



SCIENCE FOR POLICY BRIEFS

How Photovoltaics can ride the EU Building Renovation Wave

Headlines

- Building Integrated Photovoltaics (BIPV) technologies are highly innovative, locally anchored and have strong market prospects, with great potential to become a flagship for the EU industry
- Scaling-up the production and installation of BIPV devices is still critical to boost cost-competitiveness, despite recent impressive cost reductions in the sector
- Opportunities exist for BIPV to address market niches that cannot be served by conventional technologies
- Customised professional training and university programmes can create skilled EU jobs
- The renewable technology industry must be recognised as a Strategic Value Chain to encourage the industrial deployment and market penetration of BIPV
- The harmonisation of the certification process for construction products would support the standardisation of BIPV products and foster an EU-wide deployment

Getting the ecosystem right

Building Integrated Photovoltaics (BIPV) technologies expand solar electricity generation throughout the building envelope, increasing PV power output and unlocking new, available surfaces - roof tiles, façade cladding or even windows. Highly innovative, locally anchored and with strong market prospects, **BIPV can become a flagship for the EU industry**. With the right support in place, especially in the context of industrial deployment and innovative manufacturing processes, BIPV could soon be Europe's mainstream construction material. Supporting cleaner, smarter and more efficient buildings, BIPV can contribute to achieve climate neutrality by 2050, in line with the objectives of the new European Green Deal. This policy brief summarises the outcome of a recent brainstorming workshop that evaluates the status of BIPV and addresses the challenges this technology faces, focussing on:

- Current barriers preventing BIPV market growth
- Most promising emerging technologies to advance the integration of PV in building materials
- Key policy measures aimed at making BIPV products more attractive to the construction sector, architects and end consumers



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- Regulatory drivers, particularly in the field of standards and environmental certification, which could foster market demand for BIPV products

Market development

- While BIPV technologies have recently achieved impressive **cost-competitiveness**. A political and industrial focus on the most promising market segments, such as solar tiles or PV windows, could successfully encourage an initial market uptake on these first segments, followed by greater product diversification and applications in a second phase.
- BIPV technologies can play an important role in EU building renovation strategies, particularly in **maximising the contribution of renewable energy in existing buildings**, although further analysis is needed to clarify the opportunities for BIPV to optimise thermal performance levels in different climatic zones.

Technical challenges

- Striking the right balance between customisation, standardisation and energy performance is key to tailor BIPV products to market requirements.
- Integrated approaches to safety and harmonised certification procedures can drive trust in the market, facilitating the uptake in various demand segments i.e. architects, building engineers, contractors and consumers.
- Integrating the characteristics of BIPV in BIM tools would help architects and building engineers assess structural and energy performance of buildings through less fragmented approaches in the project planning phase.
- Industrial strategies to ensure the circularity of BIPV products, particularly their recycling and life cycle assessment, should complement market pull strategies. However, further efforts are needed to demonstrate the lifespan and durability of BIPV products and ensure these meet the requirements for reparability, inspectability and simplicity of operations and maintenance.
- The combination of electric and construction performance assessment could overcome an important technical and market barrier.

Emerging technologies

Emerging PV technologies, e.g. thin film perovskites and organic PV, offer an **opportunity for BIPV to address market niches that cannot be served by conventional technologies**. In order to accommodate the development of these new technologies, certification processes for BIPV need

Skills and learning

Professional training schemes and customised university programmes (Erasmus +) for innovative, clean energy technologies can **support the creation of local and qualified European jobs**, while facilitating BIPV installations in Europe.

- The BIPV sector could learn from best practices in the PV sector on coping with increased installation rates and optimising operation and maintenance practices.



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Policies and other measures

- EU Member States (MS) must strive for an ambitious implementation of the Clean Energy Package, including measures to facilitate RES individual and collective self-consumption and the installation of on-site RES in buildings.
- Recognising the **renewable technology industry as a Strategic Value Chain** would encourage the industrial deployment and market penetration of highly innovative renewable technologies such as BIPV.
- Less risk-adverse and more long-term oriented, **public buyers are a privileged market segment** for BIPV products. The inclusion of innovative technologies such as BIPV in Green Public Procurement for the construction sector could therefore enable lead markets for BIPV.
- In line with the EU single market, the **harmonisation of the certification process** for construction products could support further the standardisation of BIPV products and foster an EU-wide deployment. The certification processes could be accompanied by clear guidelines/checklists for BIPV installers, thus ensuring consistency in standards across the EU and enabling the labour mobility of BIPV professionals across the Single Market.

Participating organisations

This document contains the conclusions of a workshop held at JRC on 30th of January 2020, with the participation of European Commission staff from different Directorates General, SolarPower Europe, Akuo, CEA, CSTB, ElectriXities, Eni spa, Ernst Schweizer AG, Fraunhofer CSP, Fraunhofer ISE, Heliateg GmbH, Sunstyle AG, Solliance, SUPSI, TecNALIA and TNO.

NB The views expressed in this summary do not imply an official position of the European Commission, SolarPower Europe or any of the participating organisations.

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