

TRAINING ACTIVITIES

Objectives

The CACTUS workshop, organized as part of the European CACTUS project's final general assembly in the University of Granada, and open to all interested participants, was focuses on two critical dimensions: the social and sustainability aspects of photovoltaic deployment, and the unique climate-specific challenges faced across Europe and beyond in the Operation & Maintenance (O&M) of PV system.

This present file is dedicated to the second part of the workshop, about Operation and maintenance (O&M) of PV.

Thanks to experts within and outside CACTUS consortium, invited to join keynote presentations and panel discussions, the second part of the workshop was aimed to:

- Address the technical and environmental hurdles posed to O&M by diverse climatic conditions, from Mediterranean heat to Northern European winters, and evaluate the potential future improvement of digital AI-based and robotized solutions.
- Encourage knowledge exchange at international level, via collaboration and open access data and knowledge sharing.

DETAILED PROGRAMME:

15:30 Opening Talks

- Welcome by UGR
- Introduction by EU-SOLARIS – Sarah Essam
- Introduction to the CACTUS project – Ioannis Tsanakas
- Keynote: EU–Latin America cooperation for a sustainable energy transition – Organization of Ibero-American States

16:00 Session 1: Sustainability with Social and Environmental Aspects for the Energy Transition

Moderator: Delfina Muñoz

- Keynote 1 – Prof. Nieves Espinosa
Covers environmental, economic, and social sustainability of PV systems, including lifecycle impacts, equity, supply chain ethics, and circular economy.
- Panel Discussion – Panelists:
Cristina Polacchi (EURAC) / Nouha Gazbour (CEA) / Prof. Bilge Şentürk (ODTÜ-GÜNAM) / Felipe Valencia (ATAMOSTEC) / OEI representative / Nieves Espinosa

17:00 Coffee Break

17:30 Session 2: PV Deployment for the Energy Transition: Climate Resilience and Digitalization

Moderator: Ioannis Tsanakas (CEA)

- Keynote 2A – Veronica Bermudez
Climate-specific PV deployment and O&M strategies for extreme conditions: heat, flooding, dust, hailstorms, etc.
- Keynote 2B – Sandra Gallmetzer (EURAC)
Automation and Adaptation in PV Operation and Maintenance.

- Panel Discussion – Panelists:
Sandra Gallmetzer (EURAC) / Carmen Alonso (CIEMAT) / Hervé Colin (INES / CEA) / Felipe Valencia (ATAMOSTEC) / Veronica Bermudez

18:30 Closing Remarks & End of Workshop

Results

The CACTUS workshop successfully brought together a diverse group of experts and stakeholders to advance the dialogue on photovoltaics in the energy transition. The event opened with welcoming remarks from the University of Granada and introductions by EU-SOLARIS and the CACTUS project, setting the stage for a collaborative atmosphere. The keynote from the Organization of Ibero-American States underscored the importance of EU–Latin America cooperation for sustainable energy solutions, inspiring participants to consider global perspectives.

Session 2 addressed climate resilience and digitalization in PV deployment. Veronica Bermudez’s keynote explored operational and maintenance strategies for extreme conditions such as heat, flooding, and dust, while Sandra Gallmetzer (EURAC) discussed automation and adaptation in PV operations. The subsequent panel, featuring experts from CIEMAT, INES/CEA, ATAMOSTEC, and others, delved into the challenges of deploying PV systems in diverse climates and the role of digital tools in optimizing performance and reliability. Participants agreed on the importance of robust design, predictive maintenance, and data-driven decision-making to ensure long-term sustainability.

The workshop concluded with closing remarks, celebrating the active participation and rich exchange of ideas. Attendees left with a deeper understanding of the social, environmental, and technical challenges facing the energy transition, as well as practical strategies for advancing PV deployment in Europe and Latin America.

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Pictures



4 November 2025

Photovoltaics in Energy Transition: Social/Sustainability Aspects and Climate-specific Challenges



Salón de Grados de Matemáticas
Faculty of Science, **University of Granada**



Hybrid format:
On site & Online



15:30 - 18:30

Free workshop open to everyone!



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Figure 1 Virtual flyer of the event



Figure 2 Pictures of second session of panel discussions

Training Activity

Date

Number of attendees

Place and country

Consortium Partners involved

Additional Notes

Hybrid Workshop - Photovoltaics in Energy Transition: Social/Sustainability Aspects and Climate-specific Challenges – Session 2 – O&M

04/11/2025

Online attendees? - Around 20 in person

Hybrid - University of Granada, Spain and online, hosted via Teams by BI

CEA, ESRF, ILL, EURAC, TECNALIA, BI, ATAMOSTEC, EU SOLARIS, UNC

N/A



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