

Feedback on Carbon Storage in Buildings - CRCF methodology

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Feedback: CRCF certification methodology for temporary carbon storage in buildings

Bio-based construction products offer strong potential for long-term CO₂ storage. The EU CRCF methodology for biogenic carbon storage in buildings aims to give building owners a reliable and transparent way to demonstrate the carbon storage capacity of their buildings.

Based on the background work carried out in 2024-25, a comprehensive assessment of the certification methodology's components has been prepared in a technical assessment paper, including clear recommendations on the development of the certification methodology. This survey invites you to share your feedback on the specific elements of the methodology, and the implementation of the CRCF framework for carbon storage in buildings.

The survey seeks your input on both the general approach used in the various sections and more detailed, specific questions. Please note that you are not required to answer all questions. We thank you in advance for your valuable feedback.

DEADLINE: 23h59, 19 December 2025

Useful links:

- [Carbon Removals and Carbon Farming - European Commission \(europa.eu\)](#)
- [Sign up to our dedicated newsletter](#)

A. INFORMATION ABOUT THE RESPONDENT

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B. FEEDBACK

1. Scope of materials, building and project types

Based on the assessment, the TAP recommends the following specifications for the scope of the certification methodologies:

- Materials
 - Structural elements: Solid wood products such as planed timber, cross-laminated timber (CLT), and glued laminated timber (glulam) intended for use in building structures.
 - Insulation materials: Wood-based or other biobased materials derived from virgin raw materials or biomass by-products generated through photosynthetic activity.
- Building Types: All building types should be eligible for inclusion within the scope.
- Project Types: The scope should include both new construction and renovation projects.

General Feedback

What are your thoughts on the scope section presented in the TAP?

The scope proposed in the TAP is too narrow and should be broadened to reflect the full range of long-lived wood-based construction elements that deliver durable biogenic carbon storage. EPF considers that the exclusion of several key wood-based elements is not justified scientifically, technically, or from a monitoring perspective.

1. Structural scope must explicitly include wood-based panels

The TAP currently limits structural elements to solid wood, CLT and glulam, which does not reflect actual building practice. Wood-based panels such as OSB, plywood, structural particleboard (chipboard) and other engineered panel systems are widely used as structural components, notably in prefabricated and modular construction. They function as loadbearing shear walls, diaphragms, roof elements, floor systems and structural skins. As these uses are integral to the building's mechanical function, they meet and often exceed the 35-year longevity requirement under the CRCF and should therefore be explicitly included in the structural scope.

Beyond carbon storage, wood-based panels deliver a strong substitution effect by replacing more carbon-intensive materials. In structural applications they compete with concrete and steel, while in wall panelling, cladding, flooring and interior uses they increasingly compete with ceramics, cement-based products, textiles, vinyl systems (LVT, SPC, PVC) and other plastics. These alternative materials all show positive life-cycle greenhouse gas emissions, whereas wood-based panels combine long-term biogenic carbon storage with significantly lower embodied emissions. This substitution effect is a critical climate benefit and should be explicitly recognised in the CRCF methodology.

2. Cladding, walls and doors used as permanent building elements should be included

The TAP proposes to exclude cladding, doors and wall systems unless considered part of the primary structure. However, many of these elements remain in place for the full service life of the building and are replaced only during major renovations. Wood-based cladding often exceeds 35 years of service life, particularly when linked to the lifetime of the insulation layer. Internal and external wall systems incorporating wood-based panels are also long-lived and form an essential part of the building envelope. These elements contribute stable biogenic carbon and should be eligible when they meet the minimum lifetime requirement.

3. Floorings should be included

Many engineered wood floors have service lives compatible with the CRCF's 35-year threshold, especially in permanent buildings. Given their mass, durability and carbon storage potential, excluding them would underestimate biogenic carbon stored in buildings. Monitoring concerns are not valid, as floor areas are known at design stage and changes can be verified on site.

In addition, structural particleboard (chipboard) should be explicitly included. It is widely used as base flooring and subfloor systems and typically remains in place for the entire building lifetime, often exceeding the minimum storage period.

4. Monitoring and summing contributions are fully feasible

The TAP cites difficulty in summing contributions and monitoring complexity as reasons for exclusion. EPF finds this unconvincing. CPR and EPBD already require precise product declarations and building-level LCA data; quantities are known at design and installation stages, and on-site verification is standard practice. The appropriate response is clear calculation rules and strict monitoring, not exclusion.

5. Insulation: robust methods for bio-based materials

EPF agrees that bio-based insulation should be in scope and stresses the need for harmonised accounting methods. These materials simultaneously deliver durable carbon storage, improved energy efficiency and substitution of fossil-based materials. Given their high climate value, accounting rules should be strengthened rather than narrowed.

6. Overall recommendation

EPF urges the Commission to adopt a broader and more realistic scope by: explicitly including wood-based panels in the structural scope; including cladding, walls, doors and other long-lived envelope elements meeting the ≥ 35 -year criterion; including wood-based floorings and structural subfloors; and applying clear monitoring rules instead of excluding durable wood-based materials.

A CRCF methodology aiming to capture real long-term carbon storage must not exclude large, stable and verifiable sources of stored biogenic carbon.

More detailed questions

If an EPD reports on the A1-A3 aggregate, and the declared product-stored biogenic carbon level is higher than net A1-A3 biogenic GWP, the difference should be due to biogenic GWP emissions during A1-A3 that were unrelated to wastage or combustion of the raw biobased material being used to make the product.

Should an explanation for any such discrepancies be required in the EPD/DoPC?

Yes, an explanation should be required in the EPD/DoPC whenever product-stored biogenic carbon exceeds net A1-A3 biogenic GWP. This simple disclosure requirement strengthens transparency, supports accurate calculations, and is fully aligned with the TAP's emphasis on clear reporting of stored biogenic carbon and upstream biogenic emissions.

2. Quantification

On quantification, the TAP recommends the following specifications:

- Data sources: All CRCF-eligible products must be covered by third-party certified EN 15804-compliant Environmental Product Declarations (EPDs) and, when available, on the Declaration of Performance and Conformity (DoPC).
- Calculation of CR_{total} : quantification based on the quantities of CRCF-eligible materials at the level of the building and multiplied by the declared stored biogenic carbon content on the associated DoPCs or product-specific EPDs.
- Calculation of $GHG_{associated}$: quantification based on emissions on the associated DoPCs or product-specific EPDs of GWP-biogenic, GWP-fossil and GWP-LULUC from modules A1-A5
- Calculation of $CR_{baseline}$
 - Use of separate standardised baseline mechanisms for structural wood (based on a $kgCO_2/m^2$ floor area basis) and for biobased insulation (market-based approach related to % share of biobased insulation sold), at national or more detailed regional level
 - Use of activity-specific baselines mechanisms shall be based on hypothetical data for a reference construction or renovation activity and apply to projects with unique designs or material performance, or to common building types lacking a standardised baseline.

General Feedback

What are your thoughts on the quantification section presented in the TAP?

The quantification framework set out in the TAP is well structured, but several points require adjustment to ensure it reflects real construction practices and allows fair accounting for all long-lived wood-based materials.

1. Data sources: support with two clarifications

EPF supports the use of EN 15804-compliant, third-party EPDs and, when available, DoPCs. Two clarifications are needed:

- DoPC data under the CPR will not be available for several years; until then, EPDs must remain the primary data source.
- Harmonised reporting rules are needed for wood-based panels and other engineered wood materials so that carbon-storage values are comparable across manufacturers.

2. Calculation of CR_{total} : include all long-lived wood-based materials

EPF agrees with the principle of calculating CR_{total} based on declared stored biogenic carbon multiplied by

actual installed quantities. However, the scope must include wood-based panels, cladding, long-lived wall systems, doors integrated within structural assemblies and wood-based floorings.

These elements often represent substantial and durable biogenic carbon storage yet are excluded in the TAP's recommended scope. Excluding them would significantly underestimate the real carbon-storage benefit of many timber-based building systems, especially prefabricated and modular solutions. This is particularly relevant, for instance, for structural particleboard used in floors and wall systems, which represents a large volume of long-lived wood-based material that must be fully reflected in CR_{total} calculations.

With these improvements, the quantification methodology would more accurately reflect the real carbon-storage performance of wood-based buildings and avoid systematically undervaluing key wood-based materials.

More detailed questions

On bio-based insulation materials, how should recycled feedstocks (e.g. paper, cotton, textiles) in insulation products be addressed? Are recycled materials compatible with the principle of “certifiable carbon removals,” or should only the verifiable biogenic fraction from virgin material be counted?

Recycled biogenic materials should be included in scope where their biogenic content can be verified and quantified. This is particularly important for recycled wood fibre, which must be explicitly recognised, as it delivers certified climate benefits while reducing pressure on virgin biomass.

Recycled wood fibre insulation contributes to the CRCF objectives in two ways:

- it stores biogenic carbon that was originally fixed through photosynthesis and remains durably embedded in the product;
- it advances cascading use and circularity, extending the lifetime of existing wood resources and thereby reducing demand for virgin material.

Recognising recycled wood fibre is therefore fully compatible with the principle of “certifiable carbon removals”, provided that:

- the biogenic fraction is clearly documented, and
- no fossil-based or non-biogenic components are counted.

For other recycled feedstocks (paper, cotton, textiles), only the verifiable biogenic share should be eligible. Where the material contains non-biogenic fractions, these must be excluded from carbon-storage accounting. Clear default rules and minimum documentation requirements should be established to ensure consistent reporting.

Overall, CRCF methodology should reward recycled biogenic materials, especially recycled wood fibre, because they extend carbon-storage durations, support circular material flows and reduce pressure on forest resources, all of which are central to a sustainable bioeconomy.

How should the functional unit for insulation materials be addressed in the EPDs and the Declarations of Performance and Conformity? Should there be a standard functional unit for reporting e.g. kg, m² or m³. Or is it enough to require that all relevant physical information (e.g. density and thickness) is provided to allow it to be calculated back to common units?

A single mandatory functional unit is not necessary. It should be sufficient to require that EPDs and DoPCs provide all relevant physical information so that values can be converted transparently into kg, m² or m³ as needed. This should ensure consistency.

What are your opinions about how to deal with renovation projects? Should there be a minimum scale defined in the methodology, or should that be left up to certification schemes?

A minimum scale should be defined in the methodology, not left to individual certification schemes. Renovation projects vary widely, and without a clear threshold the risk of inconsistent baselines and unverifiable carbon-storage claims is high.

3. Additionality

On additionality, the TAP recommends to allow only for activity specific baselines when no directly relevant subsidies or statutory requirements are applicable at national or regional level, as to ensure additionality.

General Feedback

What are your thoughts on the additionality section presented in the TAP?

The approach is reasonable, but it must not restrict the use of activity-specific baselines too narrowly. Additionality should be preserved, but flexibility is needed to reflect diverse building typologies and innovative wood-based solutions. Activity-specific baselines should remain available whenever standardised baselines do not capture real practice.

More detailed questions

Are you aware of any national or Union statutory requirements that could oblige certain buildings to be constructed with structural wood or biobased insulation?

Not to my knowledge. Some Member States have incentives, such as public-procurement preferences, that indirectly favour biobased materials, but none create a legal obligation to use them.

Are you aware of any national or regional subsidy schemes that “directly” support construction with structural wood or biobased insulation materials? (“directly” means that the only way to get the subsidy would be to use these materials in a building).

Not to my knowledge.

How should the statutory requirements be dealt with in the case that a biogenic carbon building is requested as part of mandatory requirements in a public procurement exercise? And what if biobased materials are not mandated but are encouraged via award criteria?

In both cases, it is important that the methodology requires transparent documentation of the relevant procurement rules and scoring to demonstrate whether the chosen solution is genuinely above regulatory or market norms. It should be recognised that the ongoing review of the Product Environmental Footprint (PEF) methods should improve how bio-based materials and products are assessed and compared with fossil-based or energy intensive alternatives. This includes strengthening biogenic carbon accounting and refining circularity

assessment methods. It will should provide higher-quality data to support transparent and credible assessments, as foreseen in the recently updated EU Bioeconomy Strategy.

Can you provide any reports, market data, rules of thumb or even anecdotal evidence of a wooden structure being more expensive than a steel or concrete structure for the same type of building? (ideally inputs here can be normalised to (EUR/m² floor area).

Can you provide any reports, market data, rules of thumb or even anecdotal evidence of biobased insulation being more expensive than conventional insulation for the same thermal conductivity and/or acoustic performance?

An EEA/ETC-CM report on renovation synergies notes explicitly that “the cost of bio-based insulation materials is generally higher than that of its traditional competitors” while performing better on environmental and health aspects: <https://climate-energy.eea.europa.eu/topics/energy-1/energy-and-buildings/reports/synergies-energy-efficiency-and-circularity-in-the-renovation-wave>

A 2024 study on the integration of bio-based insulation materials in Europe identifies “high costs” as one of the main barriers to uptake: <https://www.mdpi.com/2071-1050/16/17/7314>

4. Long-term storage, monitoring and liability

On long-term storage, monitoring and liability, the TAP recommends to:

- require a minimum storage period of 35 years, but also to allow for longer storage period.
- align the need for liability mechanisms with the storage periods, and with the upfront and termed issuance of certified units.

General Feedback

What are your thoughts on the long-term storage, monitoring and liability section presented in the TAP?

The approach is broadly appropriate: allowing longer periods provides flexibility for durable wood-based construction which can include wood-based panels. I personally live in a house built in 1980 and that is made primarily of wood-based panels (external/internal walls and ceilings) that remained in place for already 45 years and that I have just refurbished (including wood-based panels for insulation, roof cladding and flooring) and thus will keep storing carbon for years to come. Aligning liability mechanisms with the chosen storage period and with the distinction between upfront and termed issuance is logical. What matters is that liability rules remain proportionate and do not penalise long-lived wood products, which routinely exceed 50-100 years in service. A simple, predictable monitoring regime and clear responsibilities for operators are essential to avoid unnecessary administrative burden while ensuring environmental integrity.

More detailed questions

If structural wood or bio-based materials are reused or recycled into other products at the End-of-Life, should liability for reversal be waived? If so, what type of proof of reuse or recycling would be needed?

Yes. If structural wood or other bio-based materials are reused or recycled into new long-lived products (such as wood-based panels), liability for reversal should be waived, because the carbon remains durably stored and no atmospheric release occurs. Of course, a waiver should apply only when reuse or recycling is verifiable. Appropriate forms of proof could include:

- Documentation from the demolition or deconstruction contractor, confirming selective removal and transfer of identifiable wood elements for reuse/recycling.
- Chain-of-custody or transfer records showing that the materials were delivered to a reuse operator, refurbisher, panel manufacturer or recycler.
- Evidence from the receiving facility confirming that the wood has entered a recycling process that results in a long-lived product (such as wood-based panels).

The key principle is that liability should end when there is credible evidence that biogenic carbon continues its storage beyond the building's life, either through direct reuse or through recycling into another product with a service life compatible with CRCF rules.

What are your opinions about the liability matrix, as illustrated on p.67?

Should the methodology place requirements on who the operator must be (e.g. the building owner?).

5. Sustainability

On sustainability, the TAP

- recommends to verify the compliance with several sustainability DNSH requirements prior to completion of the initial certification audit,
- lists several co-benefit categories that can be claimed by building projects that meet the specific listed criteria
- discusses the applicability of the RED Article 29 sustainability requirements

General Feedback

What are your thoughts on the sustainability section presented in the TAP?

The proposed verification of DNSH requirements before the initial audit is appropriate and ensures consistency with the CRCF and the Taxonomy. The optional co-benefits categories are useful, provided they remain evidence-based and do not create unnecessary administrative burden. The discussion on the applicability of RED Article 29 is balanced.

One key element missing is the explicit recognition of cascading use as a sustainability criterion. High-value reuse and recycling of wood resources reduce pressure on virgin biomass, extend carbon-storage duration, and

align directly with EU circular-economy and bioeconomy priorities. Cascading use should therefore be rewarded as a co-benefit and integrated into DNSH considerations, especially for projects using recycled wood fibre or reclaimed structural elements.

More detailed questions

Are the RED Article 29 sustainability requirements relevant to include in the certification methodology for carbon storage in construction materials?

Only partially. RED Article 29 requirements were designed for bioenergy feedstocks, not for long-lived construction materials. Their direct relevance to carbon storage in buildings is therefore limited.

Is it fair to assume that FSC and PEFC controlled materials are also compliant with the relevant parts of RED Article 29?

Are there any other schemes operating in the EU that can be considered as equivalent to FSC or equivalent to PEFC?

Do any Member States have legislation in place that ensures all productive forests and plantations for wood harvesting meet the relevant requirements of Article 29 of RED?

Would you be open to being contacted for further questions or clarification if needed?

- Yes
- No

Useful links

Slides from 9th CREG meeting (https://climate.ec.europa.eu/document/download/26ec807d-6e88-418e-a84c-4943bc145b51_en?filename=EG9_November_2025_Presentation_final.pdf)

Background Documents

Technical Assessment Paper (TAP) for long-term temporary storage biogenic carbon storage in buildings (with certification rules report)

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