Intersolar Europe
Intersolar Europe Conference
Munich, May 10–13, 2022

TREND PAPER FOR INTERSOLAR EUROPE: AGRICULTURAL PV

Munich/Pforzheim, February 2022: Agricultural PV (or agrivoltaics) is the simultaneous use of land for both agriculture and solar power generation. This efficient approach is ever evolving and generating increasing amounts of interest. Long gone are the days when agricultural PV was considered a niche solution. In fact, in 2020 global agricultural PV capacity amounted to more than 14 gigawatts (GW) according to the Fraunhofer Institute for Solar Energy Systems (ISE). China is leading the way, but agricultural PV is gaining traction in Europe too. Germany has put out innovation tenders to promote this technology, Italy is planning a major funding package and France has founded the world's first association dedicated to the promotion of agricultural PV. Progress is also being made towards greater standardization, which is vital for improved market uptake. Agricultural PV will be a key focus area at the upcoming Intersolar Europe 2022 and accompanying specialist conference. The aim is to promote greater international exchange of information and, in doing so, increase uptake of this relatively new technology.

One of the key advantages of agricultural PV is that it resolves the land usage conflict between agriculture, on the one hand, and increased solar power generation using ground mounted PV systems, on the other. This conflict poses a challenge for many European countries. Italy has already pledged EUR 1.1 billion to promote agricultural PV, including installing 2 GW of agricultural PV capacity. France, meanwhile, has been promoting agricultural PV since 2017 through a series of innovation tenders, and in 2020 alone launched 48 projects. According to Christian Dupraz, a senior researcher at the French National Institute of Agricultural Research (INRAé), most of these projects are tracking systems, which are the big trend in France.

Vital role of standardization in Europe

Even big energy firms like EDF (Électricité de France) are getting involved with agricultural PV. Last year EDF joined forces with Cero, a start-up from the Macquarie Group, to acquire Green Lighthouse Development, a project developer with a 2.4 GW portfolio of agricultural PV projects. Moreover, in June 2021, four French PV companies founded "France Agrivoltaïsme", the world's first association dedicated to the promotion of agricultural PV. One of the association's initiatives is to develop its "Projet Agrivoltaique Positif" label, which it hopes will increase agricultural production in conjunction with greater solar power generation. The French Environment and Energy Management Agency (ADEME) is also working on a definition and set of standards for agricultural PV that are intended to be in tune with the requirements of the agricultural industry.

The standardization of agricultural PV in Germany also took an important step forwards in April 2021, when industry representatives from agriculture, the PV sector, and research and certification bodies agreed on DIN SPEC 91434, which will serve as the basis for developing a full DIN standard. The specification covers the key aspects of agricultural PV, including scope of application, terminology, criteria and requirements for the technology, planning, installation, operation and maintenance. In October 2021, the German Federal Network Agency (BNetzA) used this specification to define the agricultural PV requirements for its innovation tenders – scheduled for spring 2022 – which aim to generate 150 megawatts (MW) of capacity in line with Germany's amended Renewable Energy Act (EEG 2021). Eligible plants must have an installed capacity of 100 kilowatts (kW) to 2 MW. In its coalition agreement, Germany's new federal government announced that it plans to promote greater use of agricultural PV as part of its 200 GW solar target, hence the original tender plans for 50 MW

have been increased to 150 MW. The definition of suitable land has also been expanded to include perennial and permanent crops, including fruit production.

Enormous potential for orchards, berry farms, vineyards and dried herb production
Fruit farms and vineyards offer enormous potential for agricultural PV. The land becomes dual purpose and, moreover, the solar modules help protect the crops against hail, heavy rainfall, sunburn and frost. The modules can even replace existing structures such as hail protection systems and polytunnels. The 1.2 MW agricultural PV plant installed by the company BayWa r.e. at a raspberry farm in the Netherlands is a great example of this. The project was even awarded the The smarter E AWARD in the Outstanding Solar Projects category in 2021. Moreover, in September last year, a 258 kW test plant was installed at an apple orchard in the village of Gelsdorf in western Germany (in the Ahrweiler district of Rhineland-Palatinate), in order to demonstrate the potential of agricultural PV and optimize its use in the fruit farming industry. Another five agricultural PV demonstration plants, with a total capacity of at least 1,650 kW, are also planned for fruit and berry farms in Baden-Württemberg, Germany. The plans were announced by the Baden-Württemberg Ministry of the Environment in the middle of January 2022, along with a EUR 2.5 million funding package for the projects.

Starting this year, German herb producer Steinecke will also be growing its herbs and vegetables under a 750 kW array of bifacial solar modules at a one hectare site in Lüchow in northern Germany (in the Wendland region of Lower Saxony). The company is aiming to use the solar energy generated to power other processes such as drying its herbs. The German Federal Ministry for Environment (BMUV) has awarded this lighthouse project EUR 400,000 in start-up funding to help it meet the total costs of EUR 1.3 million. There are currently more than a dozen agricultural PV systems installed across Germany.

However, that's just a drop in the ocean compared to the potential 1.7 terawatts that agricultural PV could generate across the country. Nonetheless, as Jens Vollprecht from the international law firm Becker Büttner Held (BBH) points out, legislators are increasingly recognizing the potential of this new technology. Standards are being updated to promote the use of agricultural PV, which he believes opens up the possibility of using EU direct payments for agriculture to fund agricultural PV projects, provided these projects do not significantly restrict agricultural activity. This prerequisite remains one of the key obstacles to market uptake.

Three way land usage in Western Africa
Agricultural PV has even greater potential in the arid and semi-arid regions of the Mediterranean area and Africa, where water conservation plays a vital role in agriculture. International research projects such as "WATERMED4.0" and "APV-MaGa Agri-Photovoltaik für Mali und Gambia" are investigating and implementing solutions in rural regions of Western Africa, which aim to use the land in three different ways – namely food production, solar power generation and rain water collection and storage using the solar modules.

Agricultural PV at Intersolar Europe 2022 and its accompanying conference
This year's Intersolar Europe will be held from May 11 to 13, 2022, as part of The smarter E Europe at Messe München. The event and the accompanying Intersolar Europe Conference, both of which are major sources of inspiration for the solar industry, will be helping shine a spotlight on the exciting area of agricultural PV. The Intersolar Europe Conference is taking place on May 10 and 11, 2022, at Internationales Congress Center (ICM) München.

Exhibitors at Intersolar Europe 2022
- AIT Austrian Institute of Technology GmbH, A5.271
- Axial Structural Solutions S.L, A6.570

- BayWa r.e. AG, A4.180, A4.181, A4.190
- Fraunhofer-Instituts für Solare Energiesysteme (ISE), A1.540
- Goldbeck Solar GmbH, A5.480
- IDEEMATEC GmbH, A6.440
- Insolight SA, A5.351
- Next2Sun GmbH, A6.335
- Premium Mounting Technologies Systems (PMT), A5.110
- STEAG Solar Energy Solutions GmbH, A4.280
- SolarPower Europe, B3.109
- SunFarming GmbH, A5.360
- and many more...

Intersolar Europe Conference – Next Generation Space Efficient Solar:

- May 10, 2022, from 2:30pm to 6:00pm, in room 12: Agri-PV – Multiplying Benefits with Solar on Agricultural Land
- May 10, 2022, from 11:30am to 1:00pm, in room 12: BIPV – Getting Ready For Embracing Solar As a Building Material
- May 11, 2022, from 9:00am to 3:30pm, in room 14 C: Floating Solar – Advantages of Solar on Water

For more information, please visit:
www.intersolar.de/en/
https://www.thesmartere.de/home?lang=en

Upcoming event: Agrivoltaics conference organized by Conexio
Conexio's international hybrid conference AgriVoltaics2022 will focus specifically on the topic of agricultural PV and is taking place from June 15 to 17, 2022. The event aims to highlight the importance of greater European and international exchange of information, in order to increase uptake of this relatively new technology.

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