Agrisolar and agrivoltaics best practices in EU

Lina Dubina, SolarPower Europe
Eva Vandest, chair of Land Use & Permitting WS

The meeting of CDG CAP STRATEGIC PLANS and HORIZONTAL MATTERS on the 23rd November

SolarPower Europe

- **Representing the whole solar value chain -** 300 organisations
- **Working closely with 30+ national associations**
- Based in Brussels

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300+ organisations

We work closely with 30+ national associations

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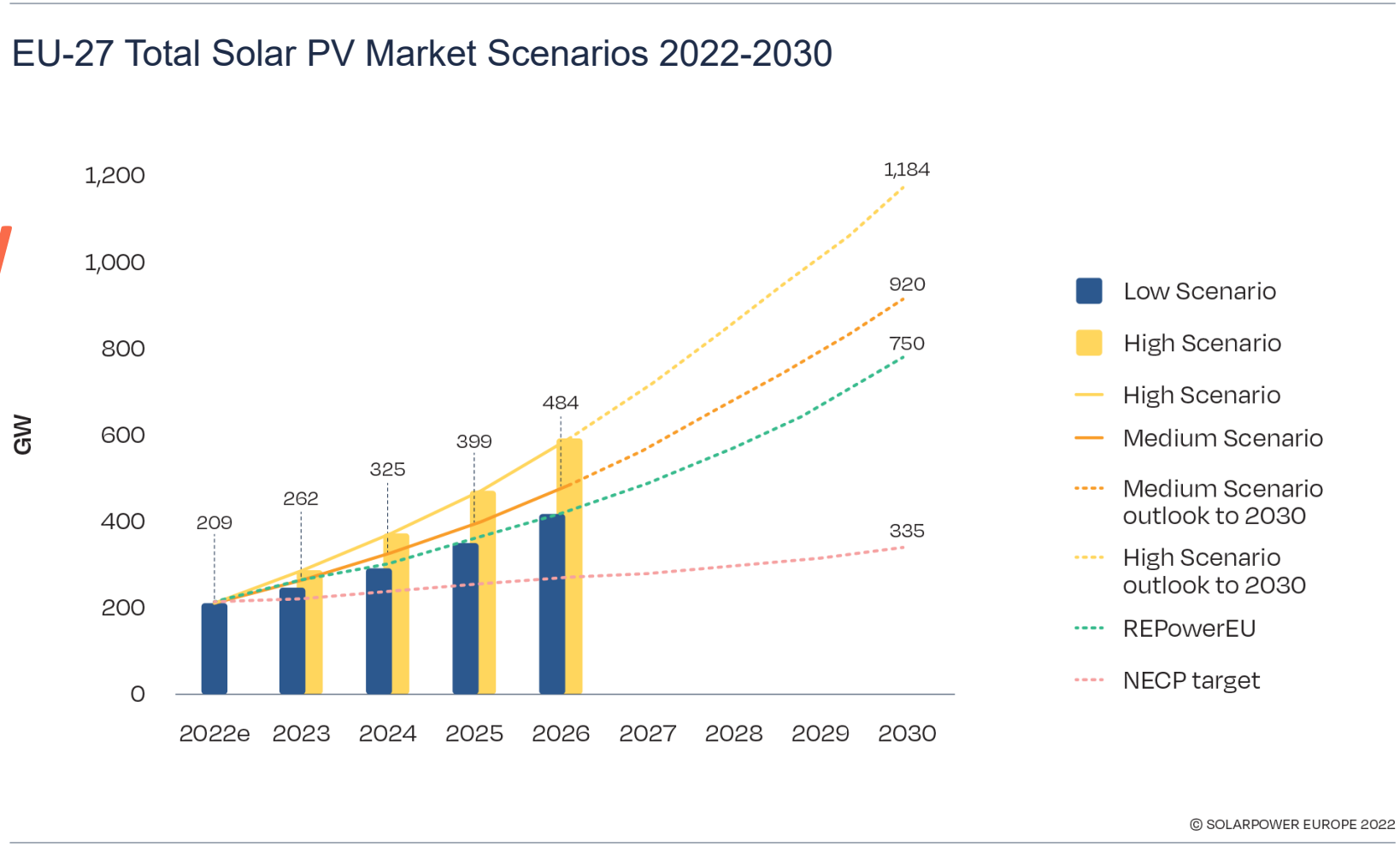
EU 2030 Medium Scenario: 920 GW



Europe ’s ambitious TW objectives will require the mobilisation of all existing surfaces suitable for PV. Scaling-up dual-use of land will support the achievement of EU’s solar targets.

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Agrisolar Best Practice Guidelines vol 2

Eva Vandest, chair of Land Use & Permitting Workstream

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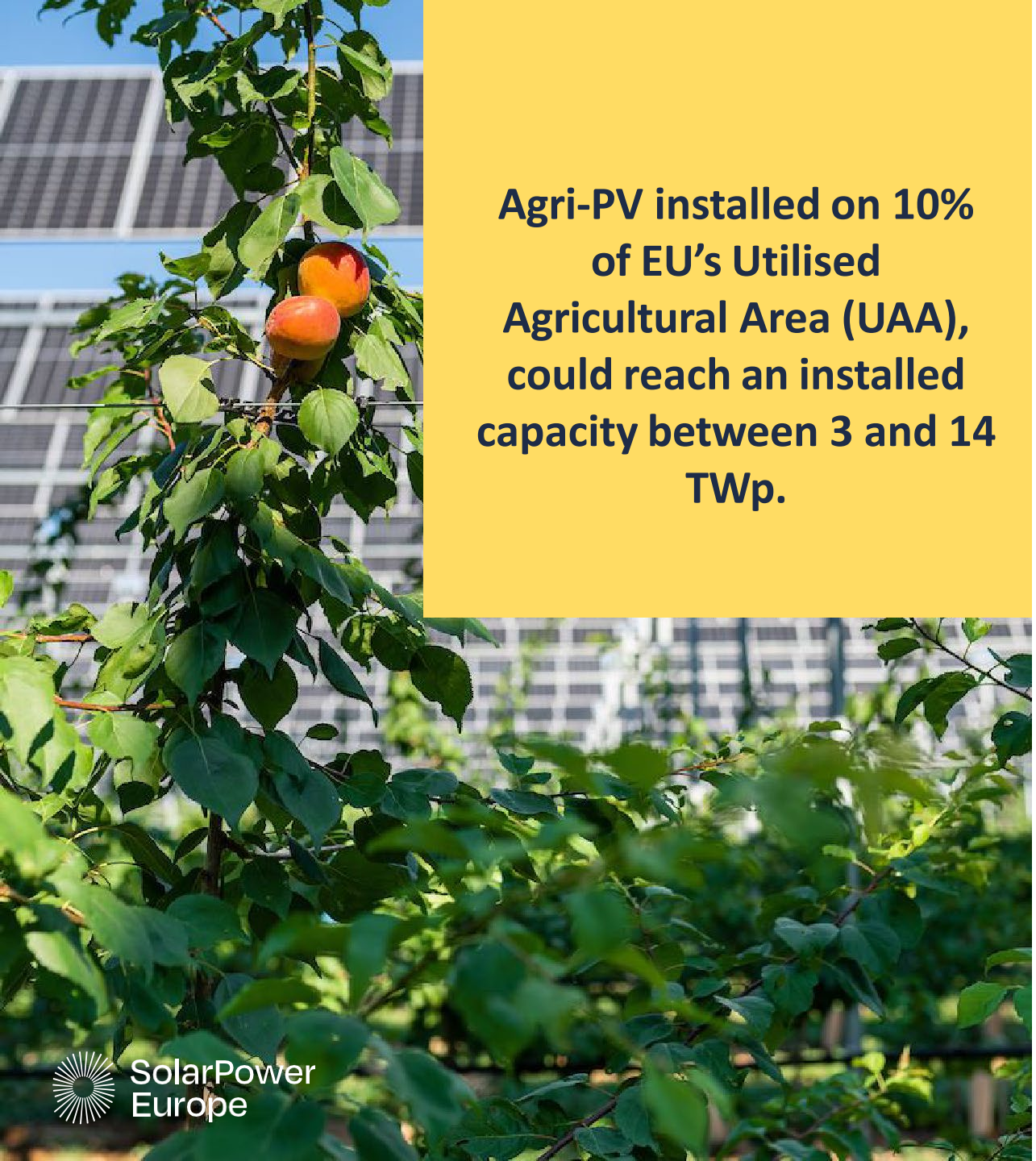

Agri-PV installed on 10% of EU's Utilised Agricultural Area (UAA), could reach an installed capacity between 3 and 14 TWp.

- **REPowerEU targets** of **45% renewables** in the EU mix and acceleration of the rollout of PV energy with a **EU Solar Energy Strategy**
- **Agri-PV can contribute** to the **1TWp** solar target* by 2030 and **5TWp** solar target by 2050
- **Nature loss:**
  - 60-70% of EU's soils are degraded
  - 1 million animal and plant species are endangered
  - In EU, >80% of continents habitats are under critical conditions

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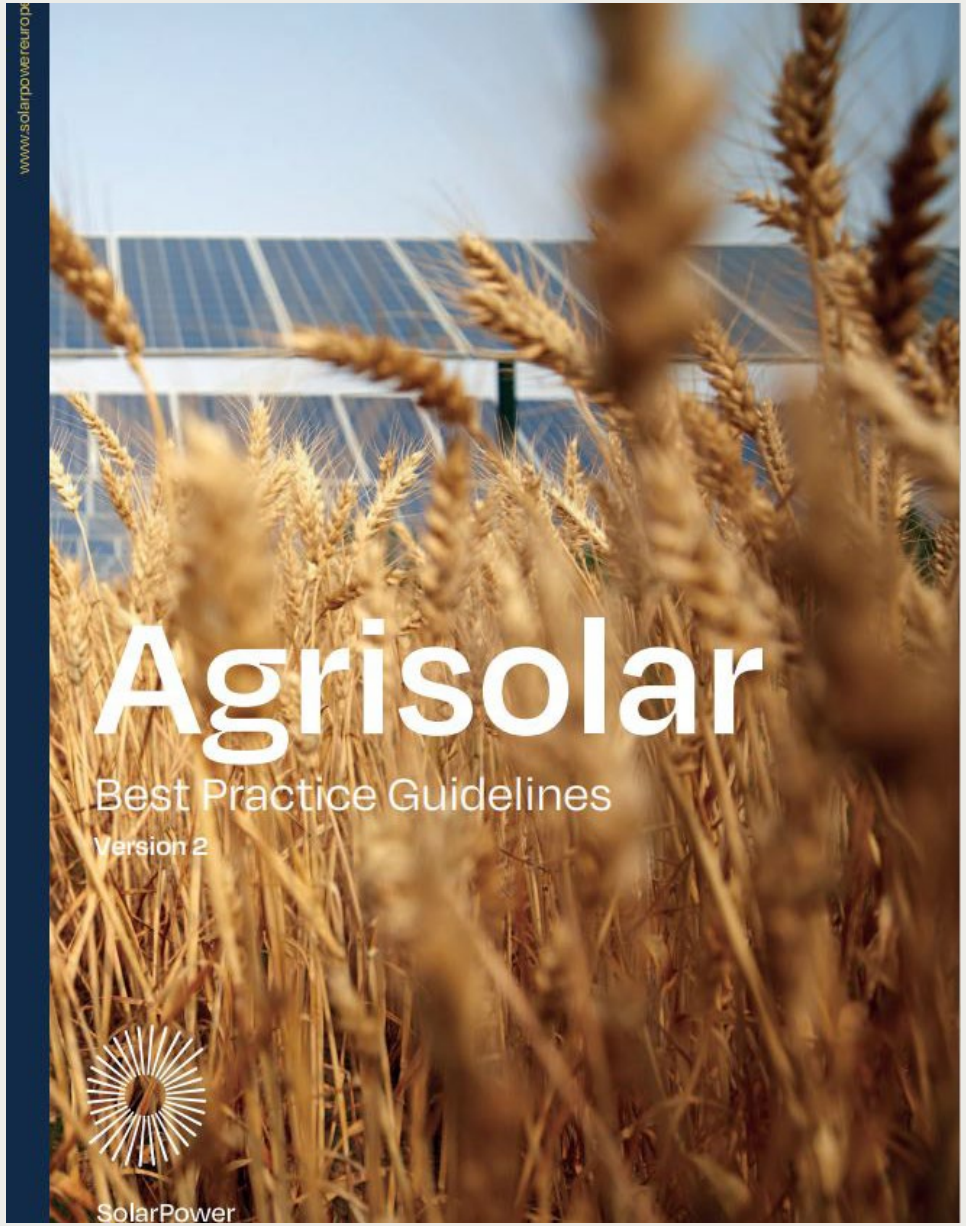

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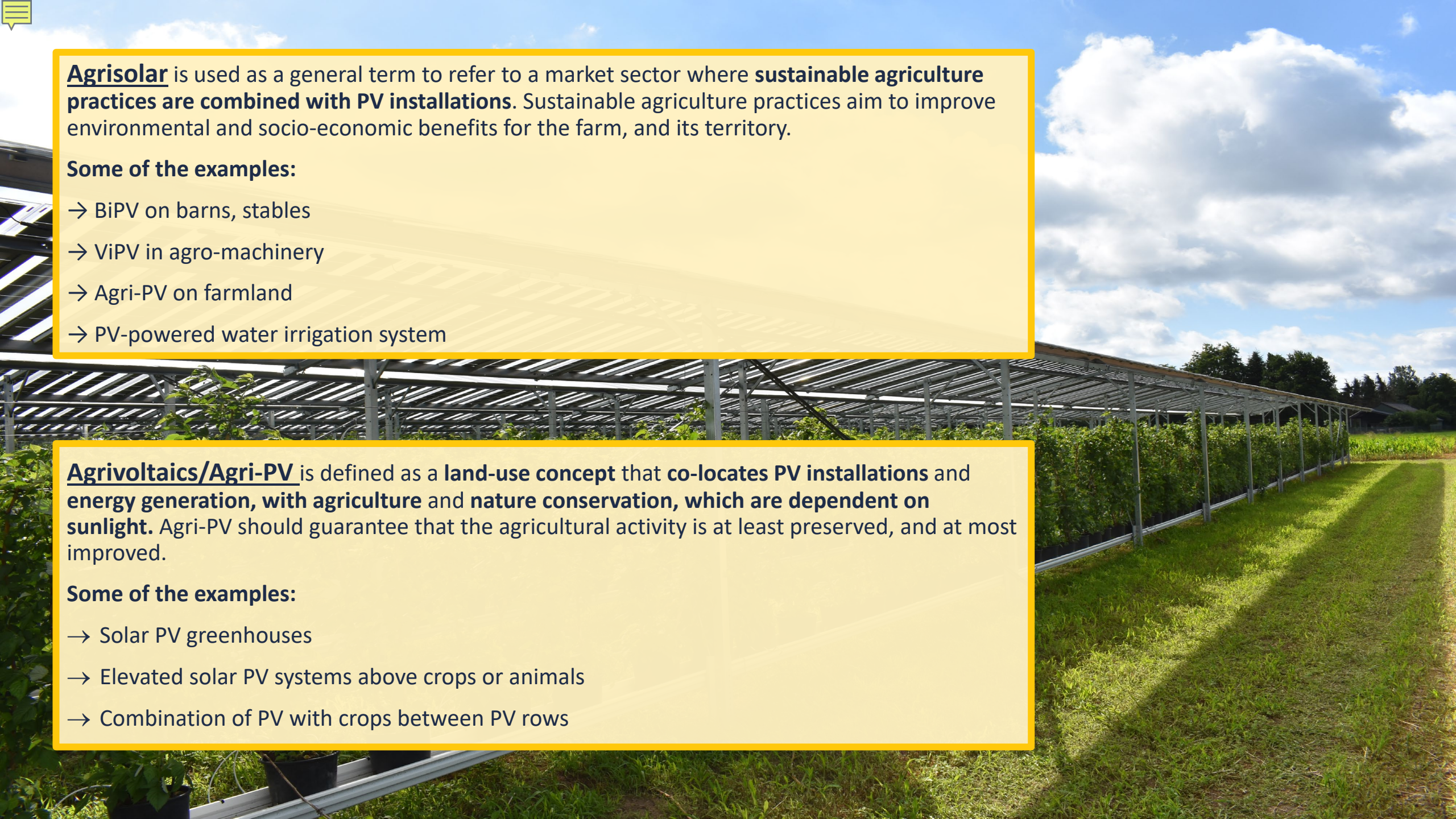
Sustainable Agricultural Concept ‘SAC’ & Best practices

- An Agrisolar best practices guide **version 2** to integrate the past **2 years of evolution**
- ABPG **pillars** remain the same:
  - **Approach** and **design** a project in **collaboration** with the farmer, starting with an analysis of the **specific needs** according to **local conditions**
  - Introducing a sustainable agricultural concept « SAC » with a **3 stars approach** in order to encourage the most virtuous projects with the best **economic, environmental,** and **social impacts**.



Agrisolar is used as a general term to refer to a market sector where **sustainable agriculture practices are combined with PV installations**. Sustainable agriculture practices aim to improve environmental and socio-economic benefits for the farm, and its territory.

Some of the examples:

→ BiPV on barns, stables

→ ViPV in agro-machinery

→ Agri-PV on farmland

→ PV-powered water irrigation system

Agrivoltaics/Agri-PV is defined as a **land-use concept** that **co-locates PV installations** and **energy generation, with agriculture** and **nature conservation, which are dependent on sunlight.** Agri-PV should guarantee that the agricultural activity is at least preserved, and at most improved.

Some of the examples:

→ Solar PV greenhouses

→ Elevated solar PV systems above crops or animals

→ Combination of PV with crops between PV rows


Source: BayWa r.e.


Source: Akuo Energy


Source: Amarenco

Diversity & Best Practices


Source: Insolight


Source: Lightsource bp


Source: Ombrea


Source: ENEL

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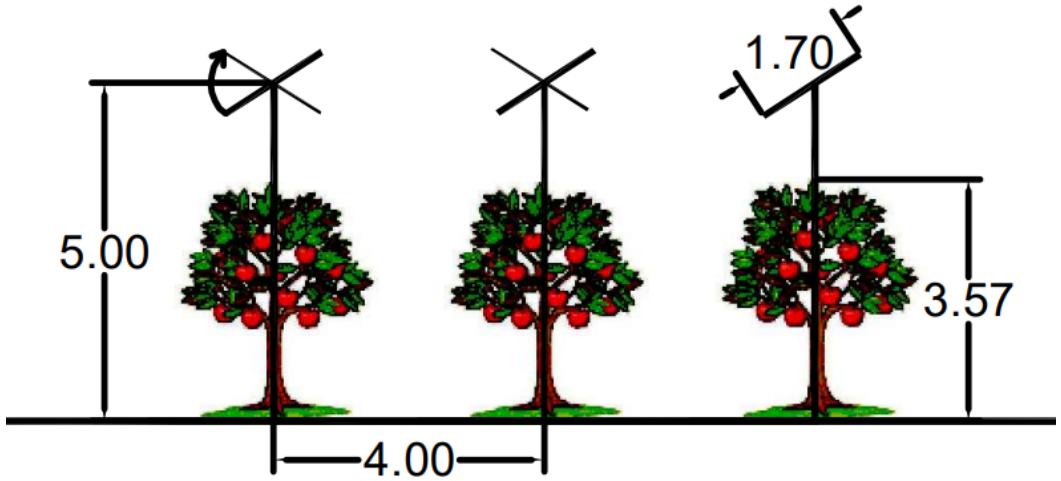
Example of impact for a coverage rate (GCR) of 43% for full panels in the south of France:

Example of a corresponding PV structure :

- 4m between rows, north-south orientation
- Full pannels are 1,7m width and 5m height



- Shade varies throughout the day, averaging 50%,
- Average temperature reduction in July of 1.2°C, up to 3.8°C.
- Keeps frost out in winter by increasing temperature by 2 to 3°C
- Higher air humidity in summer (average +1.9%, up to +14% in the hottest hours)
- Around 30% water saved for irrigation (without recovery system)

Adapting developers to agricultural constraints

Use semi-transparent panels to maximize crop protection and limit the negative effects of too much or too uneven shade :

- GCR of 50% panels at 33% ⇔ GCR of 30% full panels
- Virtually homogeneous ground shading throughout the day, reducing leaf adaptation times before photosynthesis resumes

Move from dynamic agrivoltaics with solar tracking to agricultural tracking:

- Switching off the panels at times when the plant needs the most light
- A return to solar tracking in the event of excessively high radiation and/or temperatures, to protect the plant
- Horizontal orientation to protect against frost, rain or hail
- Combine with a rainwater collection and storage system

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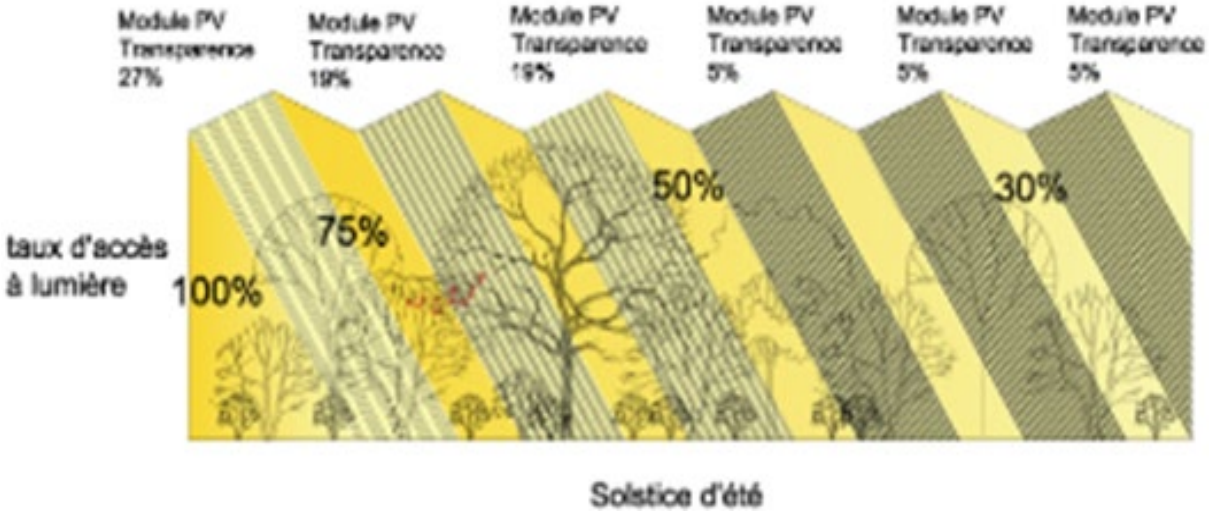
Draw inspiration from agroforestry to improve agrivoltaic models :

- Encourage crop associations and the simultaneous planting of shade loving and light loving species, thanks to specific shelter or greenhouse designs.
- The possibility of using certain "lost" spaces under structure to encourage the development of crop auxiliaries (planting hedges, leguminous plants, etc.) and / or enhance biodiversity



An opportunity for agriculture in a context of climate change:

- Protective effects will help maintain yields despite hazards
- Additional income to help "save" strategic sectors and to finance a period of transition

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Key takeaways from the Agrisolar workshop between agriculture and solar industries

- Energy production in Agriculture is not new, But PV in Agriculture is new
- There is a mutual interest from both sectors, and further cross-sectoral dialogues need to be strengthened to design common positions
- Introducing Agrisolar in CAP strategic plans regarding decarbonisation objectives and biodiversity obligations is key, in particular as an answer to the CAP echo schemes
- Harmonize EU regulations to allow multiple uses of land for integrated approaches in all EU member states

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Thanks for listening

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