

Multifunctional ground-mounted photovoltaic systems

According to the Renewable Energy Sources Expansion Act (EAG), an expansion of 11 TWh is planned by 2030, which means that around 11 GWp of solar energy capacity must be added. Of this, around 5 to 6 GWp will be required for ground-mounted systems, as it can be assumed that PV systems cannot be sufficiently implemented on existing infrastructure (PV roof systems, etc.). PV systems on open spaces with an area of around 70 to 80 km² will therefore have to be built in the coming years. PV-FFA can be erected with a degree of sealing of only a few percent. Moreover, they can improve the ecological quality of an area and thus provide a double benefit for people and the environment in addition to electricity production.

Nature-compatible design of a PVA-FFA 1)

- Soil sealing must be kept as low as possible (soil sealing should be a maximum of 5%, including all ancillary facilities)
- A maximum of 50% of the open space should be covered with modules
- Integration into nature through: Hedge planting, rows of trees, preservation of structural elements such as solitary trees. Native plants typical of the area should be used. Neophytes should be avoided
- Avoid artificial fertilizers and chemicals
- If necessary, crossing opportunities for wild animals should be kept free and path connections maintained
- Nesting aids for insects and birds can be installed
- Flower strips create attractive habitats for insects

Design of the module series1)

- Minimum distance of 80 centimetres between the bottom edge of the module and the ground
- Row spacing of at least 2 m between the modules to allow water drainage and light incidence
- Use of low-reflection materials to avoid glare and to protect aquatic insects
- A maximum depth of 6.5 m for the module tables should not be exceeded (with regard to rainwater management and vegetation)
- If a fence is necessary, the permeability for small mammals and amphibians can be ensured by raising the fence (20 cm above the ground)
- Edge areas could be set up as rest areas with information about the PV system and possibly e-bike charging stations with electricity from the neighboring PV-FFA

Targets by 2030

- Target is an expansion of 11 TWh (EAG)
- This means that an additional 11 GWp of photovoltaics will have to be installed
- of which 5-6 GWp will be required for ground-mounted systems
- this roughly corresponds to an area of 70 to 80 km²

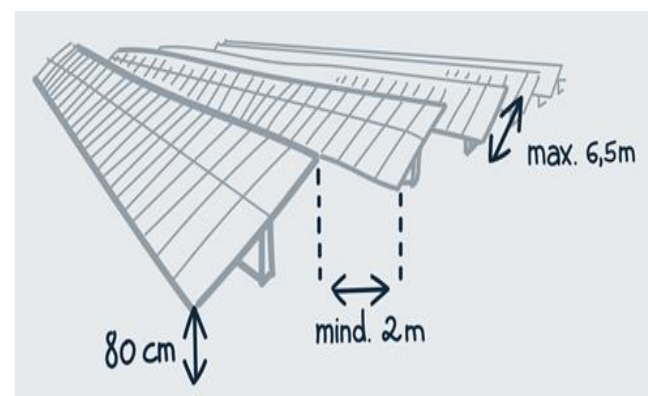


Image 1: Example of the dimensions of an environmentally friendly PV system, image: Photovoltaic Austria

Multifunctional ground-mounted photovoltaic systems in the form of grazing

Certain distances should be maintained during the construction of the plant in order to preserve extensive secondary agricultural use such as grazing with animals or light penetration for plants. Native animal species such as butterflies, breeding birds, grasshoppers, field hamsters and sand lizards should thus be provided with nutritious soil. Dual use can take place with the grazing of sheep, chickens or geese, etc.

Reasons for grazing PV systems²⁾

- Simple and most cost-effective maintenance option, such as grazing with sheep
- In contrast to mechanical mowing, there is no risk of dust formation or damage to the panels from falling rocks.
- Lower risk of theft and vandalism
- Visually recognizable damage can be repaired quickly thanks to the control of the shepherds
- Environmentally friendly, careful maintenance of the areas
- Grazing can reduce the occurrence of mouse runs and molehills on the site
- Dual use of the open space
- As "living cabs", animals bring many different animal and plant species from previously grazed areas to the PV system areas and can thus effectively increase biodiversity. The animals' droppings also serve as an important food source for other animal species, such as bats and dung beetles

Ground-mounted PV systems ...

- are necessary to achieve our climate targets quickly!
- can increase biodiversity in previously unused locations.
- can create new habitats for animals such as sand lizards, ground squirrels, birds, butterflies and many more.
- offer animals protection from rain and heat.
- can generate environmentally friendly electricity!

Links

- [Fechner, Hubert \(2020\): Ermittlung des Flächenpotentials für den Photovoltaik-Ausbau in Österreich](#)
- [1\)Photovoltaic Austria; Österreichisches Institut für Raumplanung \(2022\): Photovoltaik in der Landschaft. Planungsleitlinie für PV-Freiflächenanlagen mit Weitsicht für Umwelt und Raum](#)
- [2\)Bayerische Landesanstalt für Landwirtschaft \(LfL\) \(2019\): Beweidung von Photovoltaik-Anlagen mit Schafen](#)
- [Kompetenzzentrum Naturschutz und Energiewende\(KNE\)\(2021\): Kriterien für eine naturverträgliche Gestaltung von Solar-Freiflächenanlagen](#)

