

BUILDING CONFIDENCE

A DEEP-DIVE INTO RISKS OF USING SECONDARY CONSTRUCTION PRODUCTS AND THE POTENTIAL ROLE OF INSURANCE FOR REUSE.

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June 2025



The Circular Buildings Coalition is an initiative by Metabolic, Circle Economy, World Business Council for Sustainable Development, World Green Building Council, Ellen McArthur Foundation and Arup to accelerate the transition to a circular economy in the Built Environment. The coalition is managed by Smith innovation.

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ABOUT US

The Circular Buildings Coalition (CBC) is an initiative by World Green Building Council (WorldGBC), Metabolic, Circle Economy Foundation, World Business Council for Sustainable Development (WBCSD), Ellen MacArthur Foundation and Arup to accelerate the transition to a circular economy in the European Built Environment. Supported by Smith Innovation and Laudes Foundation, we bring together stakeholders from the built environment to overcome barriers and embrace sustainable practices.

In our first report '<u>Towards a Circular Economy in the</u> <u>Built Environment - Overcoming market, finance and</u> <u>ownership challenges</u>' we explored the four top-level strategies to achieve circular built environments: firstly **build nothing**, avoiding the intensive material use associated with constructing a new building. Secondly, **maintain buildings and build for longterm value** as 85-95% of the existing stock will still be in use in Europe in 2050. Thirdly, **build more efficiently** and finally **build with the right materials**, which includes creating simple designs that consider the actual need for components and materials, reducing the use of virgin materials and highintensive carbon materials while prioritising the use of re-used, recycled and renewable materials.

In our second report '<u>Four circular building pathways</u> <u>towards 2050</u>' we estimated the contribution of these strategies and showed how a circular building scenario combined with decarbonisation has the **potential to reduce the construction sector's CO₂e emissions by 4.15 Gt and keep the 2C global warming scenario within reach**. This 'Circular Building Scenario' was modelled based on assumptions on the rate of adoption of certain key technologies as well as building practices, and strikes a balance between ambition and feasibility, ensuring that the envisioned outcomes are both aspirational and attainable. The model recognised strategies around the decarbonisation and recycling on concrete within those with highest impact.

This deep dive seeks to explore the risks of using secondary construction products and the potential role of insurance for reuse.

ACNKOWLEDGEMENTS

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This work has been generously supported by the Laudes Foundation.

EXECUTIVE SUMMARY

Using secondary construction products is still seen by some mainstream construction stakeholders as risky as compared to virgin materials. Standard building insurance and liability policies were designed for new materials, creating ambiguity-or at least a perceived coverage gap-for reclaimed components. This deters risk-averse stakeholders, despite the significant potential benefits: reusing construction materials in Europe could cut CO₂ emissions by an estimated 4.4-12.6 Mt cumulatively between 2025-2050.¹ Furthermore, upcoming EU regulations (e.g., EU Taxonomy criteria for reuse/recycled content) and city-level initiatives (e.g., Whole Life Carbon thresholds) are set to increase demand, making the need for clear risk management pathways urgent. Our research confirms that the 'insurance issue' encapsulates broader concerns across the value chain regarding:

- Performance and failure: Assessing the remaining lifespan and quality of secondary materials, and assigning liability for defects or underperformance.
- Project risks: Managing potential delays and cost overruns associated with deconstruction, reconditioning, or sourcing secondary materials.
- Damage and liability: Determining responsibility for damage during removal, transit, or reinstallation.

 Supply Chain Reliability: Ensuring the timely availability of specified reused materials.

In response, pioneering companies have found practical ways to incorporate risk mitigation in their business models, utilizing strategies like design conservatism (overengineering), cascading use (downcycling), demanding extensive data, specific contractual models (e.g., Design, Build, Maintain, Operate (DBMO)), or relying on highly integrated suppliers who control the chain from sourcing to installation. Pioneering providers (e.g., Cycle Up, Concular) are actively addressing risk by offering reconditioning services, detailed documentation, and partnering with insurers (e.g., SMABTP, VHV, WTW) to provide extended guarantees or product liability insurance, proving that insurable solutions are possible but not yet standard.

Yet, mainstream construction stakeholders continue to demand clarity about the role of the main risk-mitigating measures they are familiar with and which are integrated with their regular business practice: insurance. This suggests that there is potentially still an important role to play for insurance companies to alleviate real or perceived risks to mainstream the use of secondary construction products as the market is poised to scale and business cases emerge.

EXECUTIVE SUMMARY

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THE LIMITATIONS OF EXISTING INSURANCE AND UNDERWRITING HURDLES

Applying the standard insurance toolkit (Property Insurance, Construction All Risk, Professional Liability, Delay in Start-Up) to secondary materials reveals significant friction. Ambiguities arise concerning valuation, repair complexity, warranty equivalence, liability allocation (material vs. installation defects), and the implications of non-disclosure. It is currently assumed and sometimes confirmed that insurance demands costly proof of 'risk-parity' with new materials or charge higher premiums due to perceived uncertainty. Finally, key underwriting challenges include:

- Lack of standardized, cost-effective methods for assessing residual performance, especially for structural elements.
- Insufficient transparency and standardization in deconstruction, handling, and storage processes.
- Absence of historical claims data for reused materials.

Despite challenges, the market potential is substantial. Focusing on easily reusable materials (bricks, insulation, doors, railings, sanitary ceramics), we estimate a potential cumulative EU market size of €12–€26 billion between 2025 and 2035, driven by increasing regulatory pressure and rising carbon costs (e.g., ETS).

THE PATH FORWARD: A COLLABORATIVE APPROACH

Addressing the insurance barrier requires collaborative action. Insurers are positioned not just to react but to proactively participate in shaping the market by engaging in standardization and evaluating how to adapt existing products. We identify the following crucial interventions:

- A. Clarify existing policy application: Insurers should work towards providing clear guidance or endorsements on how standard policies cover projects incorporating secondary materials, reducing ambiguity for stakeholders.
- B. Champion and support standardization: The insurance industry should actively support and potentially require industry-wide standards and process certifications (like the 'Safety in Circularity' attestation) that verify the quality of deconstruction, reconditioning, and handling, thereby building trust and providing reliable data for underwriting.
- C. Develop innovative underwriting and products: Leverage emerging data (from pilot projects, material passports, initiatives like Concular's RCMI) and risk differentiation based on component function (Structure, Skin, Space Plan) to develop tailored, scalable insurance solutions, potentially as add-ons to existing policies.



INTRODUCTION

Insurance for secondary building materials has in many publications been identified as a significant barrier to their widespread adoption in the construction industry.²³⁴ The main idea is that building insurance and product liability policies typically only cover new materials, creating a coverage gap - or at least ambiguity about coverage - for reclaimed materials, leading riskadverse stakeholders to forego their use. Yet the potential is substantial: our earlier Circular Building Coalition (CBC) study estimated that the re-use of construction materials in Europe could lead to a 4.4 - 12.6 Mt CO₂ equivalent reduction cumulatively between 2025-2050 - an impact comparable to the total annual greenhouse gas emissions of about 2 million average European residents.⁵ Furthermore, upcoming EU and national regulations are likely to increase demand for these materials (see chapter 'The potential market is likely to grow').

The barrier that insurability poses to buildings constructed with secondary construction has come to the forefront in publications put out by organisations such as construction small and medium enterprises (SME's),6 Green Building Councils,⁷ and from CBC's own stakeholder outreach.⁸ Yet, the issue has remained relatively off the radar in the insurance sector itself. One commonly cited reason is that secondary products are still not widely used, which reduces the perceived urgency for insurers to develop tailored policies,⁹ and that in any case secondary products need to comply with the same national regulations as new construction products.¹⁰ Yet this overlooks how the limited uptake may itself reflect the absence of clear insurance pathways. Rather than a simple lack of demand, the issue points to broader questions of market readiness, including the maturity of certification, liability, and industry norms.

Talking to various stakeholders (see box: on method) in the construction process, we find that the 'issue of insurance' speaks to the broader question of risks and responsibility when using secondary products, for example:

- **Risk of underperformance or failure:** how is the remaining performance and expected lifespan of secondary materials or components evaluated and who is responsible for damages when they occur?¹¹ As there can be high variability in the quality secondary materials, who is responsible for defects discovered after installation?
- Risk of delays and cost overruns: when deconstruction, reconditioning, or re-engineering takes more time and incurs higher costs, who pays for the delay? And if additional assessments or surveys are needed to enable reuse, who is responsible for covering the associated costs?
- **Risk of damage and liability:** How is damage during removal or reinstallation managed? Who is liable if an item is damaged in transit?
- **Supply chain risk:** How can project managers be confident that reused or second-life materials will be available when contractors begin procurement?¹²

A plethora of insurance products have historically developed in the construction sector to cover different such risks attuned to the use of new construction products in new builds. (see table X in chapter x). Indeed, insurance products emerge where there is a desire to cover risk and a business case for insurers for doing so. At the same time, a gap in deliberate attention and investment to the issue may continue to suppress demand and as such make the business case less obvious. We estimate that as drivers for circularity intensify, the potential market for secondary materials will grow, making the need to address the insurance barriers both business sense and urgent for the planet.





Finally, insurance may be a leverage point in the transition towards a circular economy in the built environment. In the hierarchy of circular strategies – from avoiding new construction altogether, to reusing components, down to recycling materials into new forms – clarifying the insurance situation directly addresses a critical loop: the direct reuse of materials and components. This makes insurance an important leverage point for accelerating the transition. Resolving the ambiguities around covering risks of using secondary materials could remove a significant barrier, encouraging higher-value retention within the built environment system.

On method

We relied on a combination of literature review, consultations with some of our project partners, and stakeholder interviews. Interparticular, we interviewed 12 stakeholders, some specifically for this project (see section "consulted", and others in the context of some of our ongoing work. For the data, we relied on our own data analyses for the projected demand based on previous work for the Circular Buildings Coalition, and desk research to determine reference prices.

THE POTENTIAL MARKET FOR SECONDARY CONSTRUCTION PRODUCTS IS LIKELY TO GROW

Although the market for secondary construction products is currently still relatively small, many countries and cities are pursuing ambitions to transition toward a more circular economy. This shift is supported by both national and EU-level legislation. As a result, several important drivers are emerging that could accelerate the uptake of secondary materials—creating a corresponding need for updated processes and instruments to manage associated risks. While there are many local and regional initiatives, two critical drivers stand out:

EU Taxonomy setting standards for claiming circularity in investments. This framework provides a basis for labeling investments as 'sustainable' if they make a significant contribution to the circular economy. Notably, it includes criteria requiring that buildings incorporate at least 15% reused components, 15% recycled components, and 20% from a combination of reused, recycled, or responsibly sourced renewable materials in weight.¹³

City and national-level initiatives introducing whole-life carbon (WLC) thresholds. WLC thresholds can increase the attractiveness of secondary construction products. Several European cities-such as Helsinki, Oslo, and Stockholm-have implemented or are considering such thresholds. Currently, these thresholds are often set at levels that can be met using conventional construction methods or by substituting key building materials with lower-carbon alternatives. However, cities have indicated that as reporting mechanisms become more robust, these thresholds will be progressively tightened to better manage total carbon emissions. Complementing these local and national efforts, the EU's Energy Performance of Buildings Directive (EPBD) is set to further accelerate this trend. The revised EPBD mandates the introduction of CO₂ limits for new buildings, typically calculated per square meter, by 2028 at the latest, with some Member States

like France already implementing such CO_2 -limits based on the directive's requirements. A significant advantage for circularity within these regulatory frameworks is that reclaimed materials are often counted as having lower embodied carbon (in some cases zero, in the Netherlands a 20% reduction on key *LCA fases*¹⁴), making their use a highly effective strategy for developers to achieve these increasingly stringent CO_2 targets.

Construction Product Regulation (CPR). Another crucial regulatory advancement is the new Construction Product Regulation (CPR), which became effective in January 2025. This is a landmark development because it marks the first instance of reclaimed construction materials being explicitly recognized within this principal EU legal framework governing the standards and market access for construction products. This formal acknowledgement means that 'the law now knows' reclaimed materials, which is essential for establishing clearer pathways to market, fostering standardization, and enabling their more confident and compliant integration into construction projects across the EU.

For this deep-dive study, we examined the reusability of materials that are relatively easy to re-use because they require little conditioning, or because visual inspection and some sampling gives sufficient information for re-use. The selected materials are bricks, insulation, interior doors, railings (stairs), and sanitary ceramics.

We note here that there are more potential products to reclaim, namely many types of interior materials as well as facade cladding. Furthermore, potentially more interior materials (e.g. sanitary ceramics) will flow out of renovations rather than demolitions which we have not accounted for.



Building on the report "Four circular building pathways towards 2050", we modelled realistic potential uptake pathways of this low-hanging fruit coming from demolition, with uptake pathways maturing in 2030.¹⁵ We estimate here that the potential combined EU market for the reuse of bricks, interior doors, staircases, toilets, sinks, and insulation materials generated through demolition between 2025 and 2035 (cumulatively) could be between €12-€26 billion. In 2035 *alone* when the adoption curve is matured we estimate it to be about 0.72 en 1.45 billion. (See box: "Sizing the Market for Easily Re-used Reclaimable Materials.") In the low scenario, we use current market prices for secondary materials. In the high scenario, we assume prices closer to those of new materials. Bricks account for the largest share in both mass and value particularly in the current market. However, items such as doors and sanitary ceramics have a higher 'spread' of price between re-used and new and will when sold closer at new value also take up a larger share in the prices.

Total cumulative market size of selected products: min ~€12.7 bln. Max ~€26.7 bln

Product	Total mass [Bln. kg]	Share of total mass	Total value low [€ bln]	Total value high [€ bln]
Bricks	287	96%	9,87	10,77
Insulation	1	0%	0,03	0,05
Interior doors	2	1%	0,83	3,11
Railings (stairs)	9	3%	0,88	6,49
Toilets, sinks	1	0%	1,14	6,29

Building Confidence: A deep-dive into risks of using secondary construction products and the potential role of insurance for reuse

THE POTENTIAL MARKET FOR SECONDARY CONSTRUCTION PRODUCTS IS LIKELY TO GROW

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SIZING THE MARKET OF SECONDARY CONSTRUCTION PRODUCTS

The market size for reusable products was determined by dynamically modeling the European construction sector from 2025 to 2035 using a bottom-up approach. This method employed a geographically diverse set of reference buildings to develop product and material compositions made available through demolition. Construction and demolition rates were based on a recent JRC study.¹⁶

In our model, we retained as constant the technical reuse potential of second-hand construction products, while the adoption rate of reuse increases exponentially from 2025 until it reaches maturity in 2035. In 2025, the reuse adoption rate is 1%, growing exponentially to 100% by 2035. Even at full adoption, technical limitations constrain the actual material outflow. For example, we estimate that only approximately 25% of bricks can be recovered from a building.¹⁷

Through desk research, we estimated the second-hand price per kilogram for each product in scope within the Western European market. We also estimated the corresponding retail prices per kilogram.

All relevant assumptions and datasets can be found online at: www.structuralcollective.nl/projects/circular-buildings-coalition

HOW IS THE RISK OF USING SECONDARY MATERIALS FELT ACROSS THE VALUE CHAIN

According to our interviews, literature review and our own engagements with construction sector stakeholders, the perceived risks associated with secondary materials are felt differently across the value chain.

Pioneering asset owners may be more willing to assume risks or to assume additional costs.¹⁸ That means that either the matter of insurance is not a blocker for them, and, if necessary, they might invest additional time and money in coordinating with their insurers to create bespoke coverage. However, more mainstream developers - who weigh costs and benefits independent of circular ambitions - may balk in the face of more uncertainty. Therefore, as the client base expands from pioneering early adopters to a more mainstream market, more robust methods of demonstrating performance and managing risk are demanded.

Providers of secondary materials often argue their products are potentially superior, having already demonstrated durability over extended periods, and highlight the care taken in sorting and selection. While providers of secondary materials can and do offer broader coverage of their products (e.g., also liability instead of only replacement value),¹⁹ their smaller scale (and the fact that they are not specialized in liability) means that some clients may lack confidence in their ability to cover substantial claims. For example, if leaking bricks lead to consequential damages in a large office building, the claim may render a smaller business insolvent. This underscores the need for larger, established insurance companies to underwrite the risk, in particular where potential consequential damages are high (see box Cycle Up).

AEC Services (Architects, Engineers, Consultants), particularly engineering firms vital for structural integrity, encounter significant risks and operational challenges with secondary materials. Engineers often face time-consuming static calculations and assessments for reclaimed elements due to limited data, absent design codes, and uncertain material histories. This additional analytical effort translates to increased service hours and project costs, and heightens professional liability concerns regarding long-term performance. Consequently, the meticulous due diligence required with incomplete information can make engineering services a critical bottleneck to wider secondary material adoption, especially if the foreseen project resources don't cover these intensified design and verification processes.

Larger construction projects managed by professional construction management companies demand tighter control of risks. Providing a professional service, they are governed by more stringent risk management protocols and would for a variety of risks demand risk-parity between new and reused materials – or otherwise require for each decision support of the client for possible higher risks. Reportedly, such uncertainties often lead larger players to cite insurance difficulties as a reason to forgo secondary options, expressing reluctance due to concerns about consistency and safety.²⁰²¹

SMEs in the construction sector reportedly also have concerns regarding who carries the responsibility for defects when using secondary materials.²² A contractor installing reused insulation, for example, may worry about being held liable for subsequent issues like mold growth, potentially attributed to either the material itself or the installation process, which might require different techniques than for new products.



ADDRESSING RISK OF UNDERPERFORMANCE AND EFFECTS: CYCLE UP'S TEAMING UP WITH INSURER SMABTP TO OFFER EXTENDED GUARANTEES (INCLUDING LIABILITY) FOR ITS PRODUCTS²³

Cycle Up operates as a significant player in the French market for reused building materials. Cycle Up's strategy demonstrates a comprehensive approach to facilitating material reuse. By integrating a marketplace, expert consulting, physical reconditioning, and bundled, multi-tiered guarantees backed by a major insurer, the company addresses multiple barriers simultaneously – access, quality assurance, and risk mitigation. This vertical integration, particularly the move into reconditioning coupled with specific guarantees like Cycle Safe, allows Cycle Up to exert greater control over material quality, thereby making the risk more manageable and insurable through its partnership with SMABTP.

HOW DOES IT WORK?

A key differentiator for Cycle Up is its provision of explicit guarantees, structured similarly to insurance products, designed to build customer confidence. These guarantees are offered in tiers:

A basic guarantee is included with all transactions made via the cycle-up.fr platform, covering reimbursement if a material has an inherent defect rendering it unusable for its intended purpose.

An optional, paid extension called "Cycle Protect" can be added to transactions involving materials not directly sold by Cycle Up. This extends coverage to include the financial consequences of bodily, material, and immaterial damages, up to a limit of €500,000 per insurance year.

For materials sold directly by Cycle Up, particularly their reconditioned products, the "Cycle Safe" guarantee is included. This also covers reimbursement for defects and consequential damages, but with a limit of €300,000 per insurance year. Certain exclusions apply, primarily related to structural components or elements critical to façade watertightness, though some exceptions exist for items like lighting terminals or unit equipment if the overall installation conformity is guaranteed by a professional.

Crucially, Cycle Up's guarantee offerings are backed by a formal partnership with SMABTP, a leading insurance group specializing in the French construction and public works sector. This partnership lends significant credibility and financial security to Cycle Up's guarantees.

WHAT IS THE POTENTIAL ROLE OF THE EXISTING INSURANCE TOOLKIT?

While many risks inherent in construction projects can be addressed using established insurance products, the growing interest in secondary or reclaimed building materials has at the same time raised questions about the applicability of existing insurance products on these materials.

PROPERTY INSURANCE (PI).

Incorporating secondary materials introduces specific risks relevant to PI coverage. Challenges can arise in obtaining accurate valuations for unique or aged components, potentially leading to underinsurance. Furthermore, if damage occurs, repair or replacement costs might be higher or more complex compared to standard new materials, and securing long-term warranties equivalent to those for new products can be difficult. Currently, PI terms and conditions rarely mention secondary products explicitly, largely because their low prevalence has kept them off the radar. Providing proof of performance comparable to new products is often difficult due to incomplete data from the processing chain (sourcing, logistics, reconditioning, etc.), and it is frequently unclear whether existing supplier warranties are sufficient. Furthermore, one researcher reports that contractors sometimes hesitate to disclose the use of secondary materials, particularly if the material lacks exhaustive documentation, thereby risking the loss of their coverage.24 Conversely, if a building owner proactively discloses their use, insurers are likely to demand demonstrated 'risk-parity' - proof that the secondary material performs to the same standard as a new equivalent. Achieving this risk-parity often requires costly, bespoke third-party testing and certification, which in turn can increase project costs and potentially premiums, thus creating a disincentive for using such products.

Who: building owner or sometimes a long-term lessee responsible for the building's upkeep

CONSTRUCTION ALL RISK (CAR) INSURANCE AND PROFESSIONAL LIABILITY INSURANCE (PLI)

The use of secondary materials can introduce risks pertinent to Construction All Risk (CAR) insurance and Professional Liability Insurance (PLI). Contractors may face the need for specialized labor, equipment, or installation techniques unfamiliar to their workforce, increasing the risk of errors or required rework due to material inconsistencies - risks typically falling under CAR. Architects and advisors might face increased scrutiny during the material selection phase and potentially heightened liability if material failures occur or other defects arise linked to the reused components, engaging PLI. However, the actual impact on CAR and PLI premiums and coverage specifics remains largely uncertain. As secondary materials are still infrequently used, particularly in complex projects, there is a lack of precedent and documented cases where disputes specifically related to their use have tested policy responses. A potential trigger for PLI or CAR claims²⁵ could arise if staff haven't been adequately trained for potentially different installation methods required by secondary materials, blurring the line between inherent material defect and installation error - a distinction insurers must make but find difficult without clear data. As a result, unspecialized contractors are more likely to shy away from using these materials, narrowing the market to vertically integrated companies (e.g., those that take the responsibility from sourcing to reconditioning and construction).

CAR: project principal (client/developer) or the main contractor (or sometimes jointly)

PLI: architects, engineers, and other design consultants or advisors,



DELAY IN START-UP (DSU)



Project delays are another concern, particularly for larger developments where Delay in Start-Up (DSU) insurance is relevant. Sourcing, testing, or remediating secondary materials could potentially lead to unforeseen delays if unknown defects are found, testing takes longer than anticipated, or supply chain issues arise. While these factors could theoretically increase DSU premiums, this area remains relatively unexplored. The low application of secondary materials in large, risk-averse projects means the potential impact on DSU insurance has not yet been significantly tested in the market.

Who: project owner, developer, or investors who have a financial interest in the timely operational start of the project

Warranties. Distinct from insurance products, warranties are typically offered by the secondary material providers themselves. These warranties, often accompanied by detailed documentation and photographs of defects as a defensive measure by the seller, play a role but have limitations. They are not insurance; they usually cover the material itself but not consequential damages or installation issues. Variability in material history and quality can lead to shorter warranty periods compared to new products. Furthermore, suppliers face an increased risk of claims under Product Liability Insurance due to the inherent uncertainties associated with reused materials, requiring thorough testing and documentation to manage their own exposure. Crucially, these supplier warranties have reportedly been considered insufficient by some larger clients and financiers who demand the comprehensive risk coverage provided by established insurance policies.²⁶

Who: suppliers

Key Problem / Area of Friction	Affected Stakeholder(s)	Relevant Insurance Product(s)	Brief Explanation
Nisk of underperformance	Property Owners / Developers, Insurers	Property Insurance (PI)	Difficulty assessing unique/aged components complicates coverage amounts and potential repairs.
Risk of delay	Property Owners / Developers (Large Projects)	Delay in Start-Up (DSU)	Sourcing/testing secondary materials might cause delays, potentially impacting DSU (unexplored).
Liability Ambiguity	Contractors, Architects / Advisors, Insurers	Construction All Risk (CAR), PLI	Distinguishing material defects from installation errors is complex for reused items.

Table: Challenges Applying Standard Insurance to Secondary Materials

WHAT IS THE POTENTIAL ROLE OF THE EXISTING INSURANCE TOOLKIT?

Continued...

Key Problem / Area of Friction	Affected Stakeholder(s)	Relevant Insurance Product(s)	Brief Explanation
(!) Warranty Limitations	Property Owners / Developers, Suppliers	(Not Insurance, but relates to PLI)	Supplier warranties are often insufficient (scope, duration) and don't replace comprehensive insurance.
Disclosure Risk	Property Owners / Developers, Insurers	Property Insurance (PI)	Failure to disclose use of secondary materials may lead to disputed claims upon discovery.
ठोठ Risk-Parity Demand	Property Owners / Developers, Insurers	Property Insurance (PI)	Insurers may require costly proof of equivalence to new materials, or charge higher premiums.
Lack of Precedent / Data	All Stakeholders, especially Insurers	CAR, PLI, DSU, PI	Low usage means limited claims history and untested policy responses for secondary materials.

In summary, while the existing insurance toolkit appears comprehensive, its practical application to projects incorporating secondary materials reveals significant gaps and uncertainties. The lack of widespread use means clear precedents, standardized assessment meth ods, and reliable data are missing. This ambiguity leaves stakeholders without clear guidance on risk coverage, potentially leading to disputes, higher costs through premiums or bespoke certifications, and unresolved liability questions. Ultimately, this hinders the broader adoption of circular economy practices in construction. Therefore, while this analysis explains the underlying complexities and difficulties, it underscores that for many SMEs and designers seeking practical guidance today, clear information on insurer-accepted documentation standards or readily available, affordable insurance products covering common secondary material applications remains largely elusive.

The practical outcome is that the standard insurance toolkit is often inadequate for covering the additional (perceived) risks associated with secondary materials. This forces construction project teams either to avoid these materials altogether or to develop costly, bespoke insurance solutions – meaning effective and accessible risk coverage for reused components remains far from mainstream.



HOW CONSTRUCTION TEAMS DEAL WITH RECLAIMED MATERIAL RISKS NOW



Given the uncertainties and costs associated with applying standard insurance to secondary materials, project teams currently employ several alternative strategies to manage the perceived risks in the absence of clear coverage. These practical workarounds in lieu of insurance are inventive ways to deal with the risks perceived in using secondary materials, and have made it possible that secondary materials are applied in real buildings today. However, they also come with some drawbacks. We found that pioneering companies apply the following risk mitigating strategies.

- 1. Design conservatism. For instance, engineers might significantly de-rate the assumed structural capacity of reclaimed elements or anticipate higher leakage risks in facade components, designing compensatorily with larger safety margins. While this addresses immediate safety concerns, it leads directly to over-engineering and inefficient material use, undermining the resource conservation goals inherent in the circular economy.
- 2. Cascading uses. Here, materials are repurposed for uses that are less demanding than their original design intent – for example, using durable old facade cladding merely for interior decoration

or aesthetic purposes. Although this finds a subsequent use for the material, it represents a reduction in value compared to direct reuse in a similar high-grade function, moving down the 'R-ladders' of circularity and failing to capture the full potential of the resource. We should note here that there are also ways to cascade uses of construction products without significantly reducing its value. Consider hollow-core slabs: when carefully removed, they can be installed as ground flooring, a less structurally demanding application, and remove the need of installing a new floor.

3. High demands on data quality, such as traceability or proof of performance: Contractors or developers may stipulate that they will only use secondary products for which exhaustive documentation of previous use, deconstruction methods, transport, and storage is available. Indeed, a circular economy may demand more time assessing material durability as the quality of the materials will always need to be insured. Nevertheless, the reality is that at the moment the data ecosystem is not mature. Consequently, the required intensive vetting process at the end of the value chain is costly and has the effect of suppressing demand.

HOW CONSTRUCTION TEAMS DEAL WITH RECLAIMED MATERIAL RISKS NOW

Continued...

- 4. Different contractual models. In structures like a Design-Build-Maintain-Operate (DBMO) agreement, the long-term performance risk, including that related to the materials used, is transferred from the building user or owner to the DBMO consortium responsible for the asset's lifecycle. While this provides assurance to the end-user, it primarily shifts the risk to another entity rather than resolving the underlying uncertainties about the material's performance or mitigating the risk through standardized assessment and insurance.²⁷
- 5. Business models that suppose high control over the value chain. It hinders the development of independent, efficient markets for demolition, storage, refurbishment, and resale, limiting the overall availability and uptake of secondary materials.
- 6. Sourcing only when demand is clear. In this set-up, companies may create 'material harvesting maps' in order to identify donor buildings to ensure that the required building materials will be present for the design foreseen.
- 7. Futures contracts. An emerging model is to create future contracts between future demolition projects and planned new constructions. (see box: Circotrade's Future's model).

While these strategies allow projects incorporating secondary materials to proceed in the current environment, they do have some drawbacks. They can compromise material efficiency, reduce potential value capture, limit market scalability, or simply transfer risk rather than managing it through transparent, standardized means. The addition of robust and systemic approaches, including reliable assessment methods and appropriate insurance products tailored for the nuances of secondary materials will have a place in addition to these approaches to help the market to scale.

MITIGATING SUPPLY CHAIN RISKS FOR SECONDARY MATERIALS THROUGH CIRCOTRADE'S FUTURES MODEL²⁸

The transition to using secondary (reused) construction materials faces significant supply chain risks, hindering widespread adoption. Circotrade's futures trading model aims to overcome these barriers by:

Addressing Financial Uncertainty: Traditional reuse involves high upfront costs for sellers (building owners) with uncertain future demand and unpredictable costs/availability for buyers (developers). Circotrade provides forward visibility, allowing buyers and sellers to lock in quantities and prices for future transactions. This manages financial risk, provides upfront financial advantages for sellers, and enables reliable budgeting for buyers.

Ensuring Quality and Specification: Specifying reused materials is often hampered by unknown technical specifications, lack of guarantees, and potential uninsurability. Circotrade mandates that materials traded on its platform are verified, reconditioned, and recertified as needed before sale. Through processes like Circopass and partnerships with specialists, it ensures known quality, quantity, and specifications, providing buyers with assurances comparable to virgin materials.

Improving Availability and Predictability: The current market for reused materials often lacks the critical mass, scale, and predictability required for large projects. Circotrade inventories existing buildings well before deconstruction, creating a large, visible pipeline of future materials. Its online marketplace provides transparency on volumes, provenance, and timing, allowing development teams to reliably incorporate reused materials early in the design process.



PATHWAYS TO EFFECTIVE INSURANCE FOR SECONDARY CONSTRUCTION PRODUCTS

Having explored the current landscape of risks, existing insurance limitations, and current mitigation strategies, the discussion now turns to potential pathways forward for developing more effective insurance solutions for secondary construction products. These pathways involve different approaches and stakeholders, aiming to address the identified barriers and build confidence in the reuse market. The following sections will explore these distinct, yet potentially complementary, paths.

PATH 1: RISK-BASED CATEGORIZATION AND UNDERWRITING ADAPTATION

To develop effective insurance solutions for secondary construction products, a structured approach is necessary, starting with understanding and categorizing the associated risks. One practical way to frame this is by considering the function of building components and, critically, the potential consequences of their failure. Adapting concepts like Stewart Brand's "Shearing Layers"²⁹ allows for differentiation based on functional lifespan and impact. We can group secondary materials into broad categories – such as Structure, Skin, and Space Plan – each associated with different failure modes, consequences, and thus, different primary methods for risk mitigation.

Diagram - basis is Stewart Brand diagram



PATHWAYS TO EFFECTIVE INSURANCE FOR SECONDARY CONSTRUCTION PRODUCTS

Continued...

Understanding these distinct risk profiles helps identify the appropriate level of assurance required. High-consequence structural elements logically demand stringent proof of residual performance, whereas lower-consequence interior finishes might be adequately covered by warranties. This risk-based differentiation aligns with the preference observed among insurers, who generally favour extending existing construction and property insurance policies rather than creating entirely new product lines for secondary materials. Coverage could then be offered under specific conditions tied to the risk category - for example, requiring certification for structural components while adjusting premiums or deductibles for uncertified or higher-risk 'Skin' elements.

KEY UNDERWRITING HURDLES FOR A RISK-BASED APPROACH

However, implementing such a risk-based approach faces significant underwriting hurdles, explaining why insuring secondary materials, particularly higher-risk ones, remains challenging. Creating or confidently extending insurance products requires underwriters to reliably assess the quality and predict the performance of the materials involved. The literature and stakeholder outreach suggests a few key challenges:

The lack of reliable data. Insurers depend heavily on reliable data for the underwriting and development of insurance products. As such, limited historical records and missing details regarding material history, maintenance, and performance, hinder accurate risk assessments for secondary construction materials. The absence of comprehensive data and building records which document material composition, service life, and load exposure complicates the integration of reused elements in construction projects.³⁰ Additionally, unstructured data formats and the lack of systematic data collection methods pose serious challenges to data aggregation. Traditional methods, such as

manual building audits, can be time-consuming and costly, while newer approaches, like creating digital replicas of buildings, lack standardization.³¹ While these challenges may be significant however, they also create new potential business opportunities in areas such as information brokerage. Information brokers are entrusted with bridging the structural information gaps within the supply chain.³² While underwriters need data to understand quality, testing the performance of each individual secondary component (like every beam) is expensive, especially relative to the value of bulk or commodity products. Of course, for bulk commodities sampling is possible and frequently done, but this still requires great transparency over the chain of sourcing-transportation-storage, in order to ensure that batches are sufficiently homogeneous.33 Furthermore, this cost barrier is particularly acute for the 'Structure' category, where robust proof of performance is precisely what's needed but hardest to achieve economically at scale.

However, insights from stakeholder interviews also challenged some of the prevailing assumptions regarding the importance of data quality and data availability, in the mainstreaming of insurance for secondary construction products. Although secondary research identified data as a significant constraint, interviews with frontrunners in secondary construction insurance revealed that in instances where insurers collaborated with established retailers of secondary construction products, they opted to utilize historical value chain and supply chain data provided by these retailers to develop their insurance products.

Certifications and Assessments. Findings indicated that in cases where data gaps exist, third-party certification³⁴ bodies can be utilized to fill these gaps through case-by-case certifications. However, the challenge is that some of the certification bodies are neither accredited nor affiliated with recognized industry associations, which could impact the reliability of their assessments. Additionally, the



reliance on individualized assessments makes it difficult for insurers to develop standardized and scalable products, as each case presents unique circumstances.

Significant uncertainty surrounds the secondary material supply chain. While some successful niche providers offering insured products achieve this through deep involvement and control from sourcing to resale, thereby guaranteeing quality to the insurer, this is not the norm. The processes of deconstruction, handling, transport, and storage can introduce damage or degradation, yet these stages often lack standardization and data trails. Much deconstruction expertise resides with individuals rather than codified, verifiable procedures. This introduces unknown variables that are difficult for underwriters to price. Paradoxically, while some underwriters acknowledge that reused materials might inherently be less risky having already proven their performance over time, the uncertainties introduced during recovery and handling often negate this potential benefit.

The absence of historical data exacerbates these

issues. While future buildings incorporating material passports will eventually provide detailed information at their end-of-life, this doesn't help with the current building stock being demolished. Underwriters lack the historical claims data and knowledge about the exact composition and past life of materials currently entering the secondary market.

Operational practices during recovery are critical yet variable. Effective sorting on the demolition site, for instance, is vital for ensuring quality control, creating homogeneous batches, and enabling efficient handling and storage. Yet, the consistency and rigour of these practices can vary widely, further complicating quality assurance downstream.

In conclusion, while categorizing secondary materials by risk and failure consequence offers a logical framework for developing appropriate insurance conditions, significant practical barriers remain.Overcoming the challenges related to data acquisition, cost-effective testing, supply chain transparency, process standardization, and quality control during recovery is essential. Until these underwriting hurdles are addressed, insurers will struggle to confidently and affordably extend coverage, particularly for higher-risk components, hindering the mainstream adoption of secondary materials in construction.

Finally, a tiered risk categorization approach suggests that insurance product development need not tackle all material types simultaneously. Instead, insurers can develop coverage progressively, starting with low-risk materials. This phased approach allows insurers to build expertise and data gradually. This approach can assist in breaking the current cycle where lack of data impedes rapid insurance product development. Additionally, it can also lower the transaction costs associated with case-by-case certification, while concurrently solving inherent data constraints. The identified approaches all seek to enable rapid scaling and mainstreaming of insurance for secondary construction materials.

PATH 2: THE ROLE OF SECONDARY MATERIAL PROVIDERS IN VERTICAL INTEGRATION

Observations of the current market highlight that secondary material providers achieving the most success, particularly in gaining traction for highervalue reuse, often possess significant skill and visibility across the entire supply chain. These tend to be highly vertically integrated businesses that incorporate crucial steps like reconditioning and sometimes remanufacturing, giving them direct control over quality and handling throughout the process.

Beyond process control, these providers frequently play a vital role in connecting salvaged supply with project demand, perhaps acting as a preferred supplier for larger developments or even hosting

PATHWAYS TO EFFECTIVE INSURANCE FOR SECONDARY CONSTRUCTION PRODUCTS

Continued...

curated platforms to resell materials. This deep involvement and control make them valuable and often more reliable partners for insurance companies seeking assurance about material quality and provenance.

While these skilled providers can and do selfinsure or offer extended guarantees, partnering with established insurance companies potentially remains important for larger projects. End clients and project stakeholders often place greater trust in the financial backing and claims-handling reputation of a known insurer, especially when potential consequential damages are high. Therefore, providers need insurers to lend credibility and financial security to their offerings.

However, relying solely on highly integrated providers may limit the scalability and diversity of the secondary materials market. A key potential benefit of developing robust industry standards (like process certifications or 'attestations') and clearer insurance frameworks is that they could enable a wider variety of business models. With standardized assurance mechanisms, less vertically integrated players specializing in specific parts of the value chain (e.g., deconstruction, logistics, specific reconditioning) could potentially participate more easily, increasing the overall supply and diversity of available materials.

Furthermore, it is important to note that the insurance models currently emerging in this space, often facilitated by these integrated providers, tend to focus on extending product liability coverage, addressing inherent defects in the material itself. They do not typically cover broader project risks like delays caused by sourcing or testing secondary materials, which remain distinct challenges.

Pioneering material providers providing insurances						
Cycle Up	France	Extended warranty	SMABTP	https://site.cycle-up.fr/ garanties-cycle-up-materiaux- reemploi/		
Concular	Germany	Product Liability Insurance	VHV Versicherungen	<u>https://www.</u> circularbuildingscoalition.org/ blueprint-projects/concular		
Greendozer	Denmark	Product Liability Insurance	WTW	https://www.wtwco.com/-/ media/wtw/insights/2023/05/ new-insurance-paves-the- way-for-more-sustainable- construction.pdf		



BUILDING CONFIDENCE: KEY COLLABORATIVE INTERVENTIONS TO ENABLE INSURANCE FOR REUSE

The insurance industry plays a pivotal role in the transition towards greater use of secondary construction materials, occupying a position perhaps best described as "somewhere in between" being purely reactive and actively leading the market transformation. Insurers generally will not wait passively for standards and markets to fully develop, nor will they typically take full ownership of driving the entire process. Instead, the industry shows an interest in proactive participation. This involves engaging in standardization discussions and collaborating with stakeholders across the construction value chain to help shape the regulatory and operational framework for reclaimed materials. Such engagement allows insurers to stay informed, understand emerging risks, and position themselves to adapt as the market evolves. Reflecting this adaptive stance, insurance companies are currently evaluating the conditions under which

they can extend existing product lines to cover reclaimed materials—determining where current coverage might suffice versus where specific upfront requirements, such as certifications or adjusted premiums, may be necessary.

To effectively play this role and facilitate the broader adoption of secondary materials, several key interventions involving the insurance industry are crucial:

 Clarify the application of existing policies. Significant ambiguity currently exists regarding how standard insurance products—such as professional liability, contractor all-risk, product liability, and property insurance—specifically apply when secondary materials are used. Reducing this ambiguity through clearer policy language or specific endorsements would provide greater certainty for all stakeholders.

THE WORK OF AXA IN THE CIRCULAR LEADERS GROUP

AXA's participation in the Circular Leaders Group (CLG) shows how insurers are starting to proactively engage in shaping the circular economy transition. As a founding member of this cross-industry collaborative initiative convened by Arup and the Ellen MacArthur Foundation, AXA is working to addressing market barriers to scaling circular business models, with particular focus on the built environment.

AXA has been a key contributor to CLG's development of a comprehensive 'Reuse Playbook' which aims to establish the core tasks and interactions needed to effectively reuse materials and maps which stakeholders are best placed to complete each of these tasks, and how they might be incentivised to do this. The playbook draws on insights from across the entire construction value chain, including manufacturers, engineers, architects, quantity surveyors, contractors, stockholders, insurers, developers, and policymakers.

Anne-Sophie Duret, Green Business and Circularity Lead highlights the central challenge related to reused materials: "Since reclaimed materials may come from various sources and have a history that is not easily traceable, there is a higher risk of potential defects compared to new materials. This uncertainty around quality and risk levels potentially lead to high premiums or even lack of coverage on traditional insurance policies."

BUILDING CONFIDENCE: KEY COLLABORATIVE INTERVENTIONS TO ENABLE INSURANCE FOR REUSE

Continued...

Through the CLG, AXA is working with partners and the wider industry to develop solutions that address these uncertainties while enabling the industry to benefit from circular practices. This collaborative approach recognises that insurance can move beyond being merely a compliance requirement to becoming an active enabler of circularity in the construction sector.

CLARIFICATION OF THE GUARANTEE AFTER RECEIPT OF DAMAGE TO A STRUCTURE RESULTING FROM A REUSE OPERATION.

AXA France's Batissur contract covers material damage and non-conformities when the insured is held liable, after acceptance, due to a reuse operation when the structural elements, electrical circuit breakers and elements of the reused fire safety system have been validated for conformity by its manufacturer or by a technical design office.

2. Champion and support overarching

standardization and certification: The insurance industry should actively promote and contribute to the development of robust, industry-wide standards, certifications, and attestations that verify the quality and reliability of both secondary products and the general processes for their recovery and reconditioning. A primary barrier to reuse is the lack of transparency and verifiable control across the material supply chain-from deconstruction and transport to storage and refurbishment. General process certifications, such as the 'Safety in Circularity' attestation, and company-led standards for specific reclaimed products (e.g., Concular's work with reclaimed bricks in Germany) are key to overcoming data gaps and building widespread confidence. By participating in the creation of these overarching frameworks, and potentially requiring such recognized certifications for coverage, insurers can help establish the necessary quality infrastructure for the market. Proactive secondary material suppliers are also vital partners, building trust by investing in rigorous quality control, providing transparent data and documentation, and collaborating directly with insurers and certifiers to demonstrate effective risk management for their products and services.

3. Promote the development and validation of material-specific reuse protocols by professional sectors: Encourage professional bodies, representing specific material sectors (e.g., for steel, timber, or concrete), to take the lead in establishing detailed professional recommendations for the reuse of their respective materials. These specialized guidelines should define best-practice processes covering the entire lifecycle of these secondary materials, including methods for careful deconstruction, appropriate transport, secure storage, and correct reinstallation that are specific to that material type. Crucially, for these protocols to gain wide acceptance by insurers and streamline risk assessment, they should seek validation from relevant national authorities or quality control bodies, enabling them to be recognized as "common techniques." The French CTICM's (Centre Technique Industriel de la Construction Métallique) guide for steel reuse, which was validated by the C2P ("Products Prevention Commission" of the AQC) and accepted by its insurer members as a "common technique," perfectly illustrates this targeted approach. Such officially recognized, material-specific protocols significantly simplify the evaluation process for insurers, reducing the need for extensive bespoke analyses and fostering greater confidence in the reliable application of reused materials.



THE "SAFETY IN CIRCULARITY" ATTESTATION - A PROCESS-BASED APPROACH³⁵

Recognizing that a lack of reliable information and formal recognition of reuse practices acts as a major barrier, the "Safety in Circularity" attestation was developed in Belgium by reuse company BatiTerre, contractor Jacques Delens (BESIX Group), and risk/quality control body SECO Belgium. It aims to address the "grey zone" surrounding the insurability of reused materials stemming from restricted information and limited risk evaluation. The goal is to build trust in the reuse sector by allowing quality-focused companies to differentiate themselves and provide stakeholders, including insurers, with greater confidence to specify, use, and validate the integration of reused materials in projects. Key features of the attestation include:

- Focus on process, not product: It validates the quality of the processes implemented by professionals involved in reuse—specifically dismantling/deconstruction, treatment/reconditioning, and storage—rather than certifying individual, unique reused products.
- **Third-party verification:** An independent auditor, qualified by SECO Belgium, evaluates the company's organisational setup and technical adherence to reference standards, both at the company's headquarters and on-site or in workshops.
- Increased information reliability: The attestation aims to provide trustworthy, traceable information about the recovery process to all project stakeholders (insurers, prescribers, clients, contractors), guiding choices about potential reuse scenarios.
- Scope: Initially covers materials like faucets, sanitary fittings, raised floors, and protective railings, with plans to develop standards for materials with higher technical requirements (e.g., insulation, structural elements) based on market demand.

This process-based attestation represents a concrete step towards standardizing quality assurance in the reuse supply chain, thereby addressing some of the key data gaps and uncertainties faced by insurers and the wider construction industry.

4. Continue to develop innovative ways of underwriting these materials. As the use of secondary materials grows, valuable data emerges. Leveraging new data points, such as actual claims history derived from projects using reclaimed materials, can significantly support underwriters in assessing risk more accurately. The case of Concular, which reportedly shared claims data with its insurance partner to help develop a tailored product, exemplifies how empirical data can bridge knowledge gaps and enable new solutions. Exploring other data sources and modelling techniques will also be important. Successfully implementing these industry-led interventions may also be significantly accelerated by supportive public policy frameworks. Potential policy levers could include public funding for pilot projects demonstrating the insurability of innovative reuse applications, government support for developing open-access data platforms (e.g., for material passports or anonymized claims history), co-funding or facilitating industrywide standardization efforts, or incorporating requirements for certified materials or processes within public procurement tenders.

BUILDING CONFIDENCE: KEY COLLABORATIVE INTERVENTIONS TO ENABLE INSURANCE FOR REUSE

Continued...

CONCULAR'S RCMI INITIATIVE (GERMANY)

Addressing the significant insurance barrier for reclaimed materials in Germany, Concular, in close collaboration with insurer VHV Versicherungen and other experts, is developing the Reclaimed Construction Material Insurance (RCMI).

Key Features:

- Structure: RCMI is designed not as standalone product liability, but as an add-on module to existing building insurance policies.
- **Goal:** To provide coverage equivalent to that of new materials, removing a key obstacle to reuse and simplifying the process for building owners.
- **Risk-Based Approach:** It proposes tiered coverage levels (e.g., Level 1, 2, 3) based on material categories defined by insurance risk and the required testing effort, aiming to tailor requirements pragmatically (drawing from standards like DIN).
- **Collaboration:** Developed through extensive workshops involving insurers, construction companies, and regulatory bodies to ensure industry alignment and legal compliance. Concular acts as a facilitator and knowledge broker.

The RCMI initiative represents a significant collaborative effort to create a scalable insurance solution intended to mainstream the use of reclaimed materials by integrating them into standard building insurance frameworks.

Engaging in these interventions aligns with insurers' interests in accessing emerging markets, supporting sustainable development goals, and managing risks in a changing climate. Ultimately, proactive involvement from the insurance industry in clarifying policies, establishing standards, and innovating underwriting practices is vital for building the market confidence required to mainstream the use of secondary construction materials, thereby unlocking their full potential within a circular economy.



Building Confidence: A deep-dive into risks of using secondary construction products and the potential role of insurance for reuse

ENDNOTES

- 1. Add reference to pathways report.
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- **3.** Circular Buildings Coalition. (2023). Towards a circular economy in the built environment; overcoming market, finance and ownership challenges
- 4. UKGBC. System enablers for a Circular Economy https://ukgbc.org/resources/system-enablersfor-a-circular-economy/
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- 8. Circular Buildings Coalition (2023). Towards a Circular Economy in the Built Environment. <u>https://www.circularbuildingscoalition.org/resources</u>
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- 10. An unnamed interviewed insurer.. Ibid
- Eugenio Quintieri, EBC Secretary general (2021). Competitiveness of secondary materials. <u>https://circulareconomy.europa.eu/platform/sites/default/files/e.quintieri-ebc-competitiveness_of_secondary_materials.pdf</u>
- 12. Also see: https://ukgbc.org/news/whats-at-riskwith-reuse/

- **13.** https://www.dgbc.nl/app/uploads/2025/01/ Bijlage-EU-Taxonomie-Circulaire-Economie-EN. pdf
- 14. <u>https://milieudatabase.nl/nl/actueel/nieuws/</u> milieueffecten-van-hergebruik-waarderenmet-de-bepalingsmethode-deel-1-dehergebruikfactor/
- **15.** Circular Buildings Coalition, Four circular building pathways towards 2050. <u>https://www.circularbuildingscoalition.org/resources</u>
- **16.** JRC, 2022. Background Data Collection and Life Cycle Assessment for Construction and Demolition Waste (CDW) Management).
- 17. There are various reasons why the recoverability of bricks is quite low. For example, in most cases only the bricks from the outer leaf cavity are eligible for re-use.
- 18. "The risks are higher, but they are accepted and borne by one or more members of the project team." in Bougrain. Insurance and reuse learning from case studies and perspectives. <u>https://opalis. eu/sites/default/files/2024-04/Prospective%20 report%20on%20reuse%20and%20insurance%20 -%20EN.pdf</u>
- 19. For example, Luijtgaarden, a Dutch tiling company offering re-used rooftiles will offer a 10 year guarantee on their installation. <u>https://luijtgaarden.nl/oplossingen/renovatie/</u> <u>herleggen#:~:text=Wij%20zorgen%20voor%20</u> <u>esthetische%20daken,herleggen%20van%20het%20</u> <u>gehele%20dak</u>
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- **21.** Insight from stakeholder interview conducted by Structural
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- **23.** Cycle-up (visisted January 2025). Garanties for material re-use. <u>https://site.cycle-up.fr/garanties-cycle-up-materiaux-reemploi/</u>
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- 25. Interview Structural
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- 27. Outside of DBMO constructions, simple maintenance contracts following renovation or construction can perform the same function. See also: Bourgain (2023). Insurance and Re-use: Learning from Case Studies and Perspectives. https://opalis.eu/sites/default/files/2024-04/
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- **29.** Brand (1994). How Buildings Learn: What Happens After They're Built.
- **30.** Byers et al. (2023). From research to practice: A review on technologies for addressing the information gap for building material reuse in circular construction. <u>https://www.sciencedirect.</u> <u>com/science/article/pii/S2352550923002920</u>
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- Wijewickrama et al (2021) Information brokerage for circular economy in the construction industry: A systematic literature review. <u>https://www.sciencedirect.com/science/article/abs/pii/ S0959652621021569</u>
- See also "The importance of the homogeneity (p.14)" in Poncelet and Nasseredine (2023).
 Evaluating the technical performance of reclaimed building materials. <u>https://opalis.eu/sites/default/</u> files/2022-02/FCRBE-booklet-02-fitness_for_use-EN.pdf

- 34. It is true that third-party certification is not exclusive to reused materials; new construction products may also require it, for instance, to verify the performance of innovative materials, to ensure compliance with specific building codes (e.g., via notified bodies for CE marking in Europe), or for entry into specific quality assurance schemes. This highlights that independent verification is a known practice in construction. The particular challenges for secondary materials, as discussed above, often relate to the current landscape: the potential scarcity of established and accredited certification pathways specifically for reused items, the variability inherent in reclaimed components necessitating more individualized assessments, and the difficulty in standardizing these assessments compared to those for massproduced new products.
- **35.** The "The "Safety in Circularity" attestation. Frederic Bougrain (2023). <u>https://vb.nweurope.eu/</u> media/21157/fcrbe_attestation-circulaire-seco_ final18oct2023_en.pdf

CALL TO ACTION

Reusing construction products could lower Europe's building-sector CO₂ emissions by an estimated 4.4–12.6 Mt between 2025 and 2050, and forthcoming EU Taxonomy rules and citylevel whole-life-carbon limits will accelerate demand—but uptake lags because insurance and liability frameworks were built around virgin materials, creating real or perceived coverage gaps for reclaimed components. Mainstream stakeholders remain wary of four linked risks: (1) uncertain performance and lifespan of secondary elements, (2) delays or cost overruns tied to deconstruction and reconditioning, (3) damage and liability during removal, transport, or installation, and (4) the reliability of supply chains for specified reused items. Early adopters are already mitigating these risks through design conservatism, cascading use, rigorous documentation, integrated "designbuild-maintain" contracts, and partnerships with insurers that extend guarantees, proving workable solutions exist—yet sector-wide, clearer insurance pathways are still needed to normalise secondary construction products just as regulatory and market pressures reach a tipping point.

Want to know more? Get in touch with **ivanthung@structuralcollective.nl**





For more visit www.circularbuildingscoalition.org