voltalia

Agrivoltaics: a powerful combination of agriculture and energy production

04 Jun 2024

Agrivoltaics is an innovative symbiosis between farming and renewable energy production. The aim is to perpetuate a sustainable agricultural production while addressing the challenges of climate change and energy production. For each agrivoltaic project, Voltalia analyses all specific challenges and opportunities of the farm, to create a successful, operable and resilient system.

Understanding agrivoltaics

Definition and goals

Agrivoltaics offer the unique advantage of combining **agricultural** and **energy** production on a single plot of land. By installing photovoltaic panels over crop or pasture land, renewable electricity can be generated while sustaining and supporting agricultural production.

Not only agrivoltaics are a major enabler to scale up renewable energies production without creating land-use conflicts, they also address a variety of challenges faced by farmers, including:

1. helping the farmers in **adapting to climate change** and reducing its impacts on agricultural production;
2. improving the **animal welfare** and **protecting crops or fruits** from hazards such as drought, hail, late spring frost, … ;
3. securing **long term revenue for the farmers** and helping to finance the **installation of young farmers**.

The role of agrivoltaics in energy transition goals

Agrivoltaics could play a major role in achieving energy transition targets.

The European Commission Joint Research Center states that "agrivoltaics alone could surpass EU photovoltaics 2030 goals": "covering just 1% of the utilised agricultural area (UAA) with agrivoltaic systems could result in 944 GW direct current of installed capacity".

Several European countries, such as France and Italy, have recently issued clear regulations and guidelines, providing a clear framework for large scale development of agrivoltaics.

Voltalia's differentiating approach to agrivoltaics

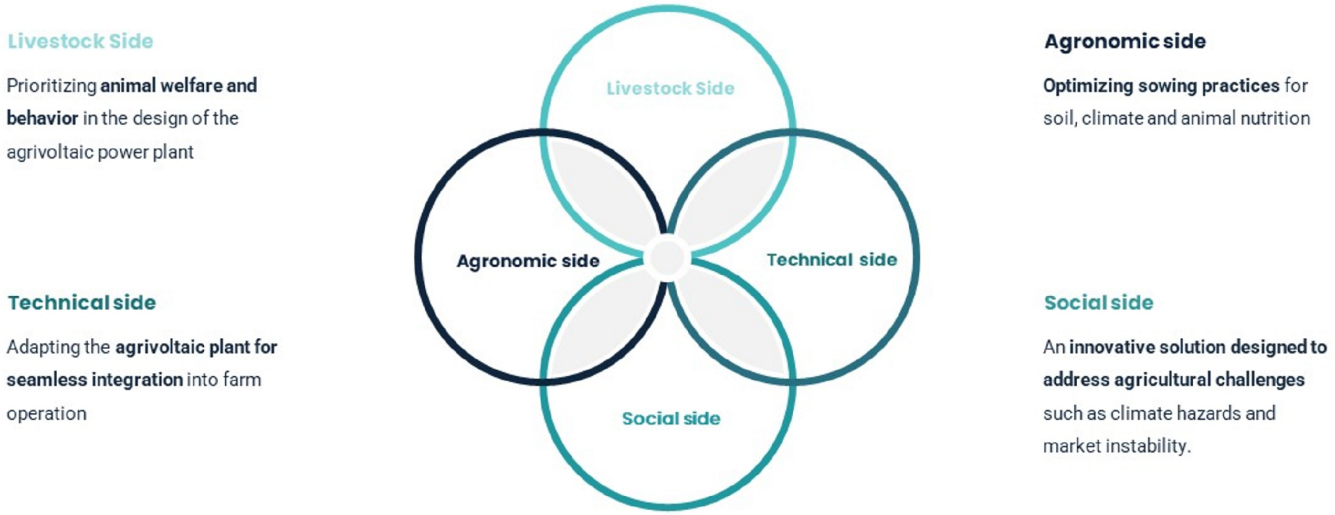
Emphasizing flexibility and customization

The variety and adaptability of agrivoltaic solutions allow them to be customized to meet the unique needs and constraints of different farming models, whether crop, fruits or livestock.

Leveraging strong solar engineering expertise, a team of agronomic engineers specialized in agrivoltaics, and collaboration with expert partners, Voltalia excels in creating customized power plants optimized for different agricultural models. There's no one-size-fits-all solution!

Voltalia has developed a systemic approach that analyses and specifies all the important agricultural aspects of each project. This four-fold approach ensures:

1. a **comprehensive, personalized farming model analysis**.
2. the use of a **wide range of flexible solutions that are tailored** to the specific needs of each farm;
3. **collaboration with farmers** on design and implementation choices.



***Caption** Our systems approach to agrivoltaics: the four sides*

This methoddology has been applied to the company's entire portfolio of agrivoltaic projects under development, which amounts to over 1,5 GW.

Durability and contract assurance

Voltalia understands that **durability** and **contract security** are absolute priorities for farmers. This is demonstrated by:

- implementing a joint operating agreement that details interfaces and value-sharing with farmers;
- upholding farm leases;
- personnel certifications and authorizations (such as the Alliance for Photovoltaic Quality [AQPV] for photovoltaic systems);
- adhering to a plant maintenance schedule that accommodates agricultural constraints;
- monitoring agricultural performance closely.

These commitments ensure that farmers have a **reliable and stable income** over the life of the partnership, which ranges from 20 to 40 years.

Building a strong partnership between Voltalia and farmers

The success of any agrivoltaic project depends on the relationship between the farmer and the **renewable energy producer**. At Voltalia, we place great emphasis on fostering this partnership, which is achieved through close collaboration between our multidisciplinary teams and our farmer partners. Open and productive communication, shared decision-making, and a commitment to transparency at every step are our guiding principles.

Ensuring reversibility

When an agrivoltaic plant needs to be **dismantled**, Voltalia takes care of the entire process, including:

- dismantling the installation;
- recycling materials;
- restoring the site.

The timeframe to complete the dismantling process and restore the site is approximately **three months**.

Generational renewal: A challenge for tomorrow's agriculture

The European agricultural sector is in the midst of significant change, where only 12% of the farms are today managed by farmers under 40 years old. Faced with an aging farming population, the new Common Agricultural Policy has made generation renewal in farms one of its top ten priority objectives. This will require extensive support for education and training, as well as facilitating the entry of new farmers into the industry.

Since 2022, Voltalia, through its land holding company Terravena, has been at the forefront of using agrivoltaics to support generational renewal. Terravene plays a crucial role in facilitating the establishment of young farmers or farm transfers by offering long-term land leaseback solutions. These solutions are financed by establishing an agrivoltaic plant on part of the land.

Agrivoltaics in action: The Cabanon plant shows the way

The **Cabanon agrivoltaic power plant**, located in Saint-Etienne-du-Grès (Bouches-du-Rhône, France), began operating in March 2021. Covering 4.5 hectares of market-garden land, the project successfully **raised 700,000 euros** from nearly 200 investors, out of a total investment of 5.2 million euros.

The plant has a peak power of 3 MW and an annual output of **4.8 GWh**, equivalent to the energy consumption of 4,000 inhabitants. It demonstrates Voltalia's ability to successfully implement state of the art dynamic agrivoltaics technologies, creating ideal conditions for the vegetables to grow.

A 20-year contract has also been signed with EDF to provide **additional compensation** for the electricity generated at the site.

Poisy agrivoltaic cattle demonstrator

The Poisy agrivoltaic cattle demonstrator project in Savoie, France, in partnership with the French Livestock-breeders' Institute and the Poisy livestock farm, broke ground in February 2024. This pioneering research station will evaluate the **effects of integrating photovoltaic structures** into the farm environment over a five-year period, studying various aspects such as:

- changes in plant populations;
- fodder production (quantity of dry matter and intrinsic nutritional value);
- changes in microclimate according to different indicators;
- the welfare of the dairy cows at the site.

This initiative exemplifies **Voltalia's systems approach** , which prioritizes sustainable development by considering both internal and external factors in every project.

Agrivoltaics highlight the synergies between agriculture and energy production, which form a beneficial collaboration for a sustainable future. Voltalia stands out as a pioneer in this field, backed by strong institutional commitments, an extensive portfolio and promising initial projects.