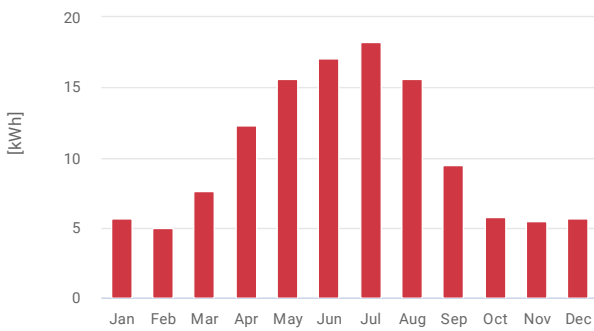
kWh per year

**843.6**

kWh/m<sup>2</sup> per year

### Monthly averages

Total photovoltaic power output



### Average hourly profiles

Total photovoltaic power output [Wh]



UTC-05

### Average hourly profiles

Total photovoltaic power output [Wh]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5												
5 - 6	0			0	0				0	1	1	1
6 - 7	5	4	4	10	15	14	12	10	7	8	8	7
7 - 8	12	11	12	25	33	37	37	29	18	14	14	13
8 - 9	17	16	20	37	47	52	54	45	29	18	18	17
9 - 10	19	19	27	45	55	62	65	57	37	20	20	19
10 - 11	20	20	32	52	61	68	71	64	42	22	22	21
11 - 12	22	22	35	55	64	72	73	67	45	24	22	22
12 - 13	21	21	34	53	62	71	72	65	43	22	21	20
13 - 14	20	20	30	49	57	65	68	60	38	20	20	19
14 - 15	18	18	24	40	49	57	59	50	30	17	17	18
15 - 16	15	15	17	29	39	45	47	37	20	13	13	14
16 - 17	10	10	9	15	21	25	28	19	8	6	7	9
17 - 18	3	3	1	1	1	1	1	2	0	0	1	2
18 - 19												
19 - 20												
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	183	177	245	411	505	570	587	505	317	185	183	182

# GLOBAL SOLAR ATLAS

BY WORLD BANK GROUP

## PV ELECTRICITY AND SOLAR RADIATION

### Annual averages

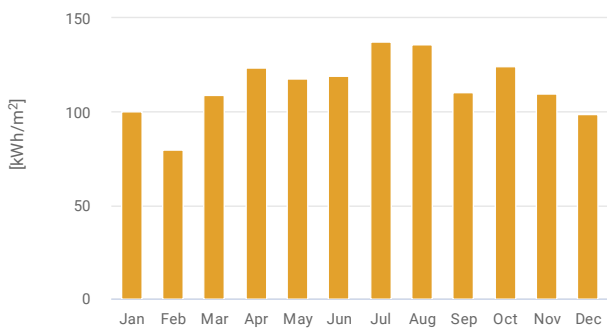
Direct normal irradiation

# 1367.2

kWh/m<sup>2</sup> per year

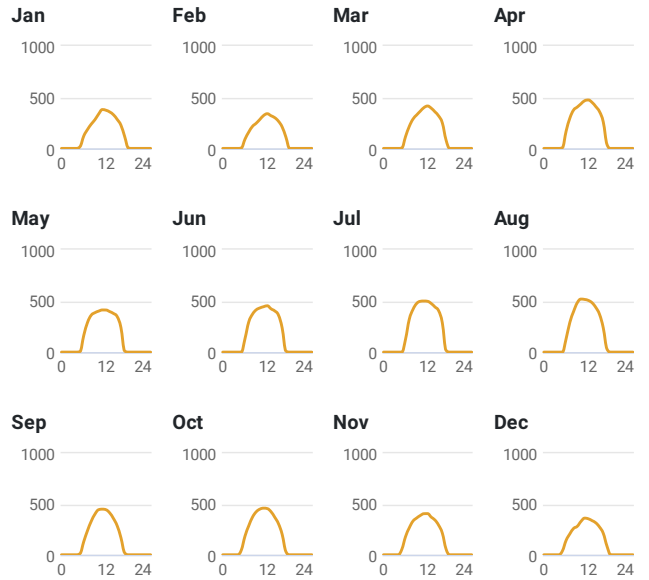
### Monthly averages

Direct normal irradiation



### Average hourly profiles

Direct normal irradiation [Wh/m<sup>2</sup>]



UTC-05

### Average hourly profiles

Direct normal irradiation [Wh/m<sup>2</sup>]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5												
5 - 6	17	4	4	7	6				12	46	54	38
6 - 7	121	91	116	169	163	133	127	131	130	185	179	142
7 - 8	184	159	214	295	289	294	319	290	237	285	265	206
8 - 9	236	215	285	374	360	370	415	396	329	370	331	259
9 - 10	280	245	326	404	385	412	474	482	400	423	362	280
10 - 11	335	283	363	435	400	431	496	518	444	450	387	329
11 - 12	379	321	398	466	411	443	498	514	449	459	405	361
12 - 13	372	338	414	472	411	452	496	504	443	455	405	354
13 - 14	355	319	392	448	395	423	474	481	412	424	370	336
14 - 15	328	300	357	407	377	402	441	435	357	370	342	314
15 - 16	283	265	317	358	346	361	403	368	285	306	291	273
16 - 17	227	209	249	258	240	235	285	236	169	200	213	211
17 - 18	117	110	83	38	11	10	18	30	19	31	58	84
18 - 19	5											
19 - 20												
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	3240	2859	3517	4131	3795	3966	4445	4384	3687	4004	3662	3188

## GLOSSARY

Acronym	Full name	Unit	Type of use
DIF	Diffuse horizontal irradiation	kWh/m <sup>2</sup> , MJ/m <sup>2</sup>	Average yearly, monthly or daily sum of diffuse horizontal irradiation (© 2021 Solargis)
DNI	Direct normal irradiation	kWh/m <sup>2</sup> , MJ/m <sup>2</sup>	Average yearly, monthly or daily sum of direct normal irradiation (© 2021 Solargis)
ELE	Terrain elevation	m, ft	Elevation of terrain surface above/below sea level, processed and integrated from SRTM-3 data and related data products (SRTM v4.1 © 2004 - 2021, CGIAR-CS)
GHI	Global horizontal irradiation	kWh/m <sup>2</sup> , MJ/m <sup>2</sup>	Average annual, monthly or daily sum of global horizontal irradiation (© 2021 Solargis)
GTI	Global tilted irradiation	kWh/m <sup>2</sup> , MJ/m <sup>2</sup>	Average annual, monthly or daily sum of global tilted irradiation (© 2021 Solargis)
GTI_opta	Global tilted irradiation at optimum angle	kWh/m <sup>2</sup> , MJ/m <sup>2</sup>	Average annual, monthly or daily sum of global tilted irradiation for PV modules fix-mounted at optimum angle (© 2021 Solargis)
OPTA	Optimum tilt of PV modules	°	Optimum tilt of fix-mounted PV modules facing towards Equator set for maximizing GTI input (© 2021 Solargis)
PVOUT_total	Total photovoltaic power output	kWh, MWh, GWh	Yearly and monthly average values of photovoltaic electricity (AC) delivered by the total installed capacity of a PV system (© 2021 Solargis)
PVOUT_specific	Specific photovoltaic power output	kWh/kWp	Yearly and monthly average values of photovoltaic electricity (AC) delivered by a PV system and normalized to 1 kWp of installed capacity (© 2021 Solargis)
TEMP	Air temperature	°C, °F	Average yearly, monthly and daily air temperature at 2 m above ground. Calculated from outputs of ERA5 model (© 2021 ECMWF, post-processed by Solargis)

## ABOUT

This pdf report (the “Work”) is automatically generated from the Global Solar Atlas online app (<https://globalsolaratlas.info/>), prepared by Solargis under contract to The World Bank, based on a solar resource database that Solargis owns and maintains. It provides the estimated solar resource, air temperature data and potential solar power output for the selected location and input parameters of a photovoltaic (PV) power system.

Copyright © 2021 The World Bank  
1818 H Street NW, Washington DC 20433, USA

The World Bank, comprising the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA), is the commissioning agent and copyright holder for this Work, acting on behalf of The World Bank Group. The Work is licensed by The World Bank under a Creative Commons Attribution license (CC BY 4.0 IGO) with a mandatory and binding addition (please refer to the GSA website for full terms and conditions of use <https://globalsolaratlas.info/support/terms-of-use>).

The World Bank Group disclaims all warranties of any kind related to the provision of the Work.

The Work is made available solely for general information purposes. Neither the World Bank, Solargis nor any of its partners and affiliates hold the responsibility for the accuracy and/or completeness of the data and shall not be liable for any errors, or omissions. It is strongly advised that the Work be limited to use in informing policy discussions on the subject, and/or in creating services that better educate relevant persons on the viability of solar development in areas of interest. As such, neither the World Bank nor any of its partners on the Global Solar Atlas project will be liable for any damages relating to the use of the Work for financial commitments or any similar use cases. Solargis has done its utmost to make an assessment of solar climate conditions based on the best available data, software, and knowledge.

Sources: Solar database and PV software © 2021 Solargis