Arbeitsgemeinschaft
bäuerliche Landwirtschaft e.V.

Position Paper

Agriculture & Energy Transition

Calling for a PV Expansion Compatible With Agriculture and Environmental Sustainability in Germany

March 2025

Introduction

The Arbeitsgemeinschaft bäuerliche Landwirtschaft e.V. (AbL) calls for consistent compliance with the German national targets for reducing greenhouse gas emissions and welcomes the expansion of renewable energies this requires. It is beyond question that an expansion of photovoltaic systems (PV systems) is necessary in this context. Throughout this expansion, however, negative side effects on other sectors of society and on critical infrastructure, which includes agricultural land,[1] must be considered and avoided.

The greatest risk of using agricultural land for the energy transition is actually not the loss of agricultural land to the generation of electricity, even though it may be an existential threat for some farms. Overall, the area lost is relatively small.[2] Much more significant is how the land market is developing, because the energy transition makes land ownership much more attractive. The concentration of land ownership in the hands of primarily non-agricultural investors that we have observed for a few decades now is ever increasing, with lease and purchase prices rising accordingly. The sale of Deutsche Agrarholding (DAH) and its 20,000 hectares of cultivated land to the Australian investor Igneo Infrastructure Partners in 2023 only makes matters worse, as the potential expansion of PV on the land was a key factor in closing the deal.[3] Huge areas of land are no longer in the hands of those who cultivate them, but serve as an investment for entire corporate groups. There is currently no effective legal framework protecting against this sell-off of land to investors, resulting in insufficient regulation of the land market and ownership structures in Germany. Under these conditions, it is increasingly difficult for farmers to gain access to land or to retain their leased land. The goal of a climate-neutral energy supply must not be pitted against food production, nor should it incentivise the sell-off of agricultural land. This is why the AbL calls for an expansion of photovoltaics that is in harmony with agriculture and that preserves a large amount of diverse farms.

Numerous measures and instruments exist at the municipal, state and federal levels which can contribute to an expansion of PV more compatible with both agriculture and environmental sustainability. They are listed in the following part A and explained in more detail in the subsequent part B. The AbL calls on decision-makers to make full use of their discretion in favour of the measures and instruments proposed here.

[1] As defined by the German Federal Office for Agriculture and Food (Bundesanstalt für Landwirtschaft und Ernährung). Bundesanstalt für Landwirtschaft und Ernährung 2025: Landwirtschaft https://www.ble.de/DE/Themen/Landwirtschaft/Kritische-Infrastruktur/Landwirtschaft_node.html

[2] According to the Öko-Institut, it is difficult to accurately predict how much agricultural land will be used for PV expansion (2024: Überblicksstudie. Photovoltaik-Freiflächen-Anlagen in Deutschland, p. 20, (PDF) https://www.oeko.de/fileadmin/oekodoc/PVFFA_Ueberblicksstudie.pdf), although estimates, for example by the Federal Environment Agency (Umweltbundesamt), put it at just 0.6% by 2030 (2022: Abschlussbericht Umweltverträgliche Standortsteuerung von Solar-Freiflächenanlagen, p. 238, (PDF) Endbericht - Umweltverträgliche Standortsteuerung von Solar-Freiflächenanlagen). Compare that to energy crops for biogas production, which are currently cultivated on 8.7% of agricultural land (Berichte über Landwirtschaft 2023: Zeitschrift für Agrarpolitik und Landwirtschaft, Volume 101, Issue 1, p. 1, Anzeige von Vergleich der Flächenenergieerträge verschiedener erneuerbarer Energien auf landwirtschaftlichen Flächen – für Strom, Wärme und Verkehr)

[3] Jobst Jungehülsing (2024): Australischer Investor übernimmt „Deutsche Agrar Holding“, (online) https://www.bauernstimme.de/news/details/australischer-investor-uebernimmt-deutsche-agrar-holding

A) Measures and instruments for an expansion of PV compatible with agriculture and environmental sustainability

1. Legal framework for fairer access to land for farmers and rural start-ups

1.1 Adopt effective legislation governing the agrarian structure that includes lease and purchase price caps and that records and regulates share deals (federal states)

1.2 Lease public land based on public welfare criteria (federal government, federal states, municipalities, churches)

2. Utilisation of non-agricultural development land for the expansion of ground-mounted PV

2.1 Commit to the expansion of PV roofing over car parks, roof- and wall-mounted PV on buildings, PV installations on areas with high degrees of soil sealing or contamination, combined with storage technology or sector coupling (federal states, municipalities)

2.2 Introduce mandatory PV installations for new constructions and similar regulation for existing buildings (federal states)

2.3 Ensure the continued operation of PV systems on non-agricultural land in the post-subsidisation period (federal government, federal states, municipalities)

3. Conservation of agricultural land through agrivoltaics

3.1 Support agrivoltaics specifically through higher subsidies and possibly minimum quotas (federal government, municipalities)

3.2 Identify and utilise agrivoltaics' synergy effects (federal government, federal states, research institutes)

3.3 Adapt the regulatory requirements in the German Renewable Energy Sources Act (EEG) to the new DIN SPEC 91492 standard (federal government)

3.4 Precisely define the concept of the spatial-functional connection required for the privileged status of agrivoltaic systems close to the farm under section 35 (1) no. 9 of the German Federal Building Code, BauGB (federal government)

3.5 Extend the privileged status under the German Federal Building Code (BauGB) to agrivoltaic systems larger than 2.5 hectares (federal government)

4. Effective utilisation of land-use planning tools to protect agricultural land while accelerating the energy transition

4.1 Designate agricultural priority areas to promote the expansion of agrivoltaics (federal states, regional planning, municipalities)

4.2 Create development guidelines and other guidance material for municipalities (federal states)

4.3 Fully utilise the scope of discretion in land-use planning and introduce minimum quotas for the expansion of agrivoltaic systems as necessary (municipalities)

4.4 Develop land use plans in cooperation with local agricultural stakeholders and citizens (municipalities)

4.5 Ensure that the property tax class for ground-mounted PV systems does not inhibit a return to agricultural land use (federal states)

4.6 Review the handling of privileged areas (introduce a development proviso to the privileged status as applicable) and enable synergies with agriculture, biodiversity and climate protection (federal government)

4.7 Bring regulation on the lifting of development restrictions for less-favoured areas into line with agricultural and nature conservation requirements (federal government, federal states)

5. Regulation of PV systems not subsidized under the German Renewable Energy Sources Act (EEG)

5.1 Extend the minimal nature conservation criteria for installations subsidised under the German Renewable Energy Sources Act (EEG) to non-subsidised installations (federal government)

5.2 Ensure that the massive expansion of installations that do not receive public funding under the German Renewable Energy Sources Act (EEG) does not further reduce the tender volume for projects dependent on subsidies – especially for small private or agricultural installations (federal government)

6. Transparency on project plans and impact assessment of legislation

6.1 Introduce mandatory, transparent and comprehensive monitoring of existing and planned solar production areas (federal government, federal states)

6.2 Assess the impact of land-use and land conversion developments in all areas (federal government, Federal Network Agency BNetzA, federal states)

6.3 Evaluate the impact of current regulation (federal government)

7. Ensuring local value creation and making local solar energy production more attractive

7.1 Introduce payment obligations or acceptance levies to state legislation for municipalities to benefit financially from wind farms and ground-mounted photovoltaic systems (federal states)

7.2 Introduce a legal obligation for PV operators to provide municipalities or affected residents of the administrative district with a share of the ground-mounted PV system's profits as Lower Saxony has done in section 6 of its NwindPVBetG legislation (federal states)

7.3 Involve citizens early and actively through information and discussion events on PV expansion held by the municipality or administrative district (municipalities)

7.4 Require operating companies to offer the municipality to become a shareholder (municipalities)

7.5 Require the operating company to be headquartered in the municipality (municipalities)

7.6 Require operators of ground-mounted PV systems to pay the voluntary municipal levy of 0.2 cents per kilowatt hour under Section 6 (3) of the German Renewable Energy Sources Act (municipalities)

7.7 Create citizen energy cooperatives or other forms of inter-municipal cooperation (municipalities)

AbL-Bundesgeschäftsstelle, Bahnhofstraße 31, 59065 Hamm/Westfalen
Tel: 02381 9053172, Fax: 02381 492221, E-mail: info@abl-ev.de

B) Background information on the measures and instruments proposed by the AbL for a PV expansion compatible with agriculture and environmental sustainability

1. Political and legal framework for a fairer access to land

Situation on the land market

Since the financial crisis of 2007/8, investments in agricultural land have been increasing, as they represent a safe investment to many.[4] Due to a legal loophole, primarily non-agricultural investors in particular are making so-called share deals. These deals enable – sometimes foreign – investors who would otherwise be prevented from buying land directly by the German Land Transfer Act (Grundstückverkehrsgesetz) to buy large amounts of land in the form of shares in a farm.[5] What makes these deals extremely attractive is the fact that no land transfer tax has to be paid on the land shares acquired, provided they account for less than 90% of the farm's total land shares. The result is not only the sell-off of our critical infrastructure, but also a massive increase in lease and purchase prices, which can often no longer be generated from primary agricultural production. The average purchase price for agricultural land has more than doubled in ten years (in 2023, 1 hectare on average cost € 33,430 in Germany).[6] The same applies to lease prices in many federal states: 60 per cent of agricultural land in Germany is leased, around three quarters of all farms operate on leased land and are particularly affected by these developments.[7] The consequences of rising prices range from a dramatic demise of farms, major difficulties for start-ups and young farmers to a higher concentration of land on large farms. Area-linked subsidies via the Common Agricultural Policy (CAP) reinforce this process, as does the increasing competition within agriculture in recent years due to the large-scale cultivation of energy crops such as maize and rapeseed.[8] At the same time, 55 hectares (ha) of land, the equivalent of 77 football pitches, are currently being developed for housing and transport purposes every day.[9] Mandatory compensation measures, such as renaturalisation and reforestation, not only do not replace this loss, but actually contribute further to the loss of agricultural land. In total, 118 hectares of agricultural land are converted every day, which means we are still far away from achieving the goal set out in the German Sustainability Strategy of reducing the increase in settlement and transport areas to less than 30 ha per day by 2030 and even to 0 ha by 2050.[10]

[4] Bundesministerium für Ernährung und Landwirtschaft 2024: Landwirtschaftlicher Bodenmarkt in Deutschland, (online) BMEL – Flächennutzung + Bodenmarkt - Landwirtschaftlicher Bodenmarkt in Deutschland

[5] Jobst Jungehülsing (2024): Australischer Investor übernimmt „Deutsche Agrar Holding", (online) https://www.bauernstimme.de/news/details/australischer-investor-uebernimmt-deutsche-agrar-holding

[6] Bundesministerium für Ernährung und Landwirtschaft 2023: Pachtpreise und Kaufwerte, (online) BMEL-Statistik: Pachtpreise und Kaufwerte

[7] ibid.

[8] Statista 2024: Anbaufläche von Energiepflanzen in Deutschland nach Art bis 2022, (online) Anbaufläche von Energiepflanzen in Deutschland nach Art bis 2022 | Statista

[9] Bundesministerium für Ernährung und Landwirtschaft 2024: Landwirtschaftlicher Bodenmarkt in Deutschland, (online) https://www.bmel.de/DE/themen/landwirtschaft/flaechennutzung-und-bodenmarkt/bodenmarkt-deutschland-landwirtschaft.html und Deutsche Nachhaltigkeitsstrategie 2021, pp. 270f. & 374, (PDF) Deutsche Nachhaltigkeitsstrategie Weiterentwicklung 2021 (bundesregierung.de)

[10] ibid.

Effects of PV expansion on the land market

The expansion of ground-mounted PV systems adds pressure to the already tight land market. It accelerates the ongoing concentration of land ownership in the hands of a few agricultural and non-agricultural people and the associated demise of farms. The expansion of ground-mounted PV systems on agricultural land makes land ownership a lucrative investment with high returns from energy production. This leads to land lease and purchase prices rising even more and makes competition for leased land more fierce. Farmers are competing with project developers or investors who offer the prospect of annual rental incomes of 3,000 to 6,000 euros per hectare – ten times the amount of an agricultural lease. This creates enormous price pressure, particularly on leased land, which is an existential threat to many farms and makes it even more difficult for young farmers looking to build a livelihood to get access to land.

Agrarian structure legislation

The increasing concentration of ownership described above not only creates distributional inequalities, it also weakens diversity and thus the resilience of the food system. Attempts at adopting agrarian structure legislation that could regulate such land market dynamics have failed in some federal states.

- *To counteract these developments, the AbL is calling for the adoption of effective agrarian structure legislation at federal-state level, which includes lease and purchase price caps and regulates share deals (1.1).*[11]

Leasing of public land according to public welfare criteria

About 11% of all agricultural land in Germany is owned by the public sector (e.g. by the federal government, the state-owned BVVG, federal states, municipalities, church organisations).[12] This land should first and foremost serve the common good, instead of maximising the profits of a few investors or agribusinesses through the construction of ground-mounted PV systems. We call on public bodies to use their scope of discretion for promoting local businesses that market regionally and in line with demand, as well as with social, animal welfare and environmental protection criteria.

- *The AbL calls on public administrations to lease their land in accordance with public welfare criteria as proposed in the AbL's catalogue of criteria*[13] *(1.2).*

[11] AbL e.V. 2023: Agrarstrukturgesetze. Eigentumsvielfalt erhalten und bäuerliche Betriebe sichern, (PDF) https://www.abl-ev.de/fileadmin/Dokumente/AbL_ev/Publikationen/2023_Positionspapier_Agrarstrukturgesetze_web.pdf
[12] Thünen Institut 2023: Flächennutzung und Flächennutzungsansprüche in Deutschland, p. 22, (PDF) https://literatur.thuenen.de/digbib_extern/dn067046.pdf
[13] AbL e.V. 2022: Gemeinwohlverpachtung – Kriterienkatalog für die Verpachtung von Flächen in öffentlicher und privater Hand, (PDF) https://www.abl-ev.de/fileadmin/Dokumente/AbL_ev/Publikationen/2022_AbL_Gemeinwohlverpachtung.pdf

2. Utilisation of non-agricultural development land for the expansion of ground-mounted PV

Promoting the expansion of integrated PV systems and storage technology

The PV expansion targets set out in the 2023 German Renewable Energy Sources Act (EEG) are 215 gigawatts (GW) by 2030 and 400 GW by 2040. 100 GW were reached by the end of 2024.[14] At least 50% of PV systems are to be installed on building roofs or walls and noise barriers.

The other half is to be implemented as ground-mounted PV systems. A maximum of 80 GW is to be generated by PV systems on agricultural land by 2030 and a maximum of 177.5 GW by 2040.[15] As explained in the first section of this paper, it is already becoming very clear that the expansion of PV systems on agricultural land will further increase land market tightness. PV expansion therefore needs to be brought into line with climate protection goals and the interests of agriculture and nature conservation. The Fraunhofer Institute for Solar Energy Systems, the Öko-Institut and the Climate Neutrality Foundation, among others, consider such an expansion to be feasible. They emphasise the importance of using integrated PV systems, which so far have only found very limited use. These can be floating systems, urban installations or systems integrated into buildings (e.g. on the roof or walls), traffic routes and even vehicles.[16] Agrivoltaics (see section 3) are another form of integrated PV systems (see figure Applications of integrated PV).

***Applications of integrated PV**. Frauenhofer ISE 2025: Aktuelle Fakten zur Photovoltaik in Deutschland, p. 30.*

[14] Frauenhofer ISE 2025: Aktuelle Fakten zur Photovoltaik in Deutschland, p. 5, (online) https://www.ise.fraunhofer.de/de/veroeffentlichungen/studien/aktuelle-fakten-zur-photovoltaik-in-deutschland.html
[15] Bundesministerium für Wirtschaft und Klimaschutz 2024: Das Solarpaket I im Überblick, (PDF), solarpaket-im-ueberblick.pdf
[16] Frauenhofer ISE 2025: Aktuelle Fakten zur Photovoltaik in Deutschland, pp. 30ff., (online) https://www.ise.fraunhofer.de/de/veroeffentlichungen/studien/aktuelle-fakten-zur-photovoltaik-in-deutschland.html

With appropriate funding for early project stages, all possible applications can be trialled and cost-cutting potentials can be identified through more widespread use.[17] In its study on ground-mounted PV systems in Germany, the Öko-Institut shows that a quarter (59 GW) of the target of 215 GW could be realised just by utilising parking areas. A further 36 GW could be realised by using areas with a high degree of sealing and contamination. For hard shoulders on motorways and alongside railways, the Öko-Institut calculates a conservative potential of 192 GW.[18] According to research carried out by the Climate Neutrality Foundation, around 400 GW could be generated by roof-mounted PV modules and about 320 GW by modules mounted on building walls.[19] Mandatory PV installations for car parks, new constructions and existing buildings would promote a broader utilisation of this potential. Such a requirement could, for example, be codified in climate protection legislation at the state level. Nevertheless, questions of storage technology and sector coupling must be answered throughout the expansion in order to absorb any local oversupply of solar power and increase grid stability.[20]

- *The AbL therefore calls for a committed expansion of PV systems on non-agricultural land, including stationary storage technology and coupling with other sectors such as e-mobility, heat pumps and corresponding storage systems, as well as mandatory PV installations for new private and commercial buildings and for new commercial car parks. Furthermore, for ecological and land-use efficiency reasons, it is important to promote the continued operation of PV systems in the post-subsidisation period. Most systems are still in good technical condition and fully capable of continued electricity production (2.1/2.2./2.3).*

[17] Currently, less than 10% of the roof area and less than 1% of the wall area potentials are utilised (ibid.)
[18] Öko-Institut e.V. 2024: Überblicksstudie. Photovoltaik-Freiflächen-Anlagen in Deutschland, pp. 24f., (PDF) https://www.oeko.de/fileadmin/oekodoc/PVFFA_Ueberblicksstudie.pdf
[19] Stiftung Klimaneutralität 2021: Photovoltaik (PV) – Potenziale. Literaturrecherche, p. 6, (PDF) 2021-02-18-PV-Potentiale-Literaturrecherche.pdf
[20] Science Media Center Germany 2025: Solarenergie: Gesetzentwurf zur Vermeidung von Stromüberschüssen, (online) Solarenergie: Gesetzentwurf zur Vermeidung von Stromüberschüssen

3. Preserving agricultural land through agrivoltaics

Agriculture and energy production on the same land

Agrivoltaic systems enable using the same land primarily for agricultural production while also producing solar power. By preserving fertile agricultural soil and the possibility of food production, land-use conflicts are avoided.[21] The Fraunhofer Institute for Solar Energy Systems ISE and other researchers have found that all crops can in principle be cultivated in an agrivoltaic system, with yields depending primarily on the crops' light requirements. Depending on the crop and on climatic conditions, yields may increase or decrease.[22] However, any decrease in yields can be compensated for by diversifying the farms' income by using or selling the solar power generated by the system.

The Öko-Institut calculates a potential of 297 GW for agrivoltaics in combination with the cultivation of permanent crops[23], which would already exceed the overall PV expansion target of 215 GW by 2030. All while being very efficient when it comes to land use: Under ideal conditions, up to 600 GW of electricity could be generated if the 1 million hectares used to grow energy maize in Germany were converted to agrivoltaics[24] – almost three times the PV expansion target for 2030. While globally, agrivoltaics are already being used at gigawatt-scale, only a few systems are currently operated in Germany. Higher costs of agrivoltaic systems and the lower land rent on these areas are currently making the expansion of agrivoltaics less attractive.

- *The AbL is therefore calling for increased subsidies for operators of agrivoltaic systems to make this expansion more attractive[25] (3.1).*

Identifying and utilising synergy effects of agrivoltaics

Synergy effects already discovered by researchers, which can even lead to increased yields, include protecting the land from extreme weather conditions, as agrivoltaic systems can replace crop protection measures such as hail nets.[26] They can provide shade or wind protection for grazing animals and protect poultry and young animals against birds of prey. PV modules used in agrivoltaic systems are also more efficient than those in ground-mounted systems: At ambient temperatures above 25 °C, the efficiency of PV modules starts decreasing. But in agrivoltaic systems, the evaporation of water creates a different microclimate, significantly reducing heat build-up in the PV modules.[27]

- *We therefore call upon the German Federal Government to recognise these concrete synergy effects and finally make agrivoltaics more attractive – not only through higher subsidies, but also through standardisation and the associated cost reductions (3.2).[28]*

Adapting regulatory requirements in the German Renewable Energy Sources Act (EEG) and apply the DIN SPEC 91492 standard

Compliance with the DIN SPEC 91434 standard is currently a requirement for the subsidisation of agrivoltaic systems under the German Renewable Energy Sources Act (EEG). However, the standard does not provide any detail on the requirements for livestock farming in agrivoltaic systems. Farmers report

[21] Frauenhofer ISE 2024: Agri-Photovoltaik: Chance für Landwirtschaft und Energiewende, (online) Agri-Photovoltaik: Chance für Landwirtschaft und Energiewende
[22] Frauenhofer ISE 2024: Agri-Photovoltaik, (online), https://www.agri-pv.org/de/das-konzept/die-rolle-der-landwirtschaft/
[23] Öko-Institut e.V. 2024: Überblicksstudie. Photovoltaik-Freiflächen-Anlagen in Deutschland, p. 23, (PDF) https://www.oeko.de/fileadmin/oekodoc/PVFFA_Ueberblicksstudie.pdf
[24] Frauenhofer ISE 2025: Aktuelle Fakten zur Photovoltaik in Deutschland, p. 30f., (online) https://www.ise.fraunhofer.de/de/veroeffentlichungen/studien/aktuelle-fakten-zur-photovoltaik-in-deutschland.html
[25] The state aid assessment conducted by the EU Commission on the sub-segment for special solar installations (agricultural, car park, floating and moorland) of Solar Package I, which contained higher subsidies for agrivoltaic installations of up to 9.5 ct/kWh, is still – as of 2 April 2020 –ongoing, (online) https://www.bmwk.de/Redaktion/DE/FAQ/Solarpaket/faq-solarpaket.html
[26] Frauenhofer ISE 2025: Synergien durch doppelte Landnutzung. Schutz der Landwirtschaft, (online) https://www.agri-pv.org/de/synergien/kulturschutz/
[27] Frauenhofer ISE 2025: Synergien durch doppelte Landnutzung. Technische Synergien, (online) https://www.agri-pv.org/de/synergien/technische-synergien/
[28] Öko-Institut e.V. 2024: Überblicksstudie. Photovoltaik-Freiflächen-Anlagen in Deutschland, p. 25, (PDF) https://www.oeko.de/fileadmin/oekodoc/PVFFA_Ueberblicksstudie.pdf

that this can cause issues with approval. In 2024, the new DIN SPEC 91492 standard was created to make livestock farming and agrivoltaics eligible for public funding.[29] Unfortunately, however, the new DIN SPEC standard is still not applied to grant applications for agrivoltaic systems under the EEG. Instead, the regulatory requirements in the EEG and in the Federal Network Agency's (Bundesnetzagentur) regulation are still based on the old standard, DIN SPEC 91434.[30]

- *The AbL calls for the regulatory requirements in the German Renewable Energy Sources Act (EEG) to be adapted to the new DIN SPEC 91492 (3.3).*

Unclear application of privileged status

The described measures would help the relaxed requirements applying to land-use planning proceedings of agrivoltaic systems on land close to farms to actually have an impact. This privileged status under Section 35 Para. 1 No. 9 of the German Federal Building Code (BauGB) for agrivoltaic systems close to farms and of up to 25,000 m² in size removes the requirement of a development plan for their construction, making them more cost-effective.[31] However, the building code stipulates that the system should have a spatial-functional connection with the farm not further defined, creating uncertainty.

- *The AbL calls on the federal government to clarify this situation and to define the concept of a spatial-functional connection in such a way that it no longer stands in the way of the expansion of agrivoltaics, e.g. by granting broad authorisation for agrivoltaics for any farm location. The AbL further calls for the privileged status to be extended to larger agrivoltaic systems (3.4/3.5).*

SolarInput e.V. goes even further and proposes treating agrivoltaic systems the same way as normal crop protection measures and lifting the requirement of a development plan entirely.[32]

[29] DIN SPEC 91492 2024: Agri-Photovoltaik-Anlagen – Anforderungen an die Nutztierhaltung, (PDF) https://www.laves.niedersachsen.de/download/210772/DIN_Spec_Agri_PV_Tierhaltung.pdf
[30] Energiezukunft 2024: Solarpaket, (online) https://www.energiezukunft.eu/erneuerbare-energien/solarenergie/noch-hakt-es-bei-ausschreibungen-fuer-agri-photovoltaik
[31] Stiftung Umweltenergierecht 2024: Studienzusammenfassung, (PDF) https://stiftung-umweltenergierecht.de/wp-content/uploads/2024/02/Stiftung_Umweltenergierecht_Zusammenfassung_ZUR_Agri-PV_Otto_Wegner.pdf
[32] Solarinput: Agri-Photovoltaik – Handlungsempfehlungen, (online) https://solarinput.de/schwerpunkte/agri-pv/handlungsempfehlungen/

4. Effective utilisation of land-use planning tools to protect agricultural land and accelerate the energy transition at the same time

The role of land-use and regional planning in the protection of agricultural land

Land-use and regional planning with adequate citizen participation are of particular importance to the promotion of agrivoltaics. The land-use plans of the federal states and the corresponding regional plans have a special, sometimes restrictive, function as they reserve areas for flood protection and generally ensure the future of the land.[33] In them, federal states can, for example, designate priority areas, reserved areas and suitable areas for specific types of land use. The principles and objectives of the state-level land-use plans are fleshed out in regional plans. For example, they can designate priority areas for agriculture, which means that any expansion of PV systems in these areas must comply with the defined agricultural purposes. If the two are in conflict, the expansion must be denied.[34] In practice, this would mean that ground-mounted PV systems could be excluded from designated agricultural priority areas, while agrivoltaic systems could be subsidised.

- *The AbL calls on planning authorities to increasingly designate agricultural priority areas in order to promote the expansion of agrivoltaics (4.1).*

Municipalities must adhere to these regional plans in their own land-use planning. Conversely, the land-use plans and the results of other urban development plans adopted by municipalities[35] are incorporated into regional planning as part of the reverse flow principle.

Preparation of planning aids and guidelines by the federal states

The actual expansion of solar energy is controlled at the municipal level. However, smaller municipalities in particular are often overwhelmed by the planning and implementation of PV systems or come under pressure from project developers and investors. Under these conditions, realising a forward-looking PV expansion compatible with agriculture and environmental sustainability is not easy, let alone involving important stakeholders from agriculture or the local population in the process. This makes it all the more important for the federal states to provide support in the form of guidelines that local authorities can use to steer PV expansion. The state of Lower Saxony, for example, lists specific areas that are reserved for grassland management or agriculture in general in its guidelines for municipalities.[36] The state of Brandenburg suggests to start by utilising areas with a high degree of sealing.[37] If guidelines taking agricultural and nature conservation concerns into account are available, some legal bindingness can be achieved through resolutions of the municipal council. This also allows the local authority to prepare for project enquiries and respond to them systematically. There is a fundamental need for nuanced regional and municipal planning, which consistently takes agricultural concerns into account, while implementing planning processes efficiekümpntly and quickly.

- *The AbL is in favour of the federal states supporting municipalities in PV expansion by providing them with comprehensive guidance[38] that includes criteria for PV expansion compatible with agriculture and environmental sustainability (4.2).*

[33] Dietmar Scholich 2018: Vorranggebiet, Vorbehaltsgebiet und Eignungsgebiet, (PDF) https://www.arl-net.de/system/files/media-shop/pdf/2023-01/Vorranggebiet%2C%20Vorbehaltsgebiet%20und%20Eignungsgebiet.pdf
[34] Umweltbundesamt 2022: p. 228, (PDF, see footnote 2)
[35] Boas Kümper 2018: Gegenstromprinzip, p. 762 (PDF), https://www.arl-net.de/system/files/media-shop/pdf/HWB%202018/Gegenstromprinzip.pdf
[36] Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz 2022: Arbeitshilfe Solarplanung, (PDF) https://www.ml.niedersachsen.de/startseite/themen/raumordnung_landesplanung/arbeitshilfen/arbeitshilfe-zur-planung-von-freiflachen-photovoltaikanlagen-in-niedersachsen-216732.html
[37] Land Brandenburg 2023: Gemeinsame Arbeitshilfe Photovoltaik-Freiflächenanlagen (PV-FFA), (PDF) https://mleuv.brandenburg.de/sixcms/media.php/9/Gemeinsame-Arbeitshilfe-PV-FFA.pdf
[38] Kompetenzzentrum Naturschutz und Energiewende 2025: Handreichung der Länder zu Naturschutz und Solarparks, (online) https://www.naturschutz-energiewende.de/publikationen/handreichungen-der-laender-zu-naturschutz-und-solarparks/

The role of municipalities in preserving agricultural land

The first step in municipal zoning is the development of a land-use plan. Section 5 (1) sentence 1 of the German Federal Building Code (BauGB) states:

> *"The land-use plan shall outline the land use resulting from the intended urban development for the entire municipal area in accordance with the foreseeable needs of the municipality."*

Among others, this includes areas for energy generation, areas for agriculture, areas for measures to protect, maintain and develop the soil, nature and landscape. As a second step, legally binding stipulations are then put into the development plan, which can be supply- or project-related. The former are created by the local authorities in a process including opportunities for public participation[39] . These are a crucial instrument for ensuring that the public interest is taken into account in the planning process, as project developers must consider the results. Project-related development plans, on the other hand, should be treated with caution, because they enable investors, i.e. project developers, to influence the planning, which may run counter to public interest.[40]

Furthermore, depending on the agrarian structure, the introduction of minimum agrivoltaics quotas can help reduce land use conflicts. It is important to ensure, however, that these quotas are not exhausted by a few large farms and that small farms are explicitly included in the planning.

- *The AbL calls on municipalities to fully utilise their scope of discretion in the public interest and to rely on supply-related development plans. The potential of minimum agrivoltaics quotas needs to assessed at the municipal level to determine whether they can encourage the expansion of agrivoltaic systems, enabling the combined use of land for food and energy production (4.3).*

Consideration of criteria relevant to agriculture and nature conservation at the municipal level

Land-use plans enable the designation of areas in accordance with agricultural and nature conservation concerns.

- *The AbL is in favour of using municipal planning and control instruments in land use and subsequent development plans that contribute to the structural consideration of agricultural and nature conservation concerns (4.4).*

[39] Given adequate public participation, citizens and associations like the AbL have the opportunity to comment at two points in this process (see Dialogforum: Beteiligen und mitgestalten, (online) https://www.dialogforum-energie-natur.de/photovoltaik/beteiligen/)
[40] Stephan Mitschang 2018: Flächennutzungsplan, p. 689, (PDF) https://www.arl-net.de/system/files/media-shop/pdf/HWB%202018/Fl%C3%A4chennutzungsplan.pdf

The full scope of discretion should be brought to bear on the following measures in particular:

- Designate priority areas for agriculture which cannot be used for ground-mounted PV
- Reserve high-quality arable land and areas that are actively used for agriculture for the exclusive expansion of agrivoltaic systems
- Prefer sealed surfaces for PV expansion
- Reduce land loss associated with the expansion of ground-mounted PV by implementing compensation measures and expanding the necessary power lines as efficiently as possible
- Limit the expansion of ground-mounted PV to the demand in line with climate targets[41]
- Promote the connectivity of different habitats in the construction and operation of any kind of PV system
- Ensure that when ground-mounted PV systems on previously agricultural land are dismantled, the land's agricultural status can be restored and clarify issues of liability and compensation related to changes in status[42]

Reviewing property tax and inheritance regulation

Throughout most of Germany, agricultural land on which ground-mounted PV systems are operated moves from property tax class A to the more expensive property tax class B. The only exception is Bavaria, where the land remains in property tax class A if it is contractually ensured that the land will be returned to agricultural use after the PV installation has been dismantled. Particularly in situations involving farm transfers, it is important to consider that the change in property tax class means that any benefits of class A regarding inheritance and gift taxes no longer apply.[43]

> ➢ *The potential impact of a reduced property tax class B for the expansion of ground-mounted PV systems and of the option to immediately return to property tax class A after the PV system's end of operation should be evaluated, also with regard to promoting the return to agricultural land use. If the land is leased, it must be ensured that the PV operator undertakes to restore the land to its original condition so that it reverts to property tax class A (4.5).*

Reviewing the handling of privileged areas

The German Renewable Energy Sources Act (EEG) assigns a privileged status to some areas. In these areas, PV systems are generally eligible for approval and do not require a land-use planning procedure or public participation as they otherwise would.[44] Privileged areas are defined as areas located up to 200 metres along motorways or railway lines of the main railway network with at least two main running lines (pursuant to Section 35 (1) of the German Federal Building Code, BauGB). Due to their privileged status, they are in particularly high demand for the expansion of ground-mounted PV systems. At the same time, these areas are often arable land or grassland, which means the regulation affects countless farms.[45] Municipalities' scope of discretion is extremely limited when it comes to the approval or denial of development in these areas. The only reservations against development can stem from public interest, defined in more detail in Section 35 (3) of the German Federal Building Code (BauGB), e.g. the impairment of measures to improve the agrarian structure. As the 2023 amendments

[41] As done by the town of Buchen, for example (https://alt.buchen.de/images/wirtschaft/Freiflaechenphotovoltaik-Kriterien-04072022.pdf)
[42] This can occur, for example, if the arable land develops into a landscape conservation area over time.
[43] Ecovis 2022: Grundsteuer: Was gilt für verpachtete Photovoltaik-Freiflächenanlagen?, (online) Grundsteuer: Was gilt für verpachtete Photovoltaik-Freiflächenanlagen? - ECOVIS Deutschland
[44] German legislators consider this extension of the privileged status to be justified, as the areas along motorways and railways are already "predetermined by visual and acoustic pollution" (Deutscher Bundestag 2022: Drucksache 20/4704, p.17, (PDF) https://dserver.bundestag.de/btd/20/047/2004704.pdf)
[45] Approx. 69.5% of the privileged areas are arable land, 14.1% permanent grassland, approx. 23% are of other types or are nature conservation areas (Thünen Institut 2023: Flächennutzung und Flächennutzungsansprüche in Deutschland, p. 37, (PDF) https://literatur.thuenen.de/digbib_extern/dn067046.pdf)

to the EEG enshrine the construction and operation of renewable energy installations as being in the overarching public interest (section 2 EEG), it can be assumed that other concerns are always subordinate and that any project in privileged areas will therefore be approved – without any way for the municipality or the public to influence the decision.

- *The AbL calls for agrivoltaics to be prioritised in privileged areas that are used for agriculture and for more land use synergies between agriculture and nature conservation to be created. The potential merit of a proviso[46] to the privileged status in accordance with Section 35 para. 3 sentence 3 BauGB, giving municipalities some scope of discretion, should also be reviewed (4.6).*

Bringing regulation on the lifting of development restrictions for less-favoured areas into line with agricultural concerns

Less-favoured areas are designated by the federal states where less yield can be generated due to natural disadvantages, e.g. mountainous regions or areas with poor soil quality. Currently, around 43.5% of agricultural land in Germany is located in less-favoured areas.[47]

The 2024 Solarpaket I legislation has opened these areas up for the development of solar parks. Federal states can only opt out of this if at least 1 percent of their agricultural land is already being used for ground-mounted PV systems.[48] In contrast to privileged areas, a development planning procedure is still required for less-favoured areas, giving municipalities some control. Nevertheless, the lifting of development restrictions on less-favoured areas is causing uncertainty for farms cultivating land in these areas. Some farms have already had their land leases terminated by the private or public owners. Others have had to give up land due to the fierce competition and prices that are no longer affordable. This regulation affects some federal states more than others, depending on how much of their land is located in less-favoured areas. Farmers in Rhineland-Palatinate, for example, report that a large proportion of the less-favoured areas are located in the ecologically valuable back-country, where few people live who use the energy produced. This not only raises the question whether the designation of less-favoured areas makes sense from a nature conservation perspective, but also as to why the expansion of ground-mounted PV systems is de facto facilitated here, but the construction of agrivoltaic systems near urban centres, which would preserve agricultural land, is not.

- *The various aspects of development in less-favoured areas should be weighed up carefully, consideration should be given to the interests of local farms that cultivate land in these areas, and farmers should be involved in the decision-making processes (4.7).*

[46] This would enable municipalities to enter a reservation, for example on grounds of concerns regarding the agrarian structure, in order to have agrivoltaic systems installed instead of ground-mounted PV systems.
[47] Öko-Institut e.V. 2024: Überblicksstudie. Photovoltaik-Freiflächen-Anlagen in Deutschland, p. 22, (PDF) https://www.oeko.de/fileadmin/oekodoc/PVFFA_Ueberblicksstudie.pdf
[48] Bundesregierung 2023: Gemeinsames Pressepapier BMWK, BMUV, BMEL, (PDF) Pressepapier Flächen für die Photovoltaik

5. Regulation of PV systems that do not receive public funding under the German Renewable Energy Sources Act (EEG)

Ground-mounted PV systems are profitable at or above 50 MW, even without receiving any funding under the German Renewable Energy Sources Act (EEG). Through Power Purchase Agreements (PPA), PV operators can sell the electricity they generate.[49] According to *pv magazine Deutschland*, 50% of the systems installed in 2024 – most of them very large installations – did not require any public funding under the EEG.[50] The Thünen Institute also notes that the function of steering the location of ground-mounted PV systems intended by the EEG is increasingly losing its effectiveness.[51] As systems with PPAs are deducted from the total volume of PV systems built across the country (215 GW by 2030), it follows that the more PPA systems are built without funding under the EEG, the fewer subsidised systems are put out to tender.

This not only means a potential disadvantage for operators who depend on public funding, but also for environmental protection. As these installations are not publicly funded under the EEG, they do not need to comply with its minimum nature conservation criteria. Operators of publicly funded installations, on the other hand, must fulfil at least three of the five minimum nature conservation criteria.[52]

- *The AbL urgently calls for potential regulation of PV installations that are not publicly funded to be investigated at the federal level with regard to minimum nature conservation criteria and ensuring that land remains available for installations that do receive public funding under the EEG (5.2).*

[49] Tagesspiegel Background 2025: Drittel neuer Freiflächen-PV läuft ohne Förderung, (online) https://background.tagesspiegel.de/energie-und-klima/briefing/drittel-neuer-freiflaechen-pv-laeuft-ohne-foerderung

[50] For example, in February 2024, 383 megawatts were added by just five installations with outputs of between 30 and 162 megawatts (https://www.pv-magazine.de/2024/03/21/photovoltaik-anlagen-ohne-eeg-foerderungen-machen-im-februar-40-prozent-des-zubaus-aus/)

[51] Thünen Institut 2023: Flächennutzung und Flächennutzungsansprüche in Deutschland, p. 37, (PDF) Flächennutzung und Flächennutzungsansprüche in Deutschland.

[52] Nevertheless, non-subsidy-related regulations apply regardless (Bundesnetzagentur 2025: Solaranlagen und andere EE-Anlagen, (online) https://www.bundesnetzagentur.de/DE/Fachthemen/ElektrizitaetundGas/ErneuerbareEnergien/Solaranlagen/start.html)

6. Transparency on project plans and impact assessment of legislation

Introduction of comprehensive land use monitoring

To date, no transparent overview of developments in land use and land conversion exists at the national level. Even the Federal Network Agency's core energy market data register only records PV systems that are already connected to the grid.[53] Disproportionate concentrations of planned PV projects thus cannot be recorded. Yet monitoring could become a crucial tool for counteracting local distortions of land prices in good time and for ensuring that regional PV expansion quotas are not exhausted by a few investors or large businesses. This requires not only the establishment of an adequate flow of information between all land-use planning levels,[54] but also public, supra-regional insight into planning processes, including municipal land-use planning.

- *The AbL calls for comprehensive land monitoring in order to adequately assess land market developments – in general and specifically with regard to PV expansion – and to be able to take action on this basis (6.1).*

Utilisation of area monitoring for impact assessment

Data from land monitoring must be used to carry out impact assessments. The impact of existing and future laws must also be reviewed and evaluated. For example, an impact assessment should be carried out for Section 2 of the EEG, which *states: "The construction and operation of installations and associated secondary structures are in the overarching public interest and serve public health and safety. Until electricity generation in Germany is almost greenhouse gas-neutral, renewable energies should be prioritised whenever legal goods are balanced."*

- *The AbL calls for an impact assessment for existing and future laws regulating the land market and the development of agricultural land, which includes national land monitoring. Based on the monitoring and impact assessments, a diverse advisory body – including agricultural organisations – should evaluate current rules and propose adjustments where necessary (6.2/6.3).*

[53] Bundesministerium für Wirtschaft und Klimaschutz 2024: Naturschutzfachliche Mindestkriterien bei PV-Freiflächenanlagen, (PDF) https://www.bmwk.de/Redaktion/DE/Downloads/J-L/leitfaden-naturschutzfachliche-mindestkriterien-bei-pv-freiflaechenanlagen.html
[54] Verbraucherzentrale 2024: Marktstammdatenregister: Das müssen Sie bei Solaranlage und Co. wissen, (online) https://www.verbraucherzentrale.de/wissen/energie/erneuerbare-energien/marktstammdatenregister-das-muessen-sie-bei-solaranlage-und-co-wissen-33124

7. Ensuring local value creation and making local solar energy production more attractive

For both subsidised and non-subsidised PV installations, mechanisms should be introduced to ensure local value creation. Section 6 of the German Renewable Energy Sources Act (EEG) already allows for municipalities to receive a voluntary levy from the PV operator. Section 6 (3) EEG stipulates that ground-mounted PV system operators may pay 0.2 cents per kilowatt hour of electricity actually fed into the grid as a municipal levy. However, there are other ways for the public to benefit financially – both at state and municipal level.

> ➢ *The AbL calls for effective mechanisms and the utilisation administrative discretion to ensure value creation at the local level for both subsidised and non-subsidised PV systems. In addition to that, citizens and local farms should be involved in the decision-making processes and both non-material and financial benefits should be introduced (7.1-7.7).*

Here are some examples of possible measures that can strengthen local value creation in the context of PV systems.

At the level of the federal states:

- Introduction of payment obligations or acceptance levies to state legislation for municipalities to benefit financially from wind farms and ground-mounted PV[55]
- Introduction of a legal obligation for PV operators to provide municipalities or affected residents in the administrative district with some share of the ground-mounted PV system's profits. Such regulation has been adopted by Lower Saxony (section 6 NwindPVBetG) and includes several options, for example offering a savings product, energy supply at a cheaper price or direct payments to citizens.

At the municipal level:

- Information and discussion events on PV expansion held by the municipality or district administration
- Requiring the operating company to offer the municipality to become a shareholder[56]
- Requiring the operating company to be headquartered in the municipality
- Requiring operators of ground-mounted PV systems to pay the voluntary municipal levy of 0.2 cents per kilowatt hour under Section 6 (3) of the German Renewable Energy Sources Act (EEG)
- Creation of citizen energy cooperatives

Inter-municipal cooperation, which has shown its value for a more democratic energy transition in the expansion of wind power, can also be brought to bear here: Municipalities can join forces to plan their energy supply together.[57] It is also worth noting that policy decisions made together with citizens are accepted better and also find more long-term support.

[55] Umweltbundesamt 2020: Planungsebenen, Planungsräume - Stufen der räumlichen Planung, (online) https://www.umweltbundesamt.de/themen/nachhaltigkeit-strategien-internationales/planungsinstrumente/planungsebenen-planungsraeume-stufen-der#landerebene

[56] The Saxon law on the financial participation of municipalities in renewable energies stipulates a mandatory municipal levy of 0.1 cents per kilowatt hour of electricity fed into the grid for ground-mounted systems (Sachsen.de 2024: Erneuerbare-Energien-Ertragsbeteiligungsgesetz, (online) https://www.revosax.sachsen.de/vorschrift/20864). In Lower Saxony, the mandatory municipal levy is 0.2 cents, with the restriction that the municipalities may not use this income for mandatory tasks (Niedersachsen. Klar: Beteiligungsgesetz: Wie Kommunen und Bevölkerung profitieren, (online) https://www.niedersachsen.de/energie/beteiligung/beteiligungsgesetz-wie-kommunen-und-bevolkerung-profitieren-234787.html)

[57] The town of Buchen requires a direct or indirect municipal participation as a shareholder in the operating company of up to 24% (https://alt.buchen.de/images/wirtschaft/Freiflaechenphotovoltaik-Kriterien-04072022.pdf)

Publisher:
Arbeitsgemeinschaft bäuerliche Landwirtschaft e.V.
Bahnhofstraße 31
59065 Hamm
Germany
E-Mail: info@abl-ev.de
www.abl-ev.de

Editors:
Rosa Braun, Climate Officer at AbL
braun@abl-ev.de

Sabrina Gerdes, Agricultural Officer at AbL Mitteldeutschland
mitteldeutschland@abl-ev.de

In cooperation with the AbL Soil Expert Group

Translation:
Florian Aurich, www.florianaurich.de

Cover & Design:
Iris Kiefer