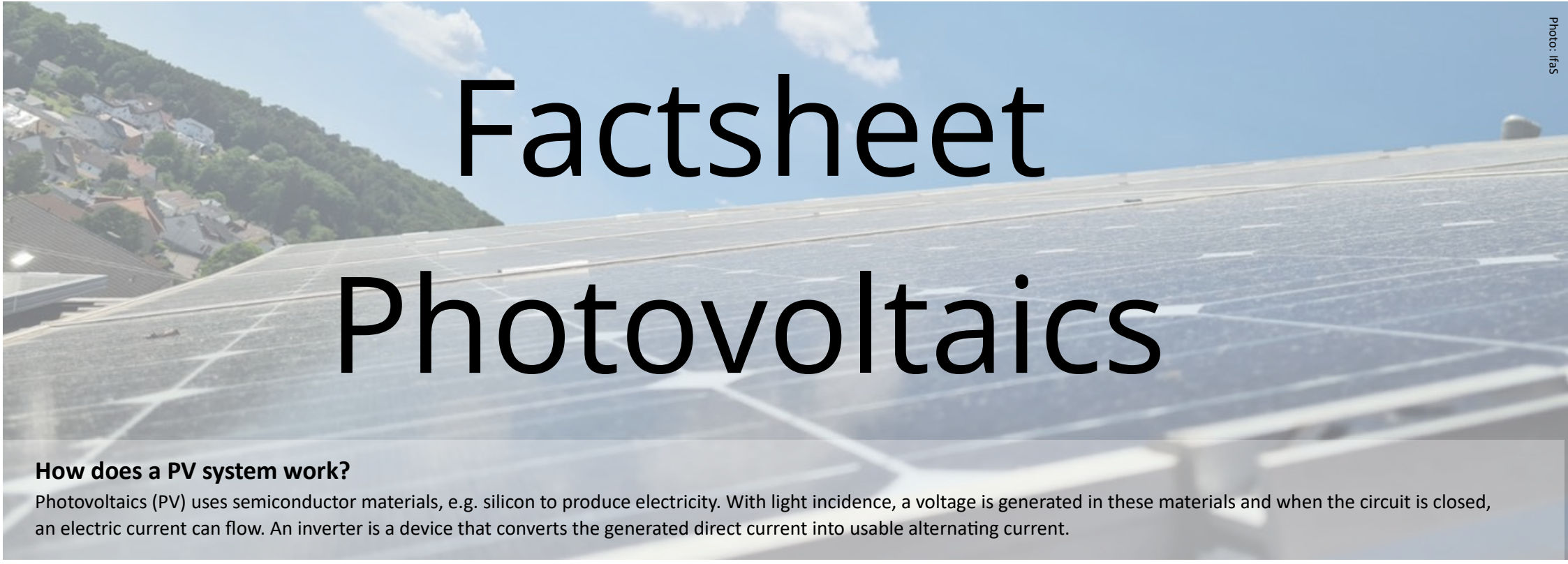


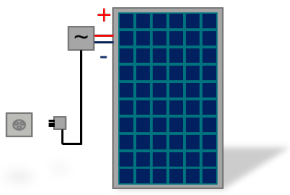
Factsheet Photovoltaics

How does a PV system work?

Photovoltaics (PV) uses semiconductor materials, e.g. silicon to produce electricity. With light incidence, a voltage is generated in these materials and when the circuit is closed, an electric current can flow. An inverter is a device that converts the generated direct current into usable alternating current.

What are the components of a PV system?

- **PV modules:** The modules are made up of many solar cells lined up together and convert the sun's energy into direct current.
- **Inverter:** In order to use the electricity in the household, an inverter must convert the direct current into alternating current.
- **Grid connection:** The inverter is connected to the household power grid.
- **Battery storage (if required):** The generated electricity can be stored temporarily. This increases the own consumption.



Eigene Darstellung nach Verbrauchszentralle RLP

How big does my PV system need to be?

So-called **Plug-and-play systems** can be plugged directly into the household socket. Up to 800 W_p (i.e. 0.8 kW_p) are possible. In most cases, these are two modules mounted on a balcony, hidden in the garden, as a roof over a shed or wooden storage area. These then cover only part of the electricity demand, but up to 100 % of the PV electricity produced can be consumed directly.

If you want to further reduce your electricity consumption, you can consider a **rooftop PV system**. With 3 - 5 kW_p, 20 - 25 % of the required household electricity can be self-generated, depending on the electricity demand. As a simple formula, you can divide your current annual electricity consumption by the expected solar electricity yield (see table). The value determined in this way reflects the plant size suitable for you.

How much electricity can I produce here in Transylvania?

The yield of a PV system depends largely on the orientation and the inclination of the modules. With a south orientation, the most electricity can be produced. However, a PV system with an east/west orientation allows for more own consumption, as the yield is distributed throughout the day. In addition, pollution and shading can reduce the yield.

module inclination	South	East/West	East	West	North
10°	1195	1100	1100	1095	995
30°	1285	1040	1045	1035	750
45°	1275	975	985	965	580
60°	1205	890	900	880	440
90°	885	675	680	670	320

PV yield in kWh per kW_p capacity and year

How can I increase my own consumption?

If you consume PV electricity directly, you also directly save money! Therefore, household appliances such as dishwashers or washing machines should run at a time when the system produces most electricity (lunchtime). In the future, electricity may be used for heat supply (heat pump) or mobility (electric car or bicycle) and should be foreseen in the sizing of PV plant.

The steps to your own PV system:

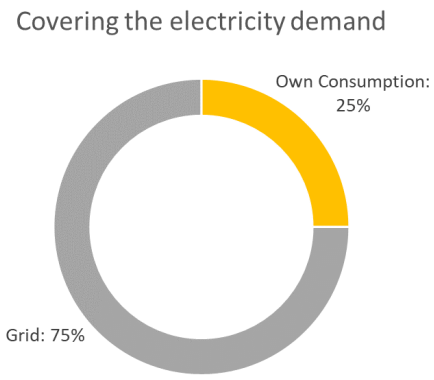
1. Contact (several) providers
2. Topics to discuss:
   a. Roof area
   b. Shading
   c. Laying of cables
   d. Connection
   e. Consumption
   f. Battery, if required
3. Obtain and check cost estimation

Cost

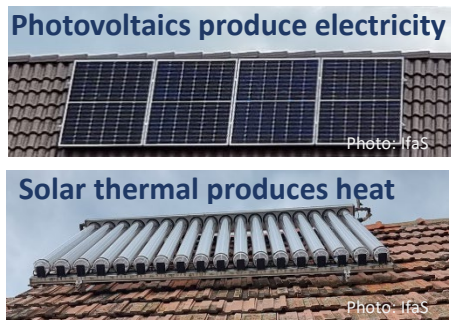
Plug-and-play systems:
3.000 – 5.000 RON/kW_p
Rooftop PV system:
3.700 – 7.500 RON/kW_p

Payback period

Plug-and-play systems:
4 - 6 years
Rooftop PV system:
9 - 12 years



What is solar energy?



To what extent can I save money with a PV system?

The electricity generated by the PV system is first used for self-consumption and the excess electricity is fed into the public grid. When the PV system produces less electricity then required the demand is covered by the grid. This is therefore referred to as a "prosumer" (= producer and consumer of electricity). Own consumption reduces the amount of electricity purchased from the grid, which leads to a reduction in the cost of purchasing electricity. Under current law, electricity fed into the grid can be withdrawn from the grid again during periods of insufficient electricity generation. In this case, however, certain fees must be paid. Or the excess electricity fed into the grid is remunerated (applies as of 2030 according to the current status). However, since a PV system can last for more than 30 years, it should be designed for a high level of self-consumption, which will ensure continued economic viability.

With a battery storage including emergency power or backup power system the power supply can be secured in case of power outages.

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