CACTUS

PRESS RELEASE

EU Project CACTUS Concludes: Advancing Climate-Resilient Solar PV through Coordinated Research Infrastructures

Brussels / Grenoble, February 2026 — The EU-funded Horizon Europe project **CACTUS** (Enhanced Solar Photovoltaic Performance Through Improved Research Infrastructure for Adapted Climate Conditions) has successfully concluded after 24 months of coordinated collaboration between Europe and Latin America.

CACTUS addressed a critical challenge for the global energy transition: ensuring the **long-term performance, reliability and sustainability of photovoltaic (PV) systems** deployed under increasingly diverse and harsh climatic conditions. Rather than developing new PV technologies, the project focused on **strengthening and aligning existing research infrastructures**, enabling robust, comparable and policy-relevant evidence across regions and climates.

A central outcome of CACTUS is the creation of a **coordinated EU–Latin America ecosystem of photovoltaic research infrastructures**, integrating indoor laboratories, outdoor test sites and large-scale analytical facilities. Harmonised methodologies for PV performance assessment, degradation analysis, operation and maintenance (O&M), and sustainability evaluation were developed and applied across multiple climatic contexts.

The project delivered **harmonised multi-climate datasets**, **a publicly accessible data platform**, and several **open-source tools**, supporting reproducibility, transparency and long-term reuse by the wider PV community. These resources enable improved benchmarking of performance losses, degradation mechanisms and climate-specific operational strategies.

CACTUS also demonstrated the value of **advanced synchrotron X-ray and neutron-based diagnostics** for photovoltaic reliability research, providing unprecedented insight into early-stage degradation processes at cell and module level. By linking laboratory-scale diagnostics with field performance data, the project strengthened the scientific basis for lifetime modelling and bankability assessments.

Operational challenges were addressed through **climate-adapted O&M approaches**, with particular attention to soiling and performance losses in arid and desert environments. Field campaigns showed that site-specific strategies are essential to optimise energy yield, reduce operational costs and improve long-term system resilience.

Beyond technical achievements, CACTUS delivered strong **capacity building and knowledge transfer**, engaging more than 150 participants through workshops, trainings and researcher exchanges, and establishing durable cooperation pathways between European and Latin American research infrastructures.

Finally, CACTUS provides **policy-relevant insights** on the sustainability and governance of research infrastructures, highlighting the need for long-term monitoring, harmonised data practices and sustained operational support to ensure reliable, climate-resilient PV deployment.

With its integrated approach bridging experimental science, infrastructure coordination and decision support, **CACTUS offers a scalable model for international research infrastructure cooperation**, supporting evidence-based photovoltaic deployment in the context of climate change.

The project's results will be formally presented to the European Commission during the **Final Review Meeting on 25 February 2026 in Brussels.**

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