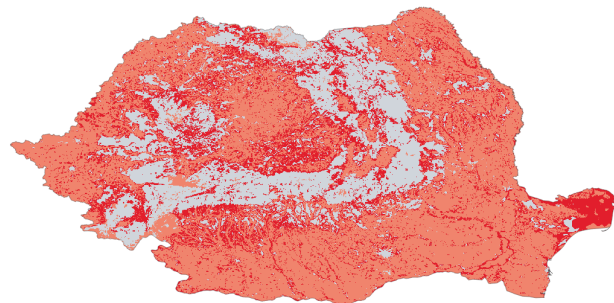
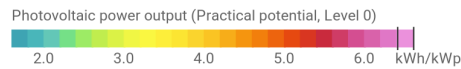
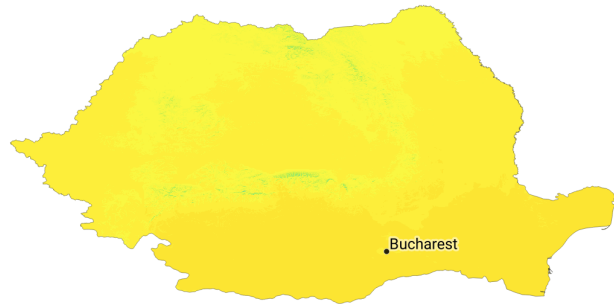


Romania



Practical potential zonation: ■ Level 2 ■ Level 1 ■ Level 0

The boundaries, colors, denominations and any other information shown on the maps do not imply, on the part of The World Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

INDICATORS

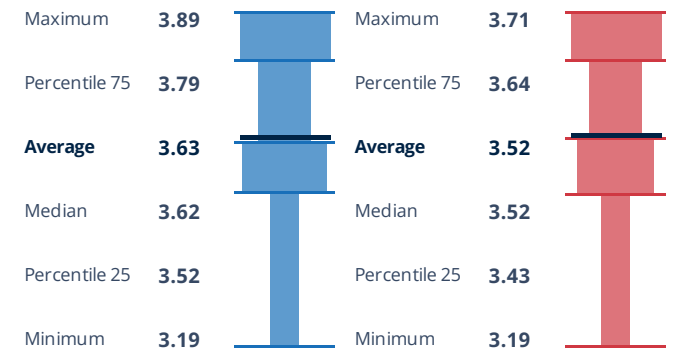
| | |
|---|-----------------------------------|
| Total area / Evaluated area | 238,400 / 237,547 km ² |
| Population (2018) | 19,473,936 |
| GDP per capita (2018) | 12,301 USD |
| HDI / rank (2017) | 0.81 / 50 |
| Electricity consumption per capita (2014) | 2,584 kWh/year |
| PV installed capacity (2018) | 1,377 MWp |
| Average theoretical potential (GHI) / rank | 3.574 kWh/m ² / 182 |
| Average practical potential, level 1 / rank | 3.524 kWh/kWp / 178 |
| PV equivalent area | 0.26% |
| PVOUT seasonality index (country range) | 3.07 (2.09 – 4.10) |
| LCOE average (country range) | 0.12 (0.11 – 0.13) |

DISTRIBUTION OF PHOTOVOLTAIC POWER OUTPUT

| kWh/kWp | 22.8 % | 75.8 % | 100.0 % | of evaluated area |
|-----------|--------|--------|---------|-------------------|
| over 3.6 | 6.6 % | 29.5 % | 31.3 % | |
| 3.6 — 3.4 | 10.1 % | 33.2 % | 40.4 % | |
| 3.4 — 3.2 | 5.8 % | 12.8 % | 23.8 % | |
| 3.2 — 3.0 | 0.3 % | 0.4 % | 3.5 % | |
| below 3.0 | 0.0 % | 0.0 % | 1.0 % | |

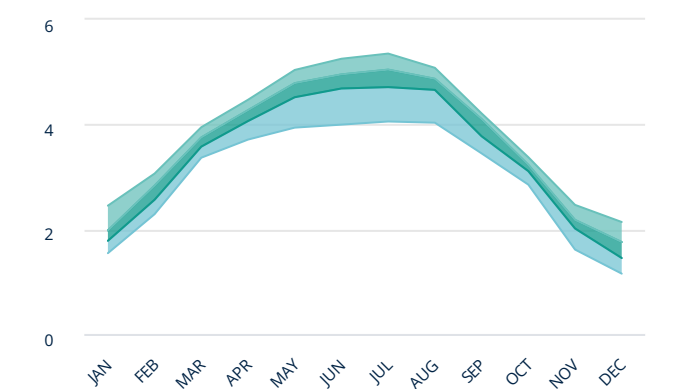
Practical potential: ■ Level 2 ■ Level 1 ■ Level 0

SUMMARY STATISTICS



Theoretical potential kWh/m² ■ GHI Practical potential, Level 1 kWh/kWp ■ PVOUT

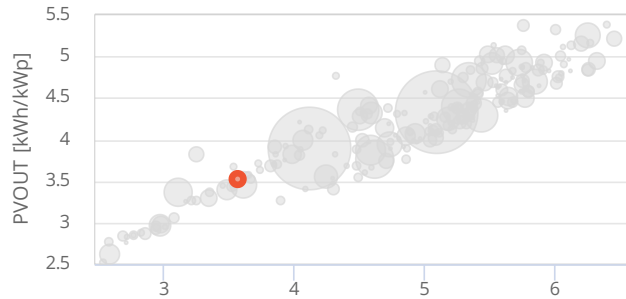
MONTHLY VARIATION OF PHOTOVOLTAIC POWER OUTPUT



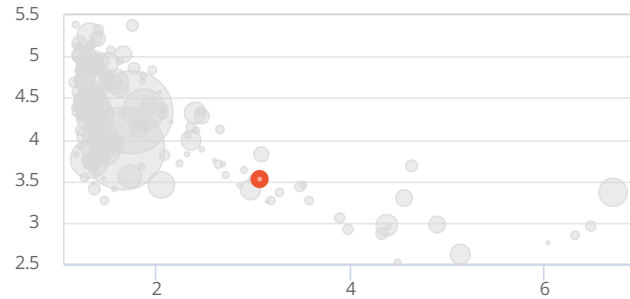
Practical potential, Level 1: — Median ■ Percentile75 to maximum ■ Percentile25 to percentile75 ■ Minimum to percentile25

Romania

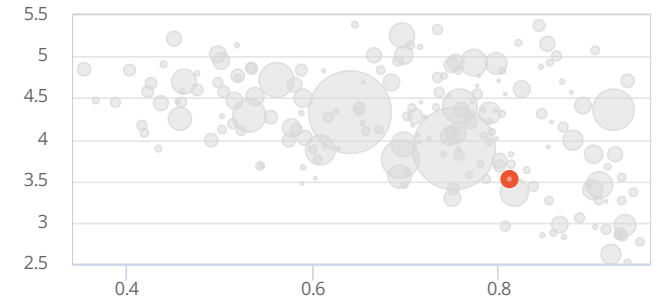
Average theoretical potential (GHI, kWh/m²) **3.574**



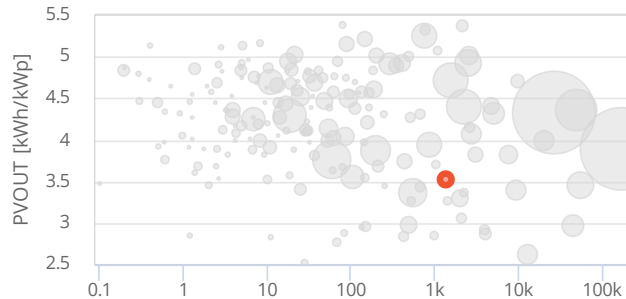
Seasonality index **3.07**



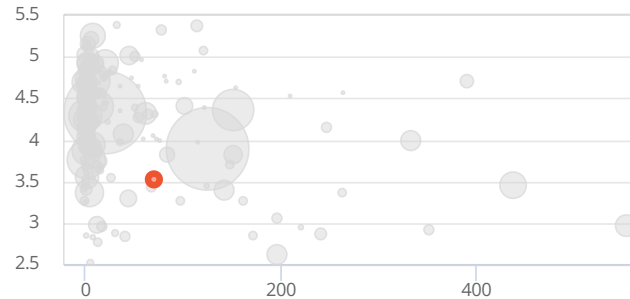
Human development index (2018) **0.81**



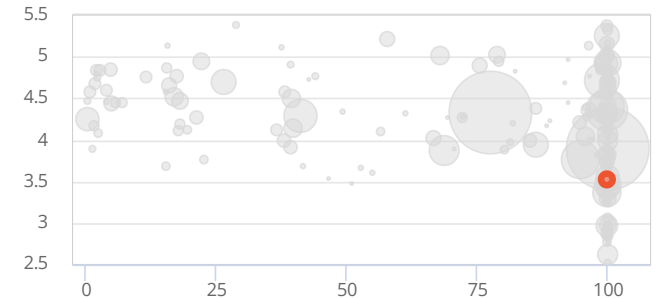
PV installed capacity (MWp, 2018) **1,377**



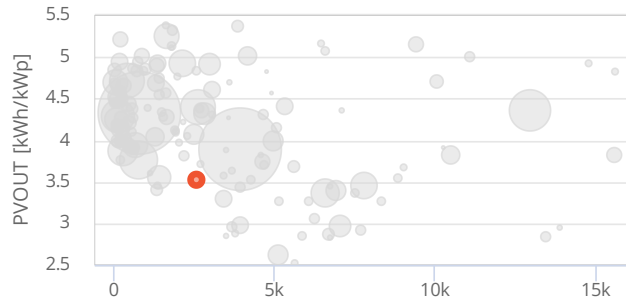
PV installed capacity per capita (Wp, 2018) **71**



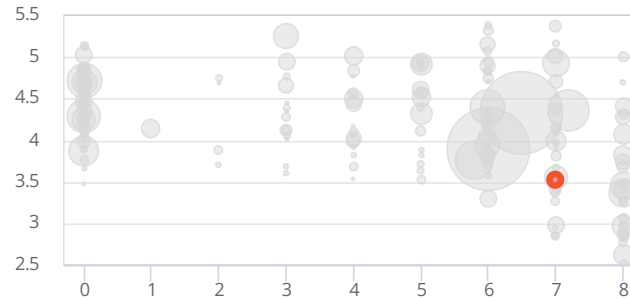
Access to electricity (% of rural population, 2016) **100.0**



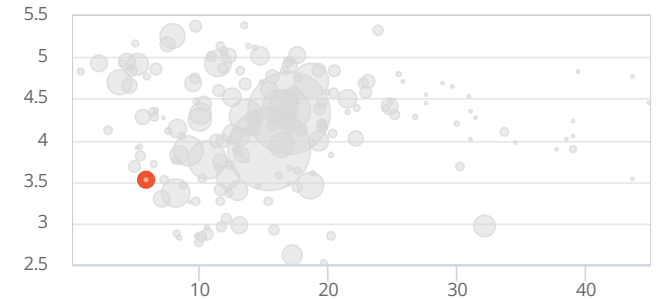
Electricity consumption (kWh/capita/year, 2014) **2,584**



Reliability of supply and transparency of tariff **7.0**



Approximate electricity tariffs (USD cents, 2019) **5.9**



The World Bank Group has published this fact-sheet as a part of the [Global Photovoltaic Power Potential study](#). Disclaimer: Neither Solargis nor the World Bank Group shall be held responsible for the accuracy and/or completeness of the data and liable for any errors or omissions. It is strongly advised that the data be limited to use in informing policy discussions on the subject. As such, neither Solargis nor the World Bank Group will be liable for any damages related to the use of the study for financial commitments or any similar cases.

ABOUT

The World Bank Group publishes this factsheet as a part of the [Global Photovoltaic Power Potential study](#), analyzing data from the Global Solar Atlas, World Bank Open Data, and other public sources. It is a part of the ESMAP initiative on Renewable Energy Resource Mapping, to support the appropriate scale-up of solar power in the worldwide energy mix.

The methodology and details behind the data analytics, explaining the graphics and figures in this factsheet, are discussed in the study. The findings aim to address the needs of policymakers, project developers, financial and academic sectors, as well as professionals and individuals interested in solar energy.

This factsheet involves numerical and graphical components:

- Photovoltaic power potential map of the country with the unified color legend for all countries worldwide (thus maps from various factsheets are comparable). Minima and maxima intervals for the country are marked in the legend.
- Country zonation map, showing how the country area is split into practical potential levels 0, 1 and 2
- Indicators section present basic country facts and statistics relevant to PV status in the country
- Summary statistics provide selected results of country-based evaluation of theoretical (GHI) and practical potential on level 1 (PVOUT)
- Distribution of photovoltaic power output histogram communicates how much land in the country is available in practical potential levels 0, 1 and 2, and various PVOUT ranges. It helps to understand, what might be the approximate area for PV development available in the best or moderate parts of the country.
- Monthly variation of the photovoltaic power potential details the seasonal PV electricity generation throughout a typical year; it is an important supplement to the seasonality index
- The bubble charts portray the position of the country in the global context of socio-economic and energy-related indicators. The bubble size is proportional to the population of the country. Current country is highlighted, other countries are in grey. Axis X represents the given indicator, axis Y represents the average practical PV potential at level 1.

Explore more

For more country fact-sheets, country and regional maps, interactive tools, PV calculator, statistics, reports and raster data in GIS formats visit Global Solar Atlas at <https://globalsolaratlas.info>. More detailed data and technical solutions for specialists are provided by Solargis company (<https://solargis.com>).

GLOSSARY

Theoretical PV Potential

Global horizontal irradiation (GHI, measured in kWh/m²/day), the long-term amount of solar resource available on a horizontal surface on Earth.

Practical PV Potential

Photovoltaic power output of a PV system (specific yield, measured in kWh/kWp/day); in this case, the long-term power output produced by a utility-scale installation with fixed-mounted, monofacial c-Si modules with optimum tilt

- **Level 0** – Practical potential disregarding any land-use constraints
- **Level 1** – Level 0 practical potential, excluding land with identifiable physical obstacles to utility-scale pv plants
- **Level 2** – Level 1 practical potential, excluding land possibly under land use regulations due to nature and cropland protection

Economic PV Potential

Levelized cost of electricity (USD/kWh) – the lifetime costs associated with construction and operation of the power plant divided by the electricity produced during this lifetime (the lower the cost, the higher is the economic potential)

PV seasonality index

Ratio between the highest and the lowest of monthly long-term PVOUT averages.

PV equivalent area

Presumed country area proportion to be covered by PV plants producing the equivalent of yearly electricity consumption. The estimated area includes both the active area of PV modules and the area between the module rows (assuming the optimum row spacing).

Total / Evaluated area

Total area is a surface area of a country derived from official statistics, including inland water bodies and some coastal waterways. Evaluated area is a true area, from which the statistics were calculated. It includes land areas, without coastal waters, interior parts of the large water bodies, areas with missing input data and minor outliers caused by input data resolution.

Acronyms

DIF – Diffuse horizontal irradiance
 DNI – Direct normal irradiance
 GDP – Gross domestic product
 GHI – Global horizontal irradiance
 HDI – Human development index
 LCOE – Levelized cost of electricity
 PVOUT – Photovoltaic power output
 PV – Photovoltaic

DATA SOURCES

Solargis

Average theoretical potential – GHI (kWh/m²/day)
 Average practical potential – PVOUT (kWh/kWp/day)
 Distribution of photovoltaic power output
 Monthly variation of photovoltaic power output
 PV equivalent area (% of the total country area)
 PV seasonality index

The World Bank

Total area (2018, km²). Accessed on 2019-11-06.
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<https://data.worldbank.org/indicator/eg.elc.accs.ru.zs>

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 World Bank, Doing Business, Measuring Business Regulations, Getting Electricity indicators.
<https://databank.worldbank.org/reports.aspx?source=3001&series=IC.ELC.PRI.KH.DB1619>

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 IRENA, Renewable Capacity Statistics 2019. Accessed on 2019-06-10.
<https://www.irena.org/publications/2019/Mar/Renewable-Capacity-Statistics-2019>

Levelized cost of electricity (2018, USD/kWh)
 IRENA, Renewable power generation cost report 2018. Accessed on 2019-06-10.
<https://www.irena.org/publications/2019/May/Renewable-power-generation-costs-in-2018>

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