ASSOCIATION OF AGRARIAN AND ENVIRONMENTAL LAWYERS

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Effectiveness of Common Agricultural Policy Implementation in Slovakia

REPORT

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ASSOCIATION OF AGRARIAN AND ENVIRONMENTAL LAWYERS

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1. Introduction

In recent years, for the whole world and the EU countries, in particular, the issue of obtaining and using energy from renewable energy sources is topical. The reasons for this need are various factors, including the improvement of the environment, energy independence and security, the exhaustion of previously used hydrocarbon energy sources.

On December 11, 2019, the European Union adopted an ambitious strategy for environmental development - the European Green Deal (EGA). The EGA provides a plan for a just transition to a sustainable, climate-friendly future.

As of the date of the adoption of Green Deal in the EU, a number of directives had already been adopted and were in force, the purpose of which was the legal regulation of the transition of the EU countries to a climate neutral energy system: Renewable Energy Directive; Energy Efficiency Directive; EU emissions trading system; Energy Taxation Directive; ReFuelEU aviation; FuelEU maritime transport; Directive on the infrastructure of alternative fuels.

In 2009, the Renewable Energy Directive (RED; 2009/28/EC) set the target for each Member State, whereby 10% of all energy used in transport should be from renewable sources by 2020. The RED also introduced sustainability criteria and, since 2011, only biofuels that comply with these criteria count towards the renewable energy share.

In 2018, the new RED, known as RED II, strengthened the sustainability criteria for bioenergy and set a new goal for 2030, increasing the target for the share of renewable energy used in transport to 14% by 2030. As part of the Fit-for-55 package, the European Commission adopted a proposal for a revision of RED II, which proposes a greenhouse gas intensity reduction target for 2030, instead of a target to reach a certain share of renewables *(European Environment Agency data published March 10, 2022, https://www.eea.europa.eu/ims/use-of-renewable-energy-for).*

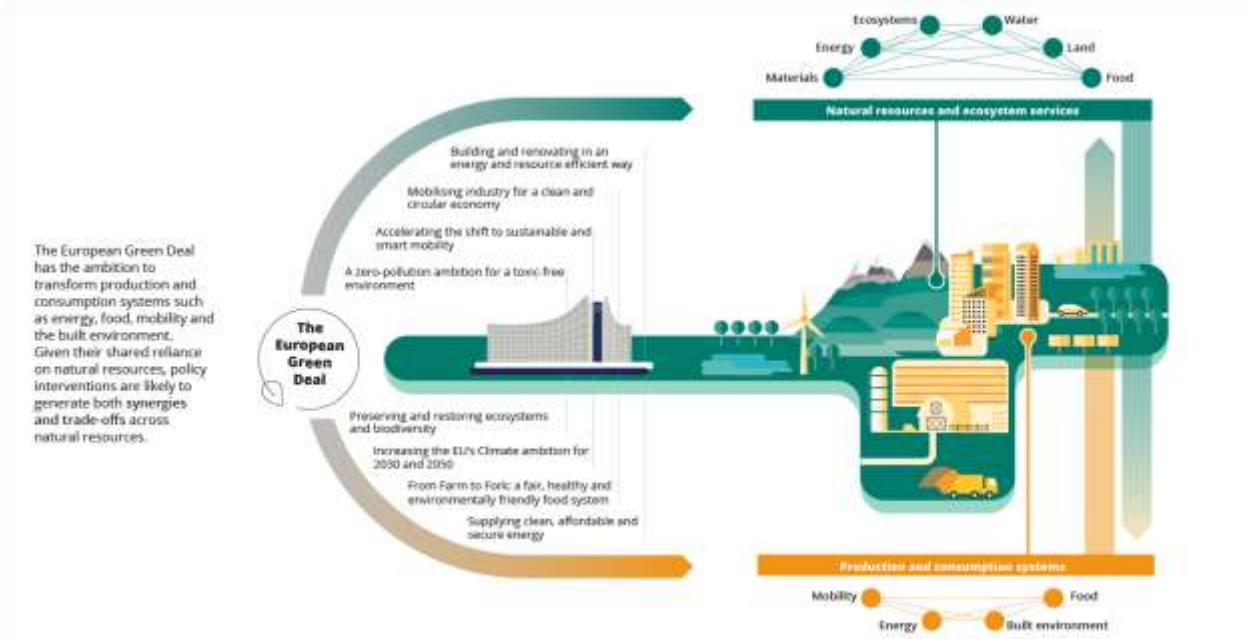
In July 2021, the European Commission presented a package of proposals to harmonize EU policies on climate, energy, land use, transport and taxation with the goal of reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The package of proposals is presented to bring these Directives in line with Green Deal, as they are key to achieving the Green Deal goal: Europe aims to realize the European Green Deal and become the world's first climate-neutral continent by 2050.

One of the important for achieving the goals of the Green Deal project is the Renewable Energy Directive, the implementation of which will be the subject of this report.

2. Renewable energy sources as part of the Green Deal strategy

Alternative energy sources shall mean renewable energy resources which include solar, wind, geothermal, hydrothermal, aero thermal energy, wave and tidal energy, hydro energy, biomass energy, landfill gas, gas from sewage treatment plants, biogas, and secondary energy resources which include blast-furnace and coke-oven gases, methane gas for coalbed degasification and conversion of waste energy potential of technological processes.

Alternative energy engineering shall mean the sector of energy engineering, providing the generation of electrical, thermal and mechanical energy from alternative energy sources.



The EEA, «Resource nexus and the European Green Deal», 17.03.2022

When implementing the Green Deal, the EU pays special attention to several basic principles for the transition to clean energy, which will help improve the environment, reduce the "greenhouse effect", and make the life of Europeans better.

Development of the EU energy sector on renewable energy sources, and focusing in the introduction of such sources on: the priority of energy efficiency, security and availability of EU energy supply, integration of the EU energy market among all EU members, interconnection and accessibility of the integrated energy market for all EU countries.

In accordance with the plans of the European Commission, one third of the 1.8 trillion euro investments from the NextGenerationEU Recovery Plan, and the EU's seven-year budget will finance the European Green Deal *(A European Green Deal. Striving to be the first climate-neutral continent», European Commission).*

Energy production and use accounts for **75% of EU emissions**, so accelerating the transition to a greener energy system is crucial.

As set out on July 14, 2021 by the European Commission in the Energy Factsheet, the goals for implementing the Green Deal renewable energy project are as follows:

Stepping up the ambition for renewables in key sectors:

- Annual binding increase of 1.1 percentage point renewables in heating and cooling at national level,
- Indicative target of 2.1 percentage points renewable energy and waste heat and cold in district heating and cooling,
- New 13% greenhouse gas intensity target in transport,
- New indicative target of a 1.1 percentage point annual increase in renewable energy use in industry,
- New benchmark to reach at least 49% renewable share in the energy used in buildings.

Boosting the deployment of and investment in renewable energy:

- Measures to boost electrification, including a credit mechanism for transport,
- Sub-targets and certification for renewable hydrogen,
- Measures to facilitate renewable Power Purchase Agreements (PPAs),
- Accelerated permitting for renewable energy projects,
- Promoting cross-border cooperation, including through the renewable energy financing mechanism.

(*Energy Factsheet, European Commission).*

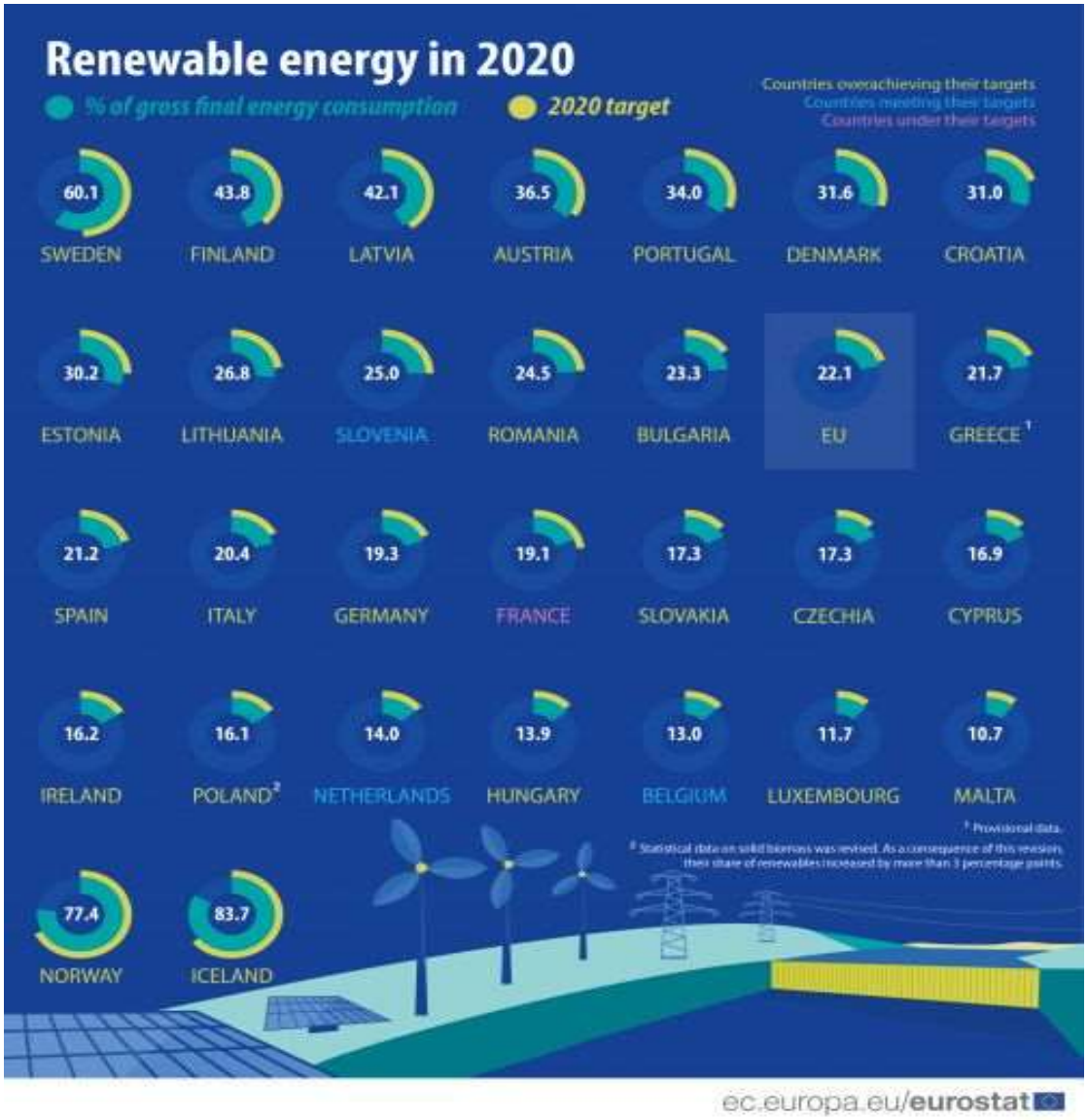
As https://www.en-former.com/ points out, according to the latest market forecast from industry association SolarPower Europe, 2021 was a record year for new EU installations. Amid the pandemic, EU solar hit all-time high in 2021 with the Netherlands taking top spot on per capita basis. In absolute terms, the EU's solar fleet now amounts to 164.9 GW, up 19% from 2020, and there is no end in sight to the technology's potential. Last year, 25 out of the EU's 27 member states installed more solar power than the year before *(https://www.en-former.com/en/solar-boom-2021-was-a-record-year-for-new-eu-installations/, https://www.solarpowereurope.org/insights/market-outlooks/market-outlook).*

On October 26, 2021, the European Commission adopted its State of the Energy Union Reports for 2021, taking stock of the progress that the EU is making in delivering the clean energy transition, nearly two years after the launch of the European Green Deal. According to the report, primary energy consumption declined by 1.9% and final energy consumption by 0.6% last year. However, both figures are above the trajectory required to meet the EU's 2020 and 2030 targets, and efforts need to continue to address this issue at Member State and EU level. Fossil fuel subsidies dropped slightly in 2020, due to lower energy consumption overall. Renewable energy and energy efficiency subsidies both increased in 2020.

According to Eurostat data received in January 2022, provides recent statistics on the share of energy from renewable sources overall and in three consumption sectors (electricity, heating and cooling, and transport) in the European Union (EU) *(Fig.1)*

According to EEA Report No 13/2021 *(https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2021)* , Slovakia increased its RES share by a full 5 percentage points between 2018 and 2019. In this period, Slovakia's renewable energy consumption in heating and cooling nearly doubled, mainly due to the increased use of biomass, following changes in the national method for collecting data on energy consumption of biomass. 2019 was also the first year in which heat pumps were accounted for, although this technology had been used in Slovakia before then. Overall, this shift in accounting method gave the country's RES share a one-time statistical boost and a remarkable 5 percentage point increase in a single year.

Fig.1 Renewable energy in 2020



https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics

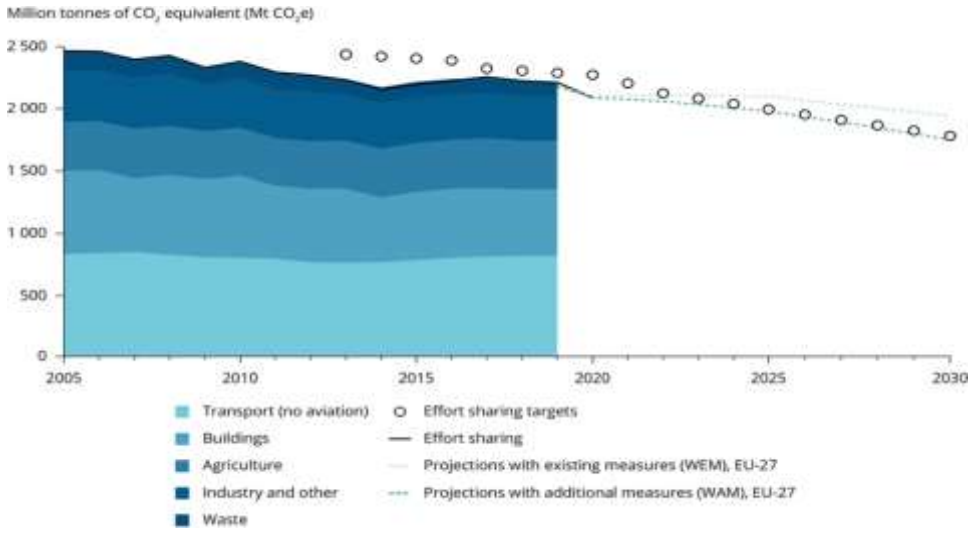
According to «Report from the Commission to the European Parliament, the council, the european economic and social committee and the committee of the regions» of the European Commission dated October 26, 2021, there are problems in the introduction of renewable energy sources. Overly complex and lengthy administrative permitting procedures constitute a major barrier for the transition to a decarbonized energy system, in particular to the deployment and integration of renewable energy. The obstacles include complex structures, a lack of legal consistency and insufficient policy and regulatory frameworks and guidelines. The Commission is closely monitoring the transposition of relevant provisions of the Directive and is assessing whether further measures are needed. For this purpose, a review clause for articles dealing with administrative procedures was included in the Commission proposal to amend the Renewables Directive presented in July 2021. Member States are also asked to establish an enabling framework that tackles the remaining non-financial barriers to renewable energy projects, such as insufficient digital and human resources of authorities to process a growing number of permitting applications. To help Member States tackle administrative and investment barriers, the Commission will issue guidance in 2022 on streamlining permitting and administrative procedures for renewable energy deployment, drawing on the analysis of existing obstacles as well as best practices in Member States.

3. Renewable energy incorporation in agriculture

Agriculture is one of the industries, the result of which is environmental pollution. According to a *Eurostat report* published on October 26, 2021, the level of greenhouse gas from agricultural activities ranks second after emissions from transport (except aviation) and construction.

This *Figure 2* shows the EU-27 sectoral Effort Sharing emission trends and projections, Effort Sharing targets under the Effort sharing decision (ESD) and Effort sharing regulation (ESR).

Figure 2 Effort Sharing emission trends



https://www.eea.europa.eu/data-and-maps/indicators/progress-towards-national-greenhouse-gas/assessment

One of the directions for reducing greenhouse gas emissions is the introduction of renewable energy sources, as well as the use of raw materials, agricultural waste to obtain alternative energy.

An interesting direction is agrophotovoltaics (agrivoltaic, Agri-PV) - a symbiosis of solar energy and agriculture. Solar panels are installed not only on the roofs of greenhouses, but also over fields with berries, potatoes and cereals. Agrofotovoltaika is considered in the EU as an important tool on the path to carbon neutrality.

SolarPower Europe sees a threefold benefit in this technology: increased crop yields, reduced water consumption and renewable energy production. SolarPower Europe launched the Agrisolar Workstream in April 2020 amid the largest health and economic crisis of the last hundred years. The edition of the SolarPower Europe Agrisolar Best Practices Guidelines, was published as a result of the SolarPower Europe briefing held in September 2020. SolarPower Europe sets such goals for the development of Agri-PV:

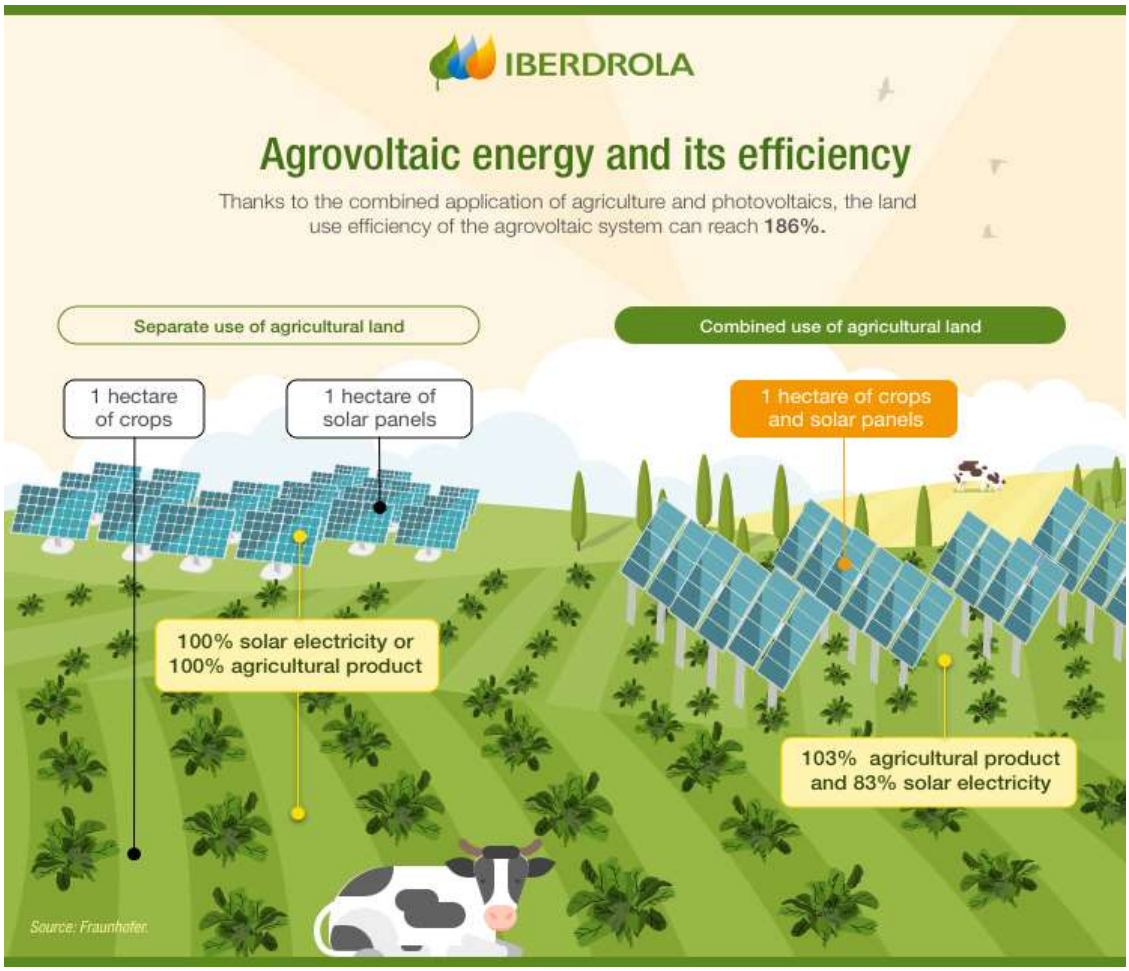
1. Towards a new paradigm. Agrisolar enables society to move away from the traditional land-use competition towards a new paradigm based on synergies between agriculture and renewable energy.

2. Sustainable rural development. Agrisolar can deliver a much-needed boost to sustainable rural development and can increase biodiversity protection.

3. Common Agricultural Policy. The Workstream plans to leverage the EU's renewable energy ambition to achieve the nine objectives of the Common Agricultural Policy. The ambition is to foster a more sustainable and qualitative agriculture, which is respectful of its environment and able to cope with the increasing environmental hazards related to climate change.

Generally, fixed support systems are used to elevate the solar panels about five meters above crop field. This allows farm machinery access to the crops below. Solar panels can also be installed on greenhouse roofs. Another solution **is dynamic agrovoltaics,** which involves installing the panels on elevated cables — a lighter alternative that is easy to disassemble — and allows the panels to be moved or adjusted manually over the seasons and as the farmer cultivates different plots of land.

Other installations have **monitoring systems,** which allow the panels to be orientated to maximize their efficiency and prevent them from always casting shade in the same place, thus adapting to the needs of the plants. These systems require complex software models that take things like crop growth phases and the weather into account. In the future, solar panels will be developed using semi-transparent polymers that allow the wavelengths of sunlight needed for photosynthesis to pass through and absorb the rest to generate energy.



According to SolarPower Europe, an experimental Agri-PV system with potatoes in Germany led to a 103% yield when compared to a control, while the PV systems generated 83% of the electricity that would have been generated on the similar plot of land, leading to an 86% increase in land use efficiency.

Co-locating solar above agriculture can contribute to lowering the water needs of agriculture by shielding crops from heat and by reducing evapotranspiration. One study indicated that, depending on the level of shading from PV panels, water savings could reach between 14-29%.

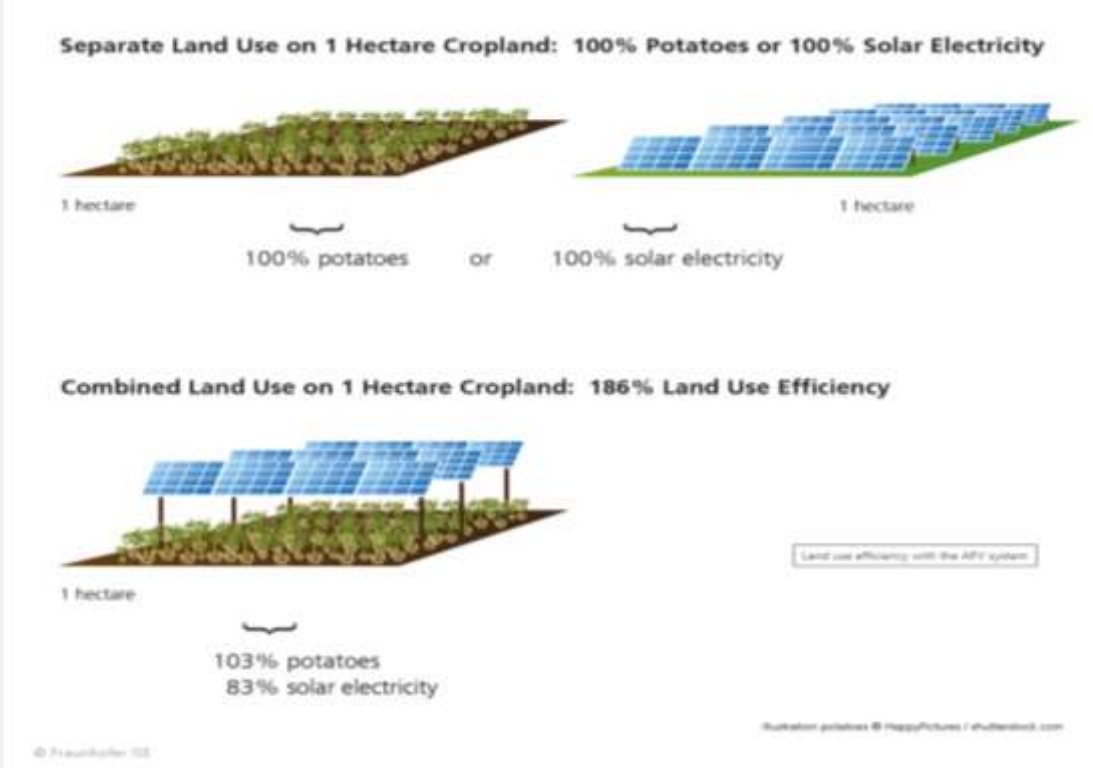
(https://www.solarpowereurope.org/interests/agrisolar).

The Fraunhofer Institute for Solar Energy Systems ISE provides similar data from their research, and states the following:

«Over the past two years, the dual use of land for the harvesting of solar electricity and agriculture has been tested in the joint project "Agrophotovoltaics – Resource Efficient Land Use (APV-RESOLA)." On one-third of a hectare arable land near Lake Constance in Germany, photovoltaic modules with a total power output of 194 kilowatt are installed on a five meter high structure. The results from 2017 showed a land use efficiency of 160 percent, as confirmed by the project consortium

under the direction of the Fraunhofer Institute for Solar Energy Systems ISE. The performance of the agrophotovoltaic system in the very hot summer of 2018 greatly exceeded this value. The partial shading underneath the photovoltaic modules improved the agricultural yield, and the sun-rich summer increased the solar electricity production.

In 2018, the farmers of Heggelbach, a Demeter farm community, successfully brought in their second annual harvest from the agrophotovoltaic system. Four types of crops were grown: winter wheat, potatoes, clover and celery. In 2018, the yields from three of the four crops grown under the agrophotovoltaic system were greater than the reference yield. The crop yields for celery profited the most by the system, with a gain of 12 percent compared to the reference. Winter wheat produced a gain of plus 3 percent and clover a minus of 8 percent. "Based on the 2018 potato yield, the land use efficiency rose to 186 percent per hectare with the agrophotovoltaic system," says Stephan Schindele of Fraunhofer ISE».



https://www.ise.fraunhofer.de/en/press-media/press-releases/2019/agrophotovoltaics-hight-harvesting-yield-in-hot-summer-of-2018.html

According to SolarPower Europe, if Agrisolar was deployed on only 1% of Europe's arable land, its technical capacity would amount to more than 900 GW, more than 6 times the current installed PV capacity in the EU.

However, there are also problems in the implementation of the Agri-PV system in the EU countries. To address these issues, SolarPower Europe proposes the EU and its Member States should implement 6 key actions:

1. The European Council and the European Parliament should integrate a "European Agri-PV strategy" within the future CAP that aims to promote the development of the Agri-PV sector across Europe.
2. Member States should, as part of CAP Strategic Plans, develop Agri-PV regulatory frameworks and prioritise investments into solar.
3. The European Commission should mainstream AgriPV across initiatives part of the Farm to Fork Strategy.
4. The European Commission and EU Member States should provide targeted support for Agri-PV research programmes.
5. The European Commission should integrate Agri-PV within its upcoming Climate Change Adaptation Strategy.
6. EU islands should deploy Agri-PV as part of their clean energy transition agendas.

https://www.galileogreenenergy.com/wp-content/uploads/2020/11/Agri-PV-How-Solar-Enables-the-Clean-Energy-Transition-in-Rural-Areas.pdf

So, solar agriculture facilitates self-sustaining farming practices, doesn't depend on other energy source, and provides sun relief which can boost productivity.

4. Scientific papers published on the bases of the CAPE results

I. BANDLEROVÁ, Anna et al.: Establishment of a farm- manual; SPU v Nitre. -- 59 s. 611792-EPP-1-2019-1-SK-EPPJMO-SUPPA (Effectiveness of Common Agricultural Policy implementation in Slovakia, Jean Monnet) +- ISBN : 978-80-552-2337-7

II. PALŠOVÁ, Lucia- BANDLEROVÁ, Anna- MACHNIČOVÁ, Zina: Land concentration and Land Grabbing Processes - evidence from Slovakia -- SSN 2073-445X online. -- Vol. 10, no. 8 (2021), art. no. 873 [16] s. -- 10.3390/land10080873. -- 000689381400001. -- 000689381400001. -- 2-s2.0-85113433649.

III. MACHNIČOVÁ, Zina- PALŠOVÁ, Lucia: Negative phenomenon of the land grabbing? Assumptions, causes and possible impacts of its existence, literature review In: EU Intellectual Property (Innovations and Intellectual Property in various fields of human life). -- 1st ed.. -- 1 CD-ROM (159 p.). -- 978-80-552-2339-1 EU Intellectual Property. -- Nitra: Slovak University of Agriculture, 2021. -- P. 129-140.

IV. TAKÁČ Ivan- PALŠOVÁ, Lucia: How to write and implement a successful project within the Common Agricultural Policy- manual -- Nitra: 2021 Vydavateľstvo SPU v Nitre. -- 133 s. 611792-EPP-1-2019-1-SK-EPPJMO-SUPPA (Effectiveness of Common Agricultural Policy implementation in Slovakia, Jean Monnet) -- ISBN : 978-80-552-2357-5 (brož.).

V. PALŠOVÁ Lucia- BEŇUŠ Ondrej- MATUŠKOVÁ- BRÁNIKOVÁ Jana- MALATINEC Tomáš: Environmental Law Nitra : Slovenská poľnohospodárska univerzita, 2021. -- 92 s. : ilustr., tab. -- ISBN : 978-80-552-2437-4.

VI. SCHWARCZ, Pavol - TAKÁČ, Ivan - KOVÁČIK, Marián. EU Agricultural policy, Nitra: Slovenská poľnohospodárska univerzita, 2021. 86 p.

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