EU PVSEC

EU PVSEC 2026

43rd European Photovoltaic Solar Energy Conference and Exhibition

14 — 18
September

WTC —
World Trade Center

Rotterdam —
The Netherlands

Conference

CALL FOR PAPERS

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AUTHORS WISHING TO CONTRIBUTE TO THE CONFERENCE PROGRAMME OF THE EU PVSEC 2026 SHOULD SUBMIT AN ABSTRACT AT THE LATEST BY

2 FEBRUARY 2026

Authors are invited to carefully read the topic descriptions and select the topic and subtopic which most closely matches the key novelty of their work. Please note that some topic areas have been renumbered and restructured. The subtopic descriptions are brief and non-exhaustive, while at the same time self-explanatory so that locating the correct area is straightforward.

MESSAGE FROM THE TECHNICAL PROGRAMME CHAIR

PV TRANSFORMING THE GLOBAL ENERGY SYSTEM

You are probably reading this because you are planning to share your work or are interested in learning about PV and the energy transition at the leading event for PV research. You are in the right place – the EU PVSEC covers the whole value chain of solar PV, the fastest growing energy source that is powering the energy transition1,2. It showcases research from leading workers in the field as well as the leading companies in the sector, as can be seen in these highlights. I am for this reason pleased to announce the call for papers for the 43rd European Photovoltaic Solar Energy Conference (EU PVSEC), which will take place in Rotterdam, 14-18 September 2026.

Renewable sources such as wind and the faster growing solar PV are now mature and affordable industrial ecosystems that are rapidly growing and transforming the global energy system. No corner of the globe is untouched by this transformation, which is destined to lead to the eventual phase-out of expensive and polluting fossil fuels.

Such growth naturally comes with challenges which need addressing in the context of the energy sector as a whole and indeed of wider society. The broader energy system needs to understand what PV technologies can offer and conversely the PV sector needs to understand how its systems can fully integrate with an increasingly electrified energy system.

I highlight some key challenges here. The large amounts of variable power require improved grid management strategies and flexibility enablers, including storage. PV systems also require space, and the good news is that they can easily and efficiently work integrated into buildings and other infrastructure, floating, or complementing agriculture. During this transition it is also essential to engage policy makers and society to ensure that everyone can share the benefits. PV also needs to prove itself as 100% sustainable, and much progress is being made in reducing material usage, especially those in short supply and ensuring full recyclability. Supply chain resilience is also of importance to ensure all regions of the world can always have full access to this irreplaceable technology and can have fair access to clean energy technologies. Even though current cell technologies are already very competitive, progress continues, and new cell material and design concepts are constantly leading to improvements in efficiency, costs and material consumption. The rapid expansion of digitalisation and the application of AI techniques throughout the value chain, in design, modelling, operation and O&M is critical.

The scientific programme is broken down in 5 topics: **Silicon Materials and Cells**, addressing improvements in feedstock, wafering and high-efficiency cell concepts; **Perovskites and Other Thin-Films; Tandems; New Concepts**, focusing on stability, scalable processing and next-generation architectures; **Photovoltaic Modules**, covering module design, manufacturing and performance and durability; **Systems Design and Operation; Applications**, examining PV and hybrid systems and the range of applications like Floating, Agri-PV and BIPV; and **Photovoltaics in the Energy Transition**, analysing and developing new deployment pathways, grid integration, sustainability, socio-economics and evolving market frameworks.

I warmly invite you to submit your work and join us in Rotterdam to ensure your contribution to solving all these challenges and more.

Dr Robert Kenny
European Commission Joint Research Centre
EU PVSEC Technical Programme Chair

[1]IEA (2025), Renewables 2025, IEA, Paris https://www.iea.org/reports/renewables-2025, Licence: CC BY 4.0
[2]IRENA (2025), Renewable capacity statistics 2025, International Renewable Energy Agency, Abu Dhabi.

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CONFERENCE TOPICS & SUBTOPICS

INTRODUCTION TO THE CONFERENCE TOPICS OVERVIEW

The **EU PVSEC** aims to cover the broad spectrum of multidisciplinary efforts required to ensure the rapid deployment of **PV and other sustainable technologies** on a global scale as key enablers of the ongoing energy transition.

The Conference spans the **entire photovoltaic value chain**, highlighting the developments from fundamental science, e.g., early-stage material and concepts research, to cells & modules, applications, and the deployment of fully integrated PV systems. It addresses scientific, technological, and industrial innovation across the **full TRL spectrum**.

The scientific programme is broken down in 5 topics: **Silicon Materials and Cells**, addressing improvements in feedstock, wafering and high-efficiency cell concepts; **Perovskites and Other Thin-Films; Tandems; New Concepts**, focusing on stability, scalable processing and next-generation architectures; **Photovoltaic Modules**, covering module design, manufacturing and performance and durability; **Systems Design and Operation; Applications**, examining PV and hybrid systems and the range of applications like Floating, Agri-PV and BIPV; and **Photovoltaics in the Energy Transition**, analysing new deployment pathways, grid integration, sustainability, socio-economic questions and evolving market frameworks.

While the conference embraces the full scope of PV research and innovation, several themes stand out as particularly dynamic at present. **Hybrid PV solutions, Flexibility Enablers and Storage, Grid integration and stability, Manufacturing, Supply Chain Resilience, and Sustainability**. Application of AI techniques is expanding rapidly in design, modelling and O&M.

By connecting scientific progress with industrial, market and societal needs, the conference aims to foster solutions that support a robust and competitive PV sector within a broader energy system.

General note for Authors: Choice of Subtopic.

We appreciate that it is not always obvious which subtopic to choose when elements of your work overlap different subtopics. We suggest submitting to the subtopic which is most closely related to the aspect of the work with the principal novelty.

N.B. Topic Organisers may redirect your abstract in case it appears to be incorrectly allocated, so it will be sure to be properly evaluated.

TOPIC 1 - Silicon Materials and Cells

TOPIC 1 COLLECTS ALL ABSTRACTS DEALING WITH CRYSTALLINE SILICON UP TO CELL LEVEL. AMORPHOUS AND MICROCRYSTALLINE SILICON ARE COVERED IN SUBTOPIC 1.2 AND 1.3. THE WHOLE SPECTRUM OF SI TECHNOLOGY IS DIVIDED INTO 5 SUBTOPICS THAT ADDRESS TYPICAL ISSUES AND FIELDS OF TECHNOLOGY DEVELOPMENT, INCLUDING DIRECTLY RELATED ASPECTS OF SUSTAINABILITY, MANY OF THEM AT THE CORPORATE R&D LEVEL. USE OF AI TECHNIQUES APPLIED TO SILICON MATERIALS AND CELLS.
AN EXCEPTION IS TANDEM STRUCTURES THAT COMBINE OTHER MATERIALS WITH SILICON, WHICH ARE GROUPED IN SUBTOPICS 2.1 (PEROVSKITE-BASED TANDEMS) AND 2.3 (ALL OTHER TANDEM MATERIALS). CONTRIBUTIONS WHICH FOCUS ON THE ENCAPSULATION AND RELIABILITY OF SI MODULES OR ELECTRICAL PERFORMANCE MEASUREMENT TECHNOLOGIES ARE BETTER PLACED IN TOPIC 3. ALSO, CONCENTRATOR AND SPACE APPLICATIONS OF SILICON PV ARE PLACED IN SUBTOPIC 4.6.

1.1 Silicon Material Science and Technology
Novel and advanced production technologies for silicon, solar-grade silicon properties and specifications, ingots and wafers, kerf free wafer technologies including crystalline silicon foils (epitaxy, direct wafer manufacturing), testing, performance, sustainability, and costs. Influence of crystallisation and/or growth parameters, impact of residual or development of defects and impurities, and their mitigation.

This subtopic focuses on all the steps required to produce high-quality silicon up to wafer stage ready for subsequent cell fabrication as well as research in silicon foils and thin silicon material growth and characterization such as direct wafer growth/kerfless technologies.

1.2 Single Junction Silicon Cell
Subtopic 1.2 is where research work on crystalline Si cell architectures is presented, and which employ either high temperature or low temperature processing routes. This includes solar cell architectures such as, e.g., PERC, TOPCon, back-contact, and silicon heterojunction technologies, as well as their derivatives and hybrids. Cells based on amorphous and microcrystalline silicon, thin crystalline silicon, and silicon foils are also contained within this subtopic. Approaches to enhance sustainability and circularity at cell level are also covered here. These include alternative metallization approaches, such as the reduction of silver consumption.

N.B. Works in Si bottom cells for Tandem Photovoltaics should be addressed to subtopic 1.3.

1.3 Silicon Bottom Cells for Tandem Photovoltaics
Subtopic 1.3 has been created as a home for research into the transformation of single-junction silicon cells into designs appropriate for use as silicon bottom cells in tandem and multijunction devices, such as perovskite-silicon tandems. Examples of such work are front surface topology, interface layers, front TCO, front tunnel junction, light trapping, adapted metallization, thermal budgets compatible with top cell (e.g. perovskite) integration, etc.

N.B. This subtopic is strictly aimed at developments where the scientific novelty of the work is in the necessary Si cell modifications and presentations of full tandem devices should be directed to the tandem subtopics 2.1 or 2.3 as appropriate.

1.4 Characterisation & Modelling of Silicon Cells
Measurement and modelling of innovative Si cell concepts. Advanced modelling and analysis tools using AI techniques.

Characterisation and modelling of cells are of crucial importance in the development of innovative concepts and architectures. All such work should be submitted to this subtopic.

1.5 Manufacturing of Silicon Cells
Novel or improved manufacturing solutions and strategies, automated production processes and systems, quality assurance in production. AI techniques used to improve these processes. Various contacts for Si solar cells - pastes, screen printing, plating, etc. Sustainability aspects of the manufacturing processes, e.g materials consumption at cell level.

Improvements in manufacturing solutions for mass production are crucial in order to continue the drive towards lower costs, while maintaining high quality and sustainability standards. New developments in production technologies should be submitted to this subtopic, including for example, transferability of laboratory results to industrial formats (M10/M12, 210mm, thin wafers); yield loss mechanisms and process variability at pilot and GW scale lines; failure modes linked to ultra-thin wafers (<100 µm).

TOPIC 2 - Perovskites and Other Thin-Films; Tandems; New Concepts

THIS TOPIC IS DIVIDED INTO THE DIFFERENT PHOTOVOLTAIC MATERIALS CURRENTLY USED OR IN THE CONCEPT OR DEMONSTRATION PHASE THAT ARE NOT BASED ON SILICON. AN EXCEPTION IS TANDEM STRUCTURES COMBINING OTHER MATERIALS WITH SILICON, WHICH ARE GROUPED IN SUBTOPICS 2.1 (PEROVSKITE-BASED TANDEMS AND MULTIJUNCTIONS) AND SUBTOPIC 2.3 (ALL OTHER TANDEMS AND MULTIJUNCTIONS). THE TOPIC COMPRISES THEORETICAL STUDIES, INNOVATIONS IN PROCESSING AND MANUFACTURING TECHNOLOGIES AS WELL AS UPSCALING, MEASUREMENT AND CHARACTERISATION, AND USE OF AI TECHNIQUES. IF THE PAPER DESCRIBES ENCAPSULATION AT MODULE LEVEL, IT IS BETTER TO SUBMIT UNDER SUBTOPIC 3.1. FOR MATERIALS WHICH DON'T FALL UNDER ANY OF THE MATERIALS LISTED IN SUBTOPICS 2.1 TO 2.3, CONSIDER SUBTOPICS 2.4 AND 2.5, WHICH COLLECT CONTRIBUTIONS FROM ONGOING CUTTING-EDGE RESEARCH INTO UNDERSTANDING PHOTOVOLTAIC CONVERSION, INCLUDING NEW MATERIALS AND CROSS-FERTILISATION WITH OTHER FIELDS OF OPTOELECTRONICS. SPACE APPLICATIONS OF PV ARE PLACED IN SUBTOPIC 4.6 OTHER PV APPLICATIONS (FLOATING, INFRASTRUCTURE, ETC.); CPV; PV IN SPACE

2.1 Perovskite-based Tandem and Multijunction Devices

This subtopic focuses on perovskite-based tandem and multijunction solar cells such as perovskite-silicon, all-perovskite or perovskite combined with other materials. Work addressing lifetime, reliability, stability, scalability, yield, and manufacturability challenge is also covered in this subtopic. For multijunction structures not containing perovskite see subtopic 2.3. For research focusing on the transformation of single-junction silicon cells into designs appropriate for use as silicon bottom cells in multijunction devices, please see Subtopic 1.3. Module level studies, such as manufacturing and field performance may be better placed in Topic 3.

This subtopic brings together the increasing research into tandem and multijunction structures employing perovskites. In the first instance this typically envisages structures on silicon, but all other combinations (such as all-thin-film multijunctions involving perovskite) are welcome. The subtopic comprises theoretical studies, innovations in processing and manufacturing technologies and upscaling, measurement and characterisation. Work related to degradation mechanisms and transient behaviour of the cell materials singly and combined, including improving material composition, and the related stress tests, on packaged cells, mini-modules and packaged mini-modules are to be submitted here, as well as works covering large-area processing and yield uniformity; reproducibility under pilot-line conditions; failure mechanisms in 2T vs 4T tandems at scale; thermo-mechanical stress and industrial module integration. N.B. For III-V multijunction devices and other tandems not employing perovskites, see subtopic 2.3.

2.2 Perovskites

Lead halide perovskites and their lead-less or lead-free analogues, perovskite-based devices, modelling, chemical synthesis, encapsulation, up-scaling technologies and strategies. Work related to improving the lifetime and reliability of perovskite devices. Applied AI techniques. Module level work, such as module manufacturing, characterisation and field performance may be better placed in Topic 3.

The subtopic comprises theoretical studies, innovations in processing and upscaling (including interconnection techniques such as monolithic interconnection via laser scribing), measurement, modelling and characterisation, and reproducibility at multisite and/or multi-laboratory scale. Work related to degradation mechanisms and transient behaviour of the cell materials, including improving material composition, ion migration and its system-level impact, and the related stress tests, on packaged cells, mini-modules and packaged mini-modules are to be submitted here. Multijunctions employing perovskites are excluded from this subtopic (please refer to subtopic 2.1), however, in the case of development of an all-perovskite multijunction, if the focus of the work is on one of the layers only, then it belongs here.

2.3 Compound (Chalcogenide, Kesterite, III-V) and Organic devices

Compound semiconductors (e.g. II-VI and III-V) and organic devices, materials, surfaces/interfaces and contacts, processing, measurement and characterisation, modelling. Novel cell architectures, materials, technologies and processing for single and multi-junction cells. Work related to improving the lifetime and reliability of such devices. Multijunction devices that do not involve perovskite.

The broad family of chalcogenide and kesterite thin film technologies, e.g. CI(G)S and CZTS, as well as CdTe, are contained in this subtopic; Polymer, organic and dye-sensitized cells and devices are also included. Devices, materials, surfaces/interfaces and contacts, modelling, processing, up-scaling technologies and strategies, quality control, lifetime and reliability measurement and characterisation are all covered. III-V and related compound semiconductors. Multijunction devices that are not covered under subtopic 2.1 (N.B. for research into the transformation of single-junction silicon cells into designs appropriate for use as silicon bottom cells in multijunction devices, please see Subtopic 1.3).

2.4 New Materials, Devices and Conversion Concepts

New cell materials and concepts, e.g., use of nanotechnologies and quantum effects. New module materials and concepts. Application of AI techniques for selection or development of novel materials, cell and module concepts.

Here we invite papers which describe experimental research realising new materials and device concepts, with emphasis on a rather fundamental or prototype (i.e., low Technology Readiness Level, TRL) level.

2.5 New Modelling and Characterization Techniques

Theoretical studies of materials, cells and modules; new measurement techniques, and new modelling and simulation approaches, including applied AI techniques.

This subtopic comprises all theoretical work on photovoltaic conversion as well as, for instance, measurement techniques to reveal e.g., atomic structures or electronic properties.

TOPIC 3 - Photovoltaic Modules

THIS TOPIC ADDRESSES DIFFERENT ASPECTS PV MODULES. PV MODULE WORK IS DIVIDED INTO THREE SUBTOPICS 3.1-3.3, WHICH BROADLY DEAL WITH MANUFACTURING, RELIABILITY AND PERFORMANCE, RESPECTIVELY. THIS TOPIC IS THE HOME FOR ALL PV TECHNOLOGIES (E.G., SI, PEROVSKITE, CIGS, CDTE ETC.) WHEN DEALT WITH AT MODULE LEVEL. CONTRIBUTIONS SUBMITTED UNDER THIS TOPIC SHOULD RELATE TO RESEARCH, DEVELOPMENT, DESIGN, MEASUREMENT, MODELLING, TESTING AND OPERATIONAL EXPERIENCE, INCLUDING APPLIED AI TECHNIQUES. PAPERS THAT DEAL WITH GENERAL ASPECTS OF SUSTAINABILITY, SUCH AS DISPOSAL, RECYCLING AND RESOURCE ISSUES ARE DEALT WITH IN TOPIC 5 (SUBTOPIC 5.2 SUSTAINABILITY OF PV), BUT SPECIFIC TECHNICAL SOLUTIONS ADDRESSING SUSTAINABILITY BELONG HERE.

3.1 PV Module Design and Manufacturing

PV module design and materials including related aspects of sustainability and circularity, module manufacturing processes, techno-economic analysis. Applied AI techniques to improve module design and manufacturing.

New module designs and hybrid technologies are also welcome here. For work relating to PV system performance, please refer to Topic 4.

3.2 PV Module Durability and Reliability

Type approval testing, degradation, ageing and lifetime, accelerated testing methods. The introduction of new cell designs requires increased attention to reliability questions: Bankability and insurer-driven reliability metrics; degradation in novel architectures (tandem, shingled, ultra-thin glass, bifacial); data-driven degradation forecasting and hybrid AI & physical models; UV-induced degradation; Bills of Materials, glass breakage, etc.

This is the place for all work regarding making a PV device fit for prolonged outdoor exposure, including type approval testing, degradation, ageing and lifetime questions.

3.3 PV Module Performance – Modelling, Testing, Standards

Measurement and characterisation methods, field performance, energy yield, energy rating. It includes modelling and methods for characterisation and calibration, independently of the particular device active material. Work supporting development and validation of standards is also reported here. Related applied AI techniques.

This subtopic looks at new and improved measurement and characterisation methods, correlation between laboratory testing and field performance, energy yield, energy rating, mismatches between standard test conditions and real operation, digital twins of PV modules.

TOPIC 4 - Systems Design and Operation; Applications

THIS TOPIC ADDRESSES INDIVIDUAL PV PLANTS, WHERE PLANT SIZE CAN RANGE FROM A FEW MODULES TO MULTI-MW SYSTEMS. CONSEQUENTLY, THIS IS THE PLACE FOR CONTRIBUTIONS ON SYSTEMS DESIGN, SIZING, MODELLING (SUBTOPIC 4.2), PERFORMANCE AND OPERATIONS (SUBTOPIC 4.3). THIS TOPIC IS ALSO ABOUT INTEGRATION OF PV, E.G., PV INTEGRATED INTO BUILDINGS (SUBTOPIC 4.4). AGRI-PV HAS ITS OWN SPECIFIC SUBTOPIC.4.5. INFRASTRUCTURE INTEGRATED PV (I2PV), FLOATING PV AND VEHICLE INTEGRATED PV (VIPV) ARE ALL IN SUBTOPIC 4.6. CONCENTRATOR PV AND SPACE APPLICATIONS OF PV ARE ALSO LOCATED IN SUBTOPIC 4.6. SUBTOPIC 4.7 DEALS WITH DIRECT USES OF PV GENERATED ELECTRICITY SUCH AS SOLAR FUELS AND HYDROGEN, STORAGE, AND ALSO HYBRID SYSTEMS. SPECIFIC TECHNICAL SOLUTIONS ADDRESSING SUSTAINABILITY AT SYSTEM LEVEL SHOULD ALSO BE SUBMITTED HERE. SUBTOPIC 4.1 ON SOLAR RESOURCES AND FORECASTING COVERS SCALES RANGING FROM THE LOCAL TO LARGE GEOGRAPHICAL AREAS. SUBTOPIC 4.7 INCLUDES SYSTEMS IN WHICH THE STORAGE IS AN INTEGRAL PART OF THE DESIGN, FOR EXAMPLE FOR THE PURPOSES OF MITIGATING CURTAILMENT. USE OF APPLIED AI TECHNIQUES. STORAGE RELATED TO THE COMPREHENSIVE ENERGY SYSTEM AS A FLEXIBILITY ENABLER IS DEALT WITH IN SUBTOPIC 5.1. ADVANCES IN POWER ELECTRONICS FOR ADVANCED GRID FUNCTIONALITY ARE ALSO DEALT WITH IN SUBTOPIC 5.1.

4.1 Solar Resource and Forecasting

Solar resource assessment, measurement, monitoring, and modelling, including long-term timeseries, forecasting and now-casting. Besides solar resource, PV projections (at different temporal and spatial scale) and meteorological assessment of PV relevant variables for standard PV as well as integrated-PV is included in this subtopic. Ground measurement (benchmark, data format, quality control, protocols and equipment) as well as modelled data (satellite-based, physical-based models and AI-based models). Use of Geographic information system (GIS) tools for solar resource assessment and mapping.

Abstracts which deal with all PV relevant solar radiation science, as well as, other relevant meteorological variables (photosynthetically active radiation (PAR), spectral irradiance, etc.) for standard and integrated-PV, including models and tools are placed here. Ground measurement equipment includes devices to measure irradiance such as pyranometers, pyrheliometers, cells, spectroradiometers, and other relevant equipment to measure other parameters such as wind speed, temperature, humidity and albedo.

4.2 Design, Engineering and Installation of PV Systems; BoS

This subtopic deals with design, engineering, realization and commissioning of individual PV systems: Planning, methods and tools for optimization, sizing, site suitability assessment, cost analyses, advanced installation criteria, construction and safety issues; Power Electronics and Electrical Grid Interface; Balance of System Components; AI techniques to support all aspects of design.

Also included here are the important components of single PV systems such as inverters, micro-inverters, converters, power optimizers, monitoring systems, charge controllers, safety switches, mounting structures, trackers, cabling; measurements and testing of performance and reliability. Work which focuses on how a system interacts with the grid is dealt with in subtopic 5.1.

4.3 Operation, Performance and Maintenance of PV Systems

This subtopic focuses on maximizing the performance, reliability, and lifetime of PV systems. It covers contributions and studies on advanced strategies for operation and maintenance (O&M), including monitoring, innovative field inspection techniques, failure analysis, predictive/preventive/corrective maintenance, and field performance assessment across diverse climates and applications, and root-cause analysis. AI techniques to support all aspects of O&M.

We welcome contributions on the application of data-driven methods and AI for fault detection and O&M optimization (beyond monitoring data), and the use of robotic and advanced and/or autonomous inspection tools. Of particular interest are studies that translate operational data into actionable strategies for improving energy yield, lifetime reliability and technical / financial bankability of PV assets (including also satellite and digital twin-based monitoring, linking degradation diagnosis to maintenance economics and operational safety). Work which focuses on how a system interacts with the grid is dealt with in subtopic 5.1.

4.4 PV and Buildings

Design, and architectural aspects of BIPV and BAPV; zero energy buildings; PV products for buildings; building, environment, safety and other regulatory aspects.

This subtopic will collect all contributions describing how PV systems are placed on or are integrated into buildings, covering both functional and aesthetic aspects. All types of buildings are considered - residential, office, commercial, and industrial. Related ancillary equipment is also considered and how the whole system is integrated and performs, e.g., electric and thermal performance, heat pumps, integrated mounting structures, balcony PV, multi-functionality (including testing and regulatory aspects).

4.5 Agri-PV

Design solutions, implementation and performance of PV in combined use with agriculture (Agri-PV) and in nature ('Eco-PV').

This subtopic will collect all contributions describing how PV systems are combined with agriculture, and in nature and the environment which surrounds us, including ecological impacts. The synergies between the PV system and the agricultural system are aspects of importance. These are electrical energy productions, impacts on agricultural production (both qualitatively and quantitatively), overall economic value, environmental impact, ecosystem-service, etc. Examples include spectral management and crop-physiology-aware PV systems; crop quality (not only yield) parameters; multi-year pilot results in real agricultural settings; AI-driven dynamic shading strategies.

4.6 Other PV Applications (floating, infrastructure, etc.); CPV; PV in Space

Design solutions, implementation and performance of PV in/on transport infrastructure, on water (floating PV); Vehicle integrated PV (VIPV); Indoor PV. Concentrator PV (CPV); Thermophotovoltaic energy conversion (TPV). Space applications of PV.

This subtopic covers floating PV (inland or in open water) and collects all contributions describing how PV systems are placed on or are integrated into infrastructure (e.g., linear PV on roads, railways, carparks).
Design and measurement of concentrator solar cells, assemblies and CPV modules, and optical systems, mounting structures and trackers, are included in this subtopic.
Space applications of PV are included in this subtopic, covering cell technologies and complete systems. The field of photovoltaics for space is constantly evolving and innovating to meet the challenges and opportunities of the fast-growing space economy, and abstracts related to III-V cell technology developed predominantly for space applications, but also silicon and other cell/array level technologies for space applications, should be submitted to this subtopic.

4.7 Hybrid Systems and Storage; Direct uses of PV Generated Electricity

Hybrid systems (e.g., various combinations of PV, wind or other renewables, storage, and use of heat, e.g., heat pumps). Such hybrid systems that creatively integrate PV with other renewable sources as well as storage can help address issues such as dispatchability, curtailment etc. This subtopic also includes the technology and engineering of storage systems and their integration, and the direct uses of PV generated electricity, e.g., desalination, P2X (solar fuels and green Hydrogen).

This subtopic is the home for work that bridges photovoltaics, electrochemistry, and other storage solutions shifting and stabilizing PV power output on different timescales. Strategies, solutions, and recent achievements for integrating and interfacing PV with storage, enabling flexible use of PV energy, and smoother grid integration of new PV installations. Storage integrated locally in a PV system is included here when the novelty is in the storage aspects and the integration with the PV system. Industrial applications in which PV generated electricity is converted directly into a useful product or service, including conversion of PV electricity into other energy carriers are also included here, e.g., PV-to-gas/fuels including hydrogen production (P2X); Water desalination, sterilization and upgrading; PV process heat/industrial processes. The technology and engineering aspects of storage systems are covered in this subtopic, but their use in guaranteeing flexibility in the wider energy system is covered in subtopic 5.1.

TOPIC 5 - Photovoltaics in the Energy Transition

THIS TOPIC COVERS THE BROAD SPECTRUM OF MULTIDISCIPLINARY EFFORTS REQUIRED TO ENSURE THE RAPID DEPLOYMENT OF PV TECHNOLOGIES ON A LARGE AND GLOBAL SCALE AS A KEY TECHNOLOGY OF THE ENERGY TRANSITION AND THE BROADER ECOLOGICAL TRANSITION. AS SUCH IT COVERS A RANGE OF ASPECTS, RANGING FROM INTEGRATION OF LARGE QUANTITIES OF PV GENERATED ELECTRICITY INTO THE ENERGY SYSTEM, INCLUDING FLEXIBILITY ENABLERS. OTHER TOPICS INCLUDE ENSURING THAT THE SUSTAINABLE AND ECOLOGICAL IMPLEMENTATION OF PV, THROUGH FINANCING, MARKET DEVELOPMENT AND POLICY MAKING, ECONOMICS OF PV MANUFACTURING, AS WELL AS ADDRESSING AND ENSURING SOCIAL JUSTICE AND BENEFIT SHARING IN THE ENERGY TRANSITION. AI TECHNIQUES ARE EXPERIENCING RAPID UPTAKE THROUGHOUT THE WHOLE VALUE CHAIN, AND THEIR APPLICATIONS ARE ALSO RELEVANT HERE. PAPERS THAT DEAL WITH ESSENTIAL ASPECTS OF SUSTAINABILITY, SUCH AS DISPOSAL, RECYCLING AND RESOURCE ISSUES AS WELL AS PV IN THE CIRCULAR ECONOMY ARE DEALT WITH IN SUBTOPIC 5.2 SUSTAINABILITY OF PV. SUSTAINABLE DESIGN AND MANUFACTURING ARE A KEY CONCERN FOR THE ENTIRE PV ECOSYSTEM, AND HENCE SPECIFIC TECHNOLOGICAL IMPROVEMENTS THAT HAVE A SUSTAINABILITY OBJECTIVE (SUCH AS REDUCING MATERIAL USE OR IMPROVING RECYCLABILITY) NEVERTHELESS BELONG IN THEIR SPECIFIC SUBTOPIC.

5.1 Grid Integration and Flexibility Enablers

Integration of PV generated electricity into the wider energy system, including balancing supply and demand. Energy management, resilience and reliability of supply including modelling of integrated supply-demand systems, digital monitoring, control, forecast and dispatch involving various energy sources and users (including heat pumps, electromobility, vehicle-to-grid (V2G), and others); The employment of storage systems and their integration to ensure flexibility at grid level. This subtopic also covers developments in power electronics, digitalization and AI.

Utilization of “smart” grid, AI, and digitalization capabilities. Experience from other renewable sources and grid operators are welcome here since the future energy system will have to flexibly combine many different sources of energy. Storage including sizing, operation and performance, aimed at optimising the “dispatchability” and functionality of PV driven electricity systems is covered here. The geographical scale may be regional, national and continental, and over time scales from grid stabilisation to seasonal.
This subtopic also covers recent developments in power electronics, measurement, modelling and control focusing on the interface between a PV plant and the electrical grid. The subtopic addresses relevant developments, including from digitalization and AI, for a reliable, secure and optimized grid operation at high PV penetration. This also covers concepts such as advanced inverter functionality, grid-forming, voltage and frequency regulation, power quality and stability, islanded operation, or micro-grids. ICT integration including (cyber) security is also part of this subtopic.
Studies that focus on technical aspects of individual PV systems, even hybrid systems that include storage, belong in subtopic 4.7.

5.2 Sustainability of PV

This subtopic addresses the sustainability of the PV supply chain, and of PV systems, life-cycle analysis (LCA) including carbon footprint, recycling friendly approaches, resource savings, mitigation of critical or potentially toxic materials and circularity aspects. Furthermore, topics like product and application regulation concepts, environmental standards, decommissioning, reuse, recycling and recovery, disposal, and waste management including downstream use of material outputs. In this respect contributions on raw material availability, resource efficiency and material flows as well as PV in the circular economy, urban and spatial planning are welcome. Note that specific technological developments may be best placed in the relevant subtopics, e.g. a cell designed for increased sustainability through reduced silver use would belong in Subtopic 1.2, and a new module material facilitating recycling would fit best in 3.1.

As a renewable energy solution, PV must also address concerns about its environmental impact in production, use and end of life. This is the subtopic for abstracts related to environmental science and engineering, the impact of materials on health and safety, and for socio-economists dealing with the circular economy and LCA.

5.3 Scenarios for Renewables, Policy, Resilience, Global Challenges

Modelling and scenario analysis; interplay with other renewable energy systems; Policies for R&D, innovation, manufacturing, deployment, supply chain resilience and energy security; Geographical diversification of PV manufacturing, also taking into account national, regional and global political aspects; role of policy, trade barriers and taxation, regulatory frameworks for grid integration; education, training and job creation; Upscaling of PV and deployment at TW scale. PV roll-out in developing and emerging economies.

This is the subtopic for policymakers, researchers, energy-law experts, media communicators, but also teachers and communicators. The more global aspects solicit papers from large, often collaborative efforts to analyse the role of PV in a larger context, often related to energy modelling or scenario analysis (including 100% renewables). Projecting PV towards 2030, 2050 and comparing the calculations are typical subjects in this subtopic, as well as the relation of PV to greater policy efforts in different regions of the world, or international agreements, including UN Sustainable Development Goals and IPPC.

5.4 Costs, Economics, Finance and Markets

Cost models and cost reduction, value enhancement (i.e., societal, environmental); PV Levelised Cost of Electricity (PV LCOE) competitiveness, economics of, and business models for PV (encompassing economics of full value chain including manufacturing, installation and operation, etc.) and storage/conversion (P2X); PPAs, financing and investment; market development and segmentation; market design for PV as dispatchable power and electricity market participation and integration; utility scale development, prosumer aspects and digitalisation. PV business models, finance and deployment in developing and emerging economies; implementation experiences at local and regional scale; energy access.

In this subtopic we address market analysts, project developers and business experts from finance, and investment and utilities. It covers the more non-technical aspects of installing and dispatching PV electricity, new scenarios and the market conditions required to make them happen as well as analysis of present market development and trends.

5.5 Societal Challenges; Citizens' Participation, Awareness

PV impacts on society, awareness, acceptance of and social justice and benefit sharing of the energy transition, barriers perceived by society, roles of citizens and examples addressing these, role of behaviour, cooperatives enabling PV deployment, trade-offs between different societal goals. Energy affordability and energy poverty.

This subtopic addresses SSH scientists and looks at societal challenges around the ongoing energy and ecological transition, and how to ensure the implementation of climate change mitigation and adaptation policies in a rapid and fair manner. Citizen's participation is essential at the local and global scale and methods and studies to help achieve this are relevant here.

ABSTRACT SUBMISSION

Authors wishing to contribute to the Conference Programme of the EU PVSEC 2026, 14-18 September 2026, in Rotterdam, The Netherlands, should **submit an abstract at the latest by 2 February 2026**.

Authors are invited to carefully read the topic descriptions and select the topic and subtopic which most closely matches the key novelty of their work. The subtopic descriptions are brief and non-exhaustive, while at the same time self-explanatory so that locating the correct area is straightforward.

A reference abstract template MS Word document can be downloaded in the EU PVSEC website.

Abstracts (in the format of 1 page for the Summary of the Abstract + up to 3 explanatory pages) shall be written in English and include short sections addressing:

- Aim and approach used
- Scientific innovation and relevance
- Results or preliminary results and conclusions

Authors also need to provide using the abstract submission platform (User Area):

Abstracts (in the format of 1 page + up to 3 explanatory pages) shall be written in English and include short sections addressing:

- Full paper title
- Full name, affiliation, address, e-mail and phone of one author for all correspondence
- For all other authors, full name, affiliation and e-mail
- Summary of the Abstract
- Applicable topic and subtopic number (e.g. 1.2) and a brief justification of the choice of subtopic to assist the evaluation process.
- Aim and approach used
- Scientific innovation and relevance
- Results or preliminary results and conclusion

SUBMIT YOUR ABSTRACT(S)

“Aim and approach used”, “Scientific innovation and relevance” and “Results or preliminary results and conclusions” provide the basis for the review and programme selection process, so please make sure to address all three aspects.

The total length should not be more than four A4 pages. We recommend a minimum of 2 pages in total to ensure a comprehensive evaluation of your work. We encourage authors to provide enough information to be evaluated correctly. Kindly also note that in case you apply for *Journal Publication”* in order to be evaluated correctly, only abstracts with a minimum of 3-4 pages are eligible. Please make sure that this requirement is respected.

Kindly also note that in case you apply for “*Journal Publication”* in order to ensure a sufficiently detailed evaluation, only abstracts with a minimum of 3-4 pages are eligible. Please ensure that this requirement is respected.

Detailed instructions on how to prepare and submit your abstract are given in the *“Abstract Submission Guidelines”* on the EU PVSEC website. Please read these instructions carefully.

For questions concerning abstracts, please contact:

EU PVSEC Programme Secretariat:
Ms. Buse Yildiz or Ms. Lisa Großhans
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ABSTRACTS REVIEW AND EVALUATION BY THE SCIENTIFIC COMMITTEE

END APRIL 2026
NOTIFICATIONS OF AUTHORS

BEGINNING OF SEPTEMBER
SUBMISSION OF MANUSCRIPT FOR THE CONFERENCE PROCEEDINGS

The **Author's Workstation** contains more detailed information.

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