Italian Agro-PV, where are we?

Legislations and Regulations

AEDES GROUP
ENGINEERING

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Who we are

AEDES GROUP
ENGINEERING

Aedes Group Engineering is a leading company in the development activities with a portfolio of 1,5 GW of large scale PV project and 500 MW of Battery energy storage systems

Continuous growth since 2000
+ 1.500 MW large scale project
+ 500 MW BESS
+ 6 Italian regions

Membership e networking

ITALIA SOLARE
Il fotovoltaico è di tutti

COMITATO ELETTROTECNICO ITALIANO

What we do

Large scale PV

Energy storage

Agri-PV

Energy Communities

Services

Project development

Design

Site management

Monitoring

Summary

- Overview and targets
- Reference legislation in Italy and reference practices
  - Ministerial guidelines on Agro-PV
  - CEI (Italian electrotechnical committee) PAS 82-93 «Impianti agrivoltaici»
  - Reference Practice (Italian National Standards Body) UNI/PdR 148

Waiting for…

- Ministerial Decree on Agrovoltaics (PNRR)
- CREA/GSE guidelines for monitoring specifications
- New Ministerial Decree on Suitable areas

The new challanges
Main targets of Agro PV

Challenges

01.

A challenge for the Environment

Renewables protect the environment and the climate, but their impact on biodiversity must always be taken into account.

02.

A challenge for the food system

Is it sufficient to reach EU targets by 2030 means using up to 0,5% of the Agricultural Surface Used for installing ground mounted PV. There will be no significant impacts on the agricultural production system.

03.

A challenge for the landscape

Installing solar energy systems in large quantities would mean transforming the landscape we're used to.
It is important to design quality systems for better integration.

04.

A challenge for energy costs

We need to create efficient systems to have a lower LCOE. Solar can reduce energy costs.

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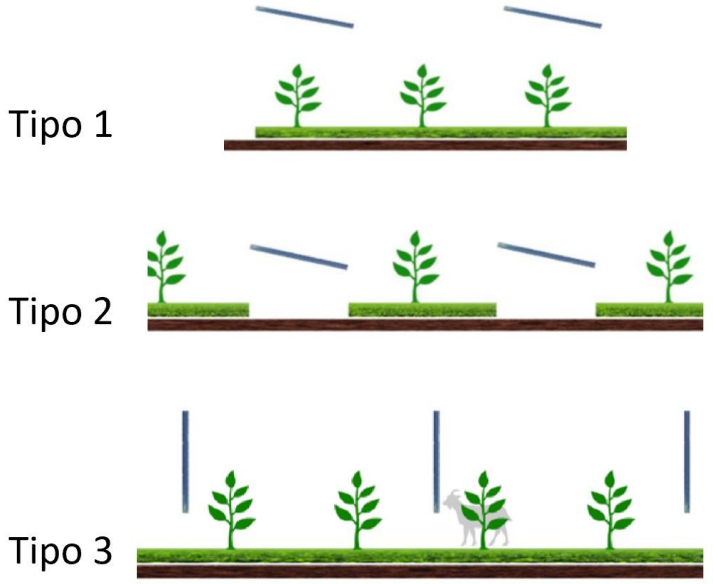
Refererence legislation in Italy
& reference practices

Ministerial guidelines on Agro PV

As we await clear national legislation, definitions are to be found in Ministerial guidelines, which specify the classifications of systems by typology (inter-row, elevated, vertical) and set minimum requirements to be respected. It is necessary to create the conditions so as **not to compromise the continuity of agricultural and farming activity, while ensuring synergies with efficient energy production.**



Ministerial guidelines on Agro PV

REQUIREMENT A: The system is designed to **allow integration between agricultural activity and electricity production** and enhance the production potential of both subsystems;

REQUIREMENT B: The agrivoltaic system is operated, during its technical life, in such a way as to **guarantee production of electricity and agricultural products in synergy with each other and not compromising the continuity of agricultural and farming activity**;

REQUIREMENT C: The agrivoltaic system **adopts innovative integrated solutions with modules elevated from the ground**, aimed at optimizing the performance of the agrivoltaic system in both energy and agricultural terms.

REQUIREMENT D: The agrivoltaic system is **equipped with a monitoring system that allows you to verify the impact on crops, water saving, agricultural productivity** for the different types of crops **and the continuity of activities of the agricultural companies** involved;

REQUIREMENT E: The agrivoltaic system is equipped with a **monitoring system which**, in addition to complying with requirement D, **allows you to verify the recovery of soil fertility, the microclimate and resilience to climate change.**

Ministerial guidelines on Agro PV

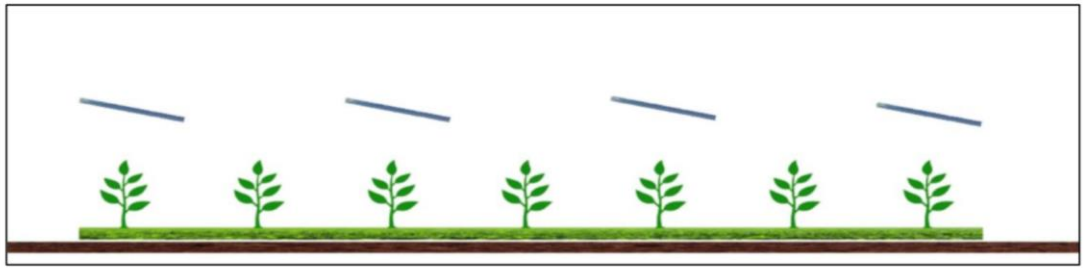
	REQ. A	REQ. B	REQ. C	REQ. D	REQ. E
Agrivoltaic	✓	✓		D2 ✓	
Advanced	✓	✓	✓	✓	
Adv. PNRR	✓	✓	✓	✓	✓

In order to define a photovoltaic system built in an agricultural area as "agrivoltaic" you need to meet requirements A & B. Compliance with requirement D.2 (base monitoring) should also be required for these systems.

Compliance with requirements A, B, C and D is necessary to satisfy the definition of "advanced agrivoltaic system" and, in compliance with the provisions of article 65, paragraph 1-quater and 1-quinquies, of the legislative decree of 24 January 2012, no. 1, to classify the plant as deserving of access to state incentives based on electricity tariffs.

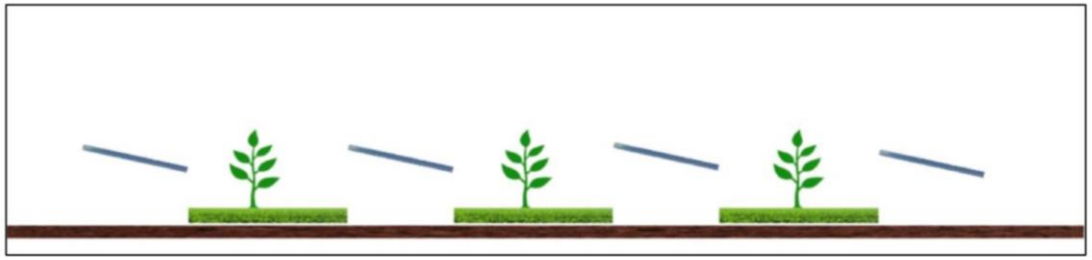
Compliance with A, B, C, D and E are pre-conditions for access to PNRR contributions.

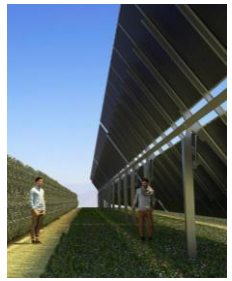
Figura 9 - Sistema agrivoltaico in cui la coltivazione avviene tra le file dei moduli fotovoltaici, e sotto a essi (TIPO 1).



Fonte: Alessandra Scognamiglio, ENEA

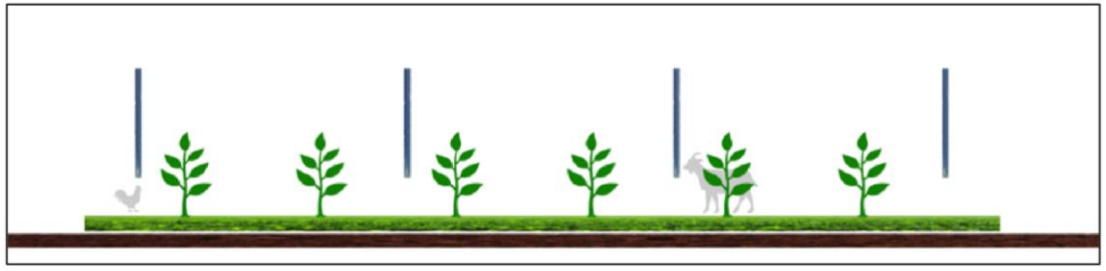
Figura 10 - Sistema agrivoltaico in cui la coltivazione avviene tra le file dei moduli fotovoltaici, e non al di sotto di essi (TIPO 2).





Fonte: Alessandra Scognamiglio, ENEA

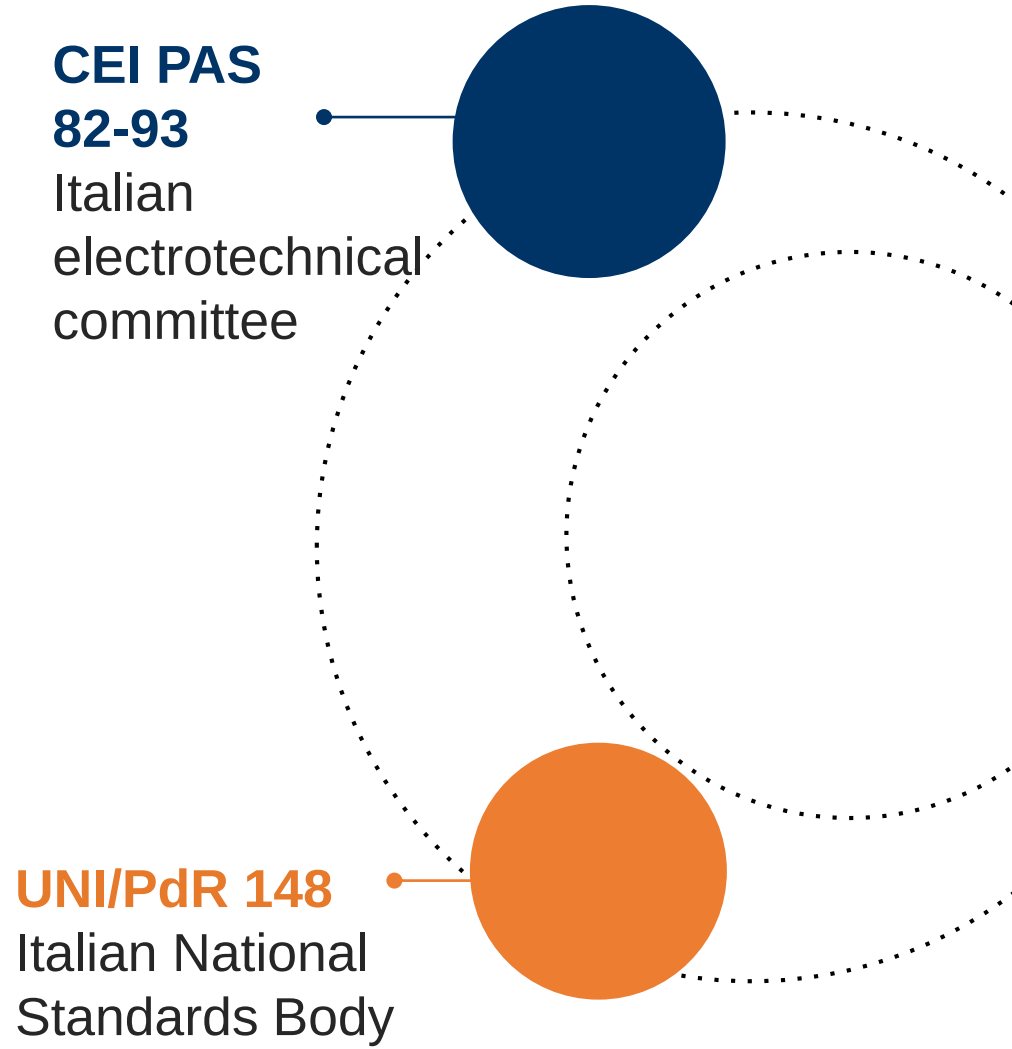
Figura 11 - Sistema agrivoltaico in cui i moduli fotovoltaici sono disposti verticalmente. La coltivazione avviene tra le file dei moduli fotovoltaici, l'altezza minima dei moduli da terra influenza il possibile passaggio di animali (TIPO 3).



Fonte: Alessandra Scognamiglio, ENEA

Reference practices

Reference practices are documents that introduce technical prescriptions or application models of technical standards, in the absence of national, European or international standards or draft standards.



Waiting for….
decarbonization

Ministerial Decree on Agrovoltaics (PNRR)

In April 2021 a €1.1 billion government plan was presented to encourage deployment of at least 1.04 GW of advanced agrivoltaic systems by end-June 2026.

The installations must include innovative mounting solutions that place solar modules above the ground without compromising the continuity of agricultural operations.

- **The draft was submitted to European Commission for approval**
- The aim is to promote the installation of innovative agroPV systems

The incentive will consist of:

- a capital contribution up to max. 40% of eligible costs
- a "two-way" incentive tariff based on the share of electricity produced and fed into the grid

The tariff is two-way with the refund of the difference between the zonal price and the value of the incentive.

Ministerial Decree Agrovoltaic (PNRR)

To promote the implementation of interventions in the world of agricultural entrepreneurship, **two distinct power contingents are foreseen for access to the procedures**:

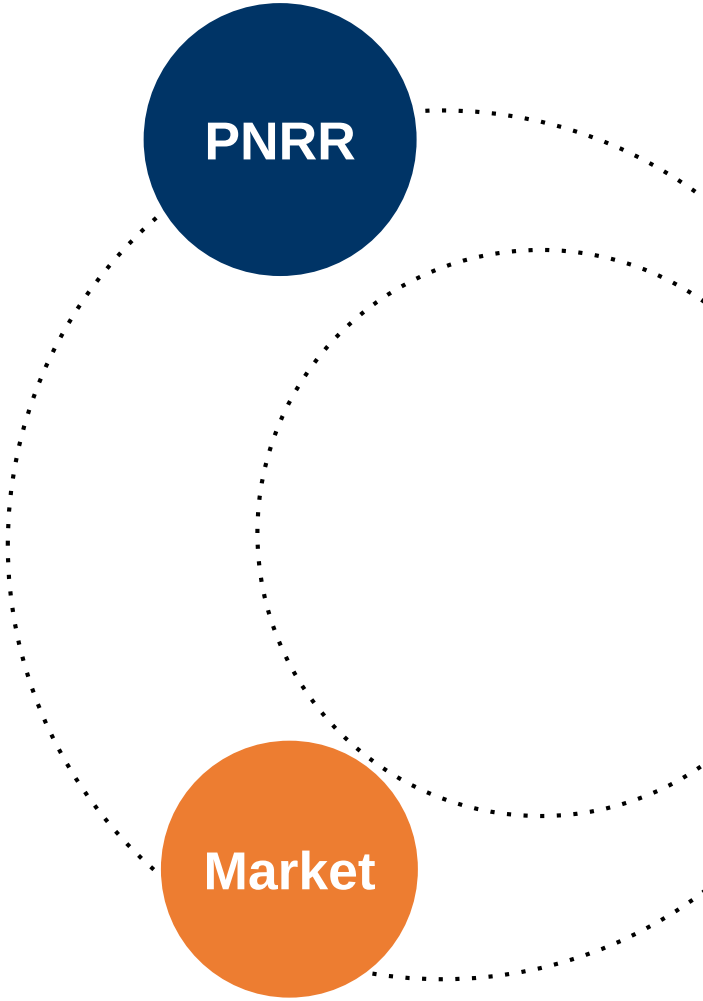
1. a first quota of 300 MW intended only for the agricultural sector for plants with installed capacity of up to 1 MW;

2. a second quota of 730 MW for plants exceeding 1 MW is also open to temporary business associations made up of at least one entity from the agricultural sector for plants of any capacity.

R&D and market parity

It is important to point out that agro-photovoltaic must be divided into **two subcategories** which must develop in parallel:

1. **Research and development**: this is why the PNRR is needed as a way to finance experts in order to find the best integration solutions between the two systems
2. **Systems that can be market-based**, efficient and that can be created without excessive constraints that would otherwise make them unfeasible (for example, freeing themselves from concepts such as minimum height). We should create efficient systems that do not require PNRR funds that limit interference between the electricity and agricultural systems and in which the maximum production efficiency of both systems is maintained.



Costs

Using steel is not an innovation: elevated systems with fixed maximal height sometimes do not make sense.
Ministerial guidelines and other regulatory guidance documents qualify systems with minimum heights of 2.1 meters and 1.3 meters for agricultural crops and livestock activities, respectively. Excessive constraints will not allow for technology-neutral research.

Creating high steel structures at all costs does not mean creating innovation.
It is necessary to overcome the idea of minimum heights proposed in the guidelines, allowing the choice of parameters in relation to the crops and project specifications. A greater height, in addition to representing an unjustified cost, makes integration with the landscape more difficult.

«The right way»

Do we want agrovoltaics to be limited to only 1 GW of the PNRR? Or rather that it can truly represent a new model that contribute to achieving decarbonisation objectives first for 2030 and then for 2050?

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