Challenges and opportunities for the deployment of BIPV

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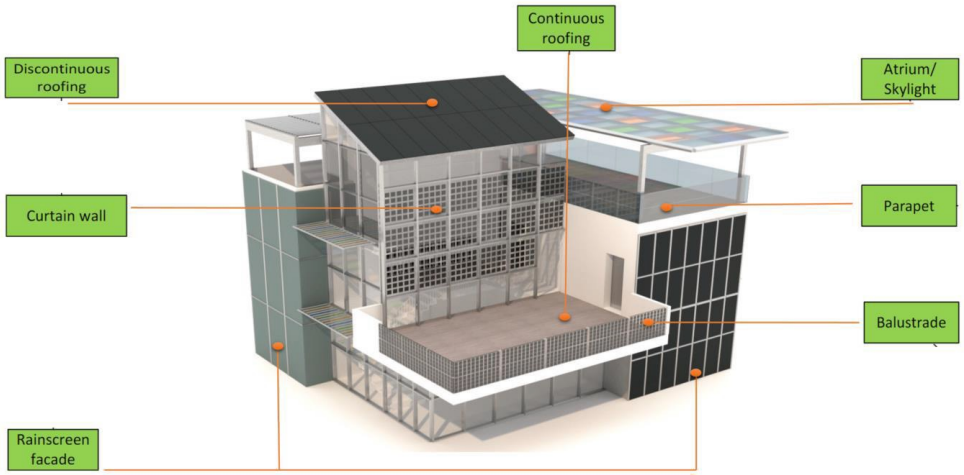
Agenda

- Technological innovation system analysis
  - Key Findings
  - Recommendations to Stimulate BIPV Market Growth
- BIPV in energy labeling
- Contribution to zero-energy buildings



Examples of BIPV systems in a building case (source: SUPSI)

Analysis of Technological Innovation Systems for BIPV in Different IEA Countries

- BIPV represents a **promising approach to integrating solar power** generation into buildings

- This report identifies the key challenges, strengths, and opportunities for advancing BIPV towards broader commercial adoption

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Key Findings

The markets for BIPV in the seven studied countries remain niche.

Integrated roof systems as a leading application in all countries, expect Spain.

Spain and Austria lead in PV glazing façade applications

Common barriers across these countries include

- Weak collaboration between the PV and construction industries
- Limited institutional support (economically, technically, or culturally)
- Perception that BIPV lacks legitimacy as a standard construction product.

Recommendations to Stimulate BIPV Market Growth (1/2)

Engage new actors in BIPV to create a more diverse and robust innovation ecosystem, supported by improved market potential assessments.

Enhance collaboration across the value chain through joint actions such as roadmaps, market development strategies, and knowledge-sharing initiatives.

Bridge the cultural and operational divide between the solar and construction sectors, for example, by requiring cross-sector collaboration in tenders and funding calls.

Recommendations to Stimulate BIPV Market Growth (2/2)

Support innovation and technological advancements, particularly in the areas of production efficiency and scalable solutions for retrofitting.

Improve regulations, standardisation, and technical guidance to ensure BIPV products are recognised as legitimate construction materials.

Create targeted incentives and regulatory measures to stimulate market demand for BIPV solutions.

Expand education, training, and knowledge transfer to equip industry stakeholders with the necessary expertise to integrate BIPV effectively.

BIPV today still restricted for lighthouse projects?

Science Gateway at CERN; RPBW, Photo credits: CERN.

Franklin University Building in Sorengo (source: Franklin University Switzerland and Leo Torri)

SOLARCHITECTURE
sun as a building material

Deltarosso, Vacallo. Arch.DELTAZERO (foto: F. Frontini)

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Enabling Framework for the Development of BIPV

Objective:

- Create an enabling framework to accelerate the penetration of BIPV products in the global market of renewables.
- Resulting in an equal playing field for BIPV products, BAPV products and regular building envelope components.
- Respecting multifunctional aspects, mandatory issues, regulatory issues, aesthetic issues, reliability and financial issues.

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Task 15 is structured into 5 subtasks

- **A: Challenges and opportunities of BIPV in a de-carbonised and circular economy**
- B: BIPV characterization & performance: pre-normative international research
- C: BIPV in the digital environment
- D: BIPV products, projects and demos: innovation and long-term behavior
- E: BIPV training, dissemination and stakeholders' collaboration

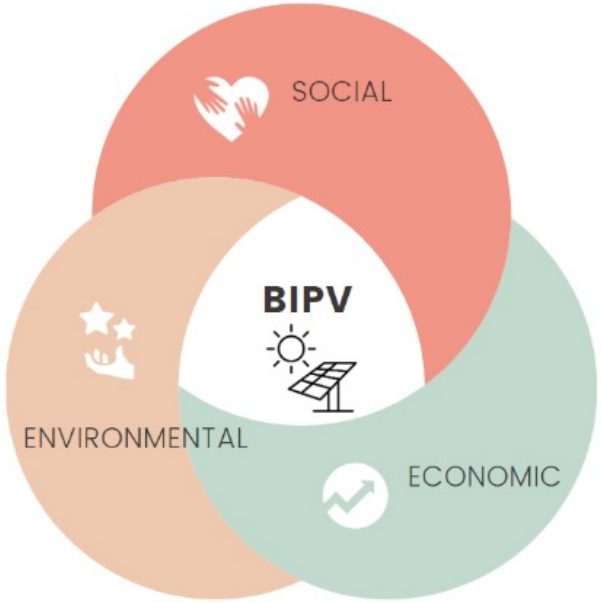
SOURCE: IEA PVPS TASK 15, WWW.SOLARCHITECTURE.CH

STA: challenges and opportunities of BIPV in a decarbonised and circular economy

- Provide a comprehensive understanding of the **state of the BIPV market status**, its trends and **potential in different countries**, discussing opportunities for BIPV deployment. (A1)

- Define and clarify the **role of BIPV in net Zero Energy Buildings (nZEB) targets and other sustainability labels**, discussing the appropriate methods to assess its contribution. (A2)

- Evaluate the **social impact of BIPV** using a Social Impact Assessment (SIA) methodology. (A3)



BIPV in the environmental labelling

- Collect the different definitions of nZEB and different certification schemes from different countries to analyse the contribution and impact of BIPV systems.
- Exchange of information with other IEA TCPs from the building sector, the district and cities
- The benefit of replacing a building material with BIPV element will be assessed

- This activity will answer the following questions or challenges:
  - What is the **role of BIPV in nZEB** regulations and targets?
  - How can **BIPV contribute to** and is considered in sustainability labels (e.g. **LEED**, BREAM, DGNB, SNBS, ...)?
  - Which **methods are appropriate** to assess the contribution of multifunctional BIPV components and systems capable of providing both the building function and the generation of renewable electricity?

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Survey

Survey to explore how photovoltaic systems are currently addressed in energy and environmental labeling schemes.

E.g. LCA of buildings as described in normative regulations including **EN 15978**.

Is anyone aware of this standard or others?

YOUR input is essential for the further development of building-integrated photovoltaics (BIPV).

https://limesurvey-ret.apps.okd.cs.technikum-wien.at/index.php/764893

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Next steps

- Publication about the different energy and environmental labeling schemes
- Online Expert Workshop 2026 with IEA- Energy in Buildings and Communities Programme, IEA Cities, other Stakeholders.

We would like to invite you to join us at this workshop, where we will discuss the role of building-integrated photovoltaics (BIPV) in the methodology and calculations of these assessments.

- How is interested?

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IEA PVPS

EBC Energy in Building and Communities Programme

SHC SOLAR HEATING & COOLING PROGRAMME INTERNATIONAL ENERGY AGENCY

IEC CEN CENELEC ISO International Organization for Standardization

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