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Making it Count for Carbon-Conscious Buildings: the data provision landscape

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Abstract. As the built environment accounts for a significant share of global greenhouse gas emissions, achieving whole life cycle net zero carbon buildings has become a pressing objective. Reliable, standardized, and transparent data is critical to support WLC accounting, inform design decisions, and underpin regulatory frameworks. This paper presents the *interim* findings of collaborative research focusing on the role of GHG emissions databases in supporting WLC assessments of buildings. Building on analysis of data coverage and quality, policy integration and institutional support, the paper delineates a global maturity landscape of existing databases. It also outlines current practices and challenges in data provision and devises a reference framework based on features that high-level data systems should pursue.

1. Introduction

The built environment, responsible for over a third of global CO_2 emissions [1], must shift toward low-carbon and net-zero operations. Whole life carbon (WLC) accounting—covering both embodied and operational emissions across a building's lifecycle—has emerged as a key framework for this transition. Implementing WLC requires robust data systems with accurate, verified emission factors for materials, construction, energy use, and end-of-life stages [2]. However, current practices are hindered by limited geographic coverage, inconsistent data granularity, and varying degrees of verification and accessibility.

Life cycle greenhouse gas (GHG) emissions databases provide global warming potential (GWP) information over the life cycle of materials, components and systems. Despite the proliferation of voluntary standards and digital tools, the availability and quality of life cycle GWP data vary dramatically between countries and regions. Higher-income economies often possess well-established life cycle inventory databases and Environmental Product Declaration (EPD) schemes, while many low- and middle-income countries still lack even basic emissions datasets for key construction materials. This discrepancy creates a substantial data gap that hinders the global scaling of credible WLC assessments and policy instruments.

Life cycle-based databases for the building and construction sector were thoroughly explored by [3]. This paper (i) maps the state of GHG emissions databases across diverse national contexts through application of maturity assessment criteria, and (ii) draws from *interim* findings to identify common bottlenecks, emerging trends, and strategic opportunities for improving data ecosystems worldwide to support net zero WLC targets. Given that data infrastructure — including scope, quality, and accessibility — affects the credibility of WLC assessments, our focus lies on recommendable ("ideal") aspects that existing or a new generation of data infrastructures should observe to support evolving regulatory frameworks and climate targets. We also argument that building a coherent and inclusive global GWP data landscape is both a technical and political task.

2. Current Challenges in GHG emissions Data Provision and Use

Despite growing momentum in WLC accounting and increasing alignment with international standards, significant structural and technical barriers continue to limit the reliability, comparability, and policy utility of GHG emissions data worldwide. Röck et al. [2] highlight the lack of precedent or requirement to develop buildings life cycle assessments (LCA), but that other factors also pose data challenges related to availability, accessibility, quality, comparability, and representativeness. We expand and detail the factors challenging data provision and use as:

1. Data quality: Many databases still include unverified datasets, outdated emission factors, or proxy values with limited representativeness. These inconsistencies undermine LCA results in both regulatory and market-based contexts. Transparency around uncertainty is often lacking [4], making it difficult for users to assess data reliability. Some initiatives apply uncertainty factors or conservative buffers to generic data, encouraging use of verified EPDs and highlighting limitations in current datasets.

2. Localization and context-specific relevance: localized data is fundamental to implement and track national decarbonization strategies. Localized generic datasets can guide early design, until specific information is needed. Only a few countries count on such national databases. Later design stages demand access to high-quality, verified EPDs, which also remains concentrated in high-income countries, reinforcing dependence on foreign, unrepresentative datasets that may distort WLC outcomes and reduce their relevance.

3. Comprehensive life cycle coverage: Cradle-to-grave data remains limited, with most databases restricted to A modules due to scenario uncertainty [5]. Biogenic carbon and negative emissions are inconsistently addressed [6]. For example, many EPDs predate EN 15804's latest version (+A2) [7]. Though this share is steadily declining, the so-called "+A1 EPDs" represent about 40% of valid EPDs [8], meaning that e.g. not all life cycle modules were necessarily assessed, which could lead to varied treatment of sequestration, delayed emissions, and end-of-life [9].

4. Temporally responsive: Most databases rely on static values that disregard future decarbonization trajectories in energy, transport and materials. Dynamically modelling such trends is an attempt to avoid locking-in outdated assumptions in contexts actively reducing and tracking down emissions (e.g. Finland [10] and Denmark [5]) but remains uncommon. On the other hand, it is conservative to use actual data rather than data reflecting promises of the future, that may delay climate action now. This is an ongoing active debate in some countries.

5. Data granularity: Some databases provide detailed, product-specific data with life cycle module breakdowns; others rely on aggregated averages or extrapolated values per m^2. Data granularity encompasses multiple dimensions: scope (ranging from whole-building averages to product- and material-level detail), item specificity (from generic to manufacturer- or product-specific data), life cycle breakdown (from aggregated figures to module-level detail), and spatial/temporal resolution (from global or outdated sources to recent, project-specific data).

6. Standardization of indicators: Climate change indicators are inconsistently applied and often diverge from EN 15804+A2 recommendations, limiting comparability. In Europe, some databases follow EN 15804:2012 [11] (superseded); in the future, it is expected to transition towards information from Declaration of Performance (DoP).

7. Transparency, verification and documentation: Without standardized review protocols and documentation of data sources, assumptions, and boundaries, confidence in WLC assessments – and trust in the data systems used – is weakened, especially when decisions hinge on cross-country or cross-tool comparisons. In performance-based regulatory or investment contexts such opacity can undermine the legitimacy of carbon claims, particularly where certification or tax incentives depend on auditable data. Third-party verification remains inconsistent, and metadata standards vary widely across EPD program operators. Verification however does not address nor replace transparency. EPDs are *per se* opaque, because the underlying LCI raw data remains obscured. Data available on unit process level offers full transparency.

8. Accessibility and digital integration: Digitalization gaps constrain scalability and interoperability. Despite efforts toward machine-readable formats (e.g., ILCD+EPD, buildingSMART bSDD), most datasets remain static PDFs, limiting integration with BIM and automated LCA tools [12]. Open APIs and structured metadata are key to enable real-time assessments and adaptive carbon management across the building value chain.

These interconnected challenges highlight the need for a concerted global effort to modernize GHG emissions data systems in line with climate goals. They also inform the reflection on the proposed draft framework for assessing GHG emissions databases.

3. Method

Two major criteria were used to determine a global maturity landscape of databases, equally weighted: coverage and quality of data infrastructure, and policy integration and institutional

Table 1. Criteria for determination of maturity landscape

	Coverage and Quality of Data Infrastructure	**Policy Alignment and Institutional Support**
High	Comprehensive national LCI databases and EPD systems, well-maintained and publicly accessible. Data cover a wide range of construction materials and align with international standards	National or regional regulations mandate or actively support the use of GHG emissions data in procurement, permitting, or planning (e.g., mandatory LCA in codes)
Moderate	National or sectoral databases exist but may lack completeness, consistency, or accessibility. EPD programs are available but not universal or mandatory	Voluntary frameworks (e.g., green building rating tools) incorporate data; some public-sector pilots or incentives exist
Low	Fragmented, emerging, or pilot-level data systems. Databases may be academic or industry-led without formal integration or standardization	Minimal or no regulatory integration; use of data remains in academic or industry initiatives without policy enforcement

support. Table 1 provides further details as to how country-specific databases initiatives were assessed.

Several types of databases exist, like EPD databases, mixed databases, generic databases, and background databases, among others. This paper focuses on mixed and generic databases, due to the need for generic data to support early stages, to the fact that EPDs are not mandatory yet, and not available for all products, and because background databases cost is critical for implementation into regulation. Tools with integrated databases, like EC3, Athena Estimator, CeCarbon, OneClickLCA, were excluded from the analysis.

4. Results and discussion

4.1 Landscape based on selected data systems

Figure 1 depicts the global maturity landscape of GHG emissions databases. A few nations count on partial or emerging national data infrastructures, but very few can rely on them to inform

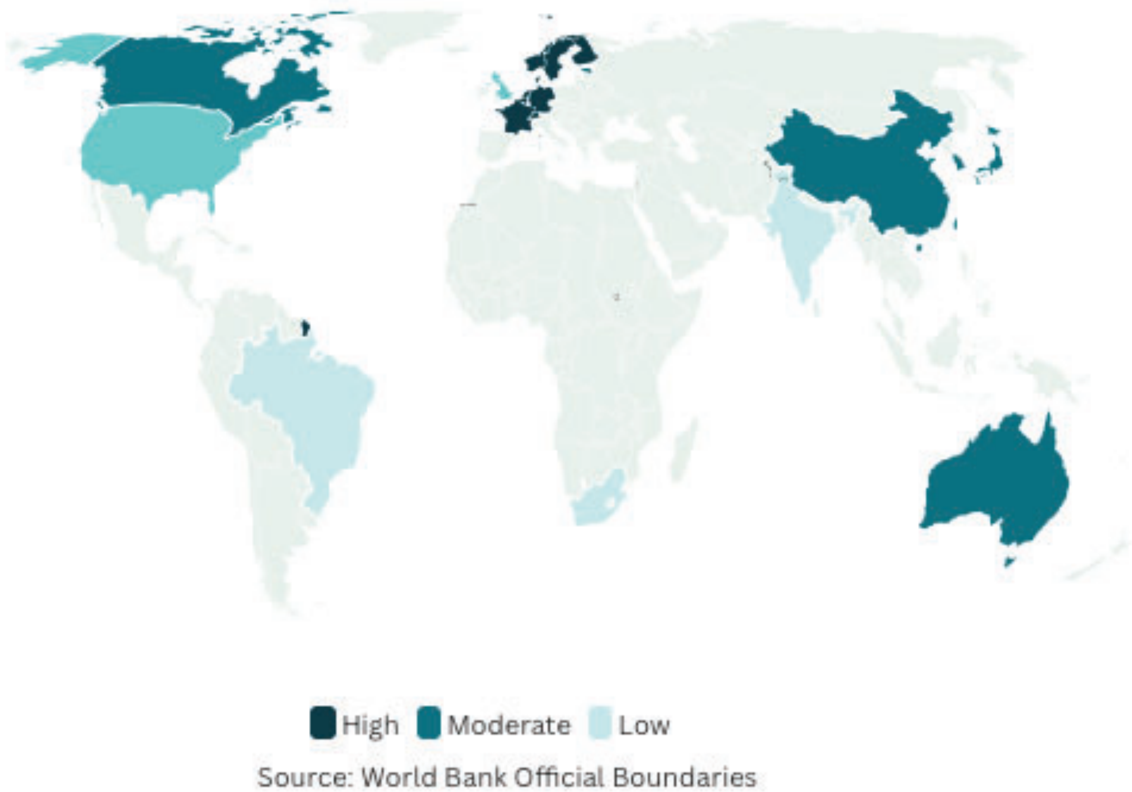

Figure 1. Maturity level landscape of GHG emissions databases worldwide (*interim* survey result), considering (1) Coverage and Quality of data; and (2) Policy integration and Institutional support.

climate policies for the built environment. Importantly, a significant number of countries, including major construction economies and high emitters such as Brazil, India, and Russia, lack comprehensive national GHG databases for building and construction. In many Global South contexts, the lack of both localized generic datasets to guide early design and of product-specific

EPDs to enhance assessment as design processes advance, forces reliance on foreign datasets/databases.

In the Asia-Pacific region, countries such as Japan (AIJ-LCA Intensity DB), South Korea (KLCI DB), and Australia (EPiC DB, ICM DB) [14] have established or are actively expanding their databases, but the former remain somewhat limited in public accessibility or in the breadth of available EPDs, or are still highly academic. India (IFC-India Construction Materials) and China (Chinese Life Cycle DB and High-Quality LCI DB - HiQLCD) also have emerging data infrastructures on building and construction, though standardization and integration efforts are still in early stages.

Initiatives in the Americas mostly refer to tools with integrated databases, like EC3 and Athena Estimator, in the US and Canada. In Canada, the government-backed "Low-carbon assets through life cycle assessment" program - LCA^2 Initiative, led by NRC Canada[1], created, between 2019 and 2023, Canadian LCI datasets and a repository, wbLCA guidelines, product-class strategies and toolkits to support embodied carbon procurement and design. The United States LCI Database includes thousands of datasets across materials, energy, transport, and waste sectors, supporting large-scale LCAs, not tailored specifically to the building and construction industry. In Brazil, the CECarbon tool has a default integrated database that collects and compiles real-life building and construction data from the industry, and SIDAC supplies CO_2 intensities for key materials, but insufficient for conducting comprehensive whole-building LCAs.

European platforms are currently among the most advanced. Germany's ÖKOBAUDAT [15], for instance, is a publicly accessible, government-backed database that offers both generic and EPD-derived data across most lifecycle modules. It aligns with EN 15804+A2, and supports data exchange through the ILCD+EPD digital format. Similarly, the French INIES database [16] is the official repository for RE2020-compliant environmental product data, ensuring consistency between product declarations and building-level carbon metrics. Its regulatory role reinforces data credibility and encourages industry participation. The database includes: FDES, which are product-specific environmental and health declarations for construction materials; PEP ecopassport® declarations for technical equipment such as HVAC and electrical systems; and default generic datasets used when verified EPDs are unavailable.

The UK RICS Built Environment Carbon Database - BECD [17] combines five types of EPD data (average, generic, representative, specific, template verified) with user-submitted values. It includes confidence scoring mechanisms and uncertainty factors, which helps practitioners transparently assess data reliability throughout the design process, and allows benchmarking across projects, though data granularity remains uneven for operational modules. The Swedish Boverket Climate Database [18] integrates GHG emissions thresholds into building codes and leverages its national database to drive market transformation toward low-carbon materials. The Swedish, Finnish and Dutch approaches explicitly apply conservative adjustment factors (+25% [18], +20% [10], and 30% to categories 1 and 2 [19], respectively) to generic values to highlight data uncertainty or unrepresentativeness and to promote verified EPD uptake [5].

The Netherlands' Nationale Milieudatabase–NMD [19] offers tiered datasets based on third-party verification, covering A1–D but with restrictions on operational modules (B6–B7). Switzerland's KBOB database compiles average and company specific LCA values. Data are third party verified, transparent, documented in technical reports and available on unit process level. The data is embedded in design software accredited by national labels and standards [20]. Finland's CO2data.fi database [10] offers data on building products and on infrastructure and

[1] https://nrc.canada.ca/en/research-development/research-collaboration/programs/low-carbon-assets-through-life-cycle-assessment-initiative

emphasizes transparent methodologies and machine-readable formats. Both cases reflect a growing commitment to transparency and user accessibility.

4.2. Draft framework for assessing databases

To ensure its effectiveness in supporting WLC assessment, policy implementation, and design decision-making, an ideal database should embody core characteristics. Based on a qualitative assessment of current challenges in GHG emissions data provision and use, Table 2 gathers a draft framework of key features and scoring system to trace databases' performance in supporting the transition towards a decarbonized built environment.

5. Final remarks

As the built environment becomes a focal point for decarbonization efforts worldwide, the ability to accurately quantify emissions across the entire life cycle of buildings is no longer optional, but central to credible climate policy, performance-based regulation and strategies. Credible WLC assessment frameworks hinge on the availability of data that is not only comprehensive but also verifiable, transparent, and digitally accessible.

The design and functionality of compatible data systems must evolve to meet high standards of scientific robustness, usability, and interoperability, while also being inclusive and adaptable to the rapidly evolving demands of climate-aligned construction. Yet, despite the evident progress in several regions, significant gaps persist in data coverage, standardization, and digital integration. Uneven geographic coverage, lack of standardization, limited data accessibility, limited data on stages B6–C4, inconsistent verification practices and a lack of clear documentation and harmonized quality indicators across platforms continue to undermine comparability and delay policy implementation, particularly in countries without established data infrastructures.

Addressing these gaps requires not only technical innovation. Global collaboration is essential to close the carbon data gap and move collectively toward a harmonized, open, and verifiable data ecosystem that empowers stakeholders across regions.

This paper outlines a framework for improving building and construction-related GHG database systems through quality assurance, localization and harmonization, and aligning them with emerging policy and market demands. Subsequently, this framework will be enhanced and applied to select GHG emission infrastructures to better understand the current state and room for improvement in database developments, both in countries without any, and in those willing to advance their systems.

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Authorship contributions

Conceptualization: VG, MRMS, MGS. Investigation: VG, MRMS, MB, BSV**.** Methodology: VG, MRMS. Visualization: VG. Writing – Original Draft: VG. Writing – Review & Editing: MB, MGS, BSV, TL, AP.

Table 2. Essential features and pilot scoring system for high-level GHG emissions infrastructures

1. **Data Quality and Verification** *>80% data from third-party verified sources/EPDs +remaining documented and conservatively justified factors for estimates =5 | >50%- third-party verified … =4 | >20%- third-party verified… =3 | 100% documented and conservatively estimated =2 | >50% documented and conservatively estimated =1*	**Ideal:** All data from third-party verified sources/EPDs or, where unfeasible, data transparently documented and conservatively justified adjustment factors for estimates. **Rationale:** Verified EPDs follow standardized methodologies, reducing uncertainty and enabling consistent benchmarking. When EPDs are lacking, conservative and well-documented assumptions help maintain methodological transparency and uphold the integrity of lifecycle-based carbon accounting.
2. **Localization and Context-Specific Relevance** *100% country- or region-specific datasets= 5 | > 60% local data=4 | > 40% local data=3 | >20% local data=2 | 100% imported data=1*	**Ideal:** Reflect local or regional conditions in production processes, electricity grid mix, transportation distances, and construction practices. **Rationale:** Country- or region-specific datasets increase the credibility and applicability of carbon assessments and help to avoid methodological pitfalls of importing data built on incompatible assumptions.
3. **Comprehensive Coverage Across Life Cycle Stages** *A1-C4=5; A-C (partial B)= 4; A-B=3; A1-5=2; A1-3=1*	**Ideal:** Cradle to grave coverage (A1–C4). **Rationale:** Only carbon emissions across the full life cycle of building materials allow fair comparisons between materials or systems with different lifespans, maintenance needs or end-of-life scenarios, and support robust policy/benchmarking and informed decision-making in public and private sector procurement.
4. Temporal responsiveness *Integrated (transparent) static + dynamic = +1 | additional (optional, separate) dynamic or scenario-based modeling = +3 | 100% static = 1*	**Ideal:** Whenever reliable, offer integrated or additional dynamic modeling or scenario-based forecasting, to reflect evidence of the pace or direction of national climate mitigation pathways implemented. Carefully crafted to avoid delaying climate action. **Rationale:** Reliance on static values that may lock-in outdated carbon intensities detached from (future but reliably forecast) decarbonization trajectories in energy systems, transport modes, material production processes, material substitution, or building refurbishment over time.
5. Data granularity ***Scope:*** *by material=+1 | product=+2 | element=+1 | building (generic values per m2 for modules) =1* ***Specificity:*** *product-specific data=5 | manufacturer-specific=4 | generic=1* ***Life cycle breakdown:*** *module-level detail =5 | aggregated figures=1* ***Spatial/temporal resolution:*** *recent, project-specific data =5 | global or outdated sources =1*	**Ideal:** Data resolution at least at product level, recent product-specific data, broken down per lifecycle. **Rationale:** Fine-grained data supports more precise GHG emissions estimates and specific modelling as design progresses, from generic to product-specific. High data granularity ensures that databases provide context-specific information, including life cycle module breakdowns (e.g., production, use, end-of-life).
6. **Standardization of Indicators and Formats** *GWP-GHG +1 | GWP-luluc +1 | separate GWP Biogenic +1 | GWP fossil +1 | GWP total = 1*	**Ideal:** Declaring all GWP sub-categories aligns with EN 15804+A2 methodology. GWP Biogenic separately declared for product and packaging. **Rationale:** Allow understanding of the different GWP components and harmonize communication and comparisons across cases.
7. **Transparency and Documentation** *Data available on unit process level +4 OR complete set of background information for each dataset =+3 OR key metadata for each dataset = +2 | Version histories and Update logs= +1 | Companion documentation=1*	**Ideal:** Full transparent data at unit process level. Companion documentation and clear metadata for each dataset, including documentation of data sources, system boundaries, methodological assumptions, and reference units in line with the latest versions of EN 15804/ISO 21930 [13]. Version histories and update logs published. **Rationale:** To increase the credibility and applicability of carbon assessments and help to avoid methodological pitfalls of using outdated info and mixing data built on incompatible assumptions. Ensure traceability and relevance assessment over time.
8. **Accessibility and Digital Integration** *integrated to BIM/LCA/regulatory reporting tools=+2 | digitally enabled =+2 | open access =+1*	**Ideal:** Openly accessible. Digitally enabled. Downloadable machine-readable data structures. **Rationale:** To maximize uptake and equity in data use, and support automation, real-time decision-making, and BIM/LCA/regulatory reporting tools for scalability across projects and jurisdictions. Comparability/data exchange that supports integration into a broader ecosystem of LCA and policy tools.

References

[1] UNITED NATIONS ENVIRONMENT PROGRAMME – UNEP (2022). 2022 Global Status Report for Buildings and Construction: Towards a Zero-Emission, Efficient and Resilient Buildings and Construction Sector. Nairobi: United Nations Environment Programme. Available at: https://globalabc.org/resources/publications/2022-global-status-report-buildings-and-construction [Accessed 8 June 2025].

[2] RÖCK, M; SØRENSEN, A.; STEINMANN, J.; LE DEN, X.; LYNGE, K.; HORUP, L. H.; TOZAN, B.; BIRGISDOTTIR, H. (2022). Towards Embodied Carbon Benchmarks for Buildings in Europe – Facing the data challenge, 2022, https://doi.org/10.5281/zenodo.6120522

[3] CHAE, C-U.; SUNGHEE, K.; FRISCHKNECHT, R. (2023) World Building Life-Cycle Based Databases and Repositories for the Building and Construction Sector. International Energy Agency Energy in Buildings and Communities Programme. treeze Ltd: Uster, February 2023.

[4] MARSH, E., ALLEN, S., HATTAM, L. Tackling uncertainty in life cycle assessments for the built environment: a review. Building & Environment, 231 (2023), Article 109941, 10.1016/j.buildenv.2022.109941

[5] ERLANDSSON, M.; GÖRMAN, F.; THRYSIN, A.; HÄKKINEN, T.; ECKERBERG, K.; PESU, J.; DALBORG, M.; ASPLUND, J. (2024). Nordic view on data needs and scenario settings for full life cycle building environmental assessment. Copenhagen: Nordic Innovation.

[6] SAADE, M.R.M.; BALOUKTSI,M.; SILVA, M.G. & GOMES, V. (2023). When means and ends meet: examining strategies and carbon accounting fit for Our Global Future. IN:ICARB 2023 Proceedings. Edinburgh, 2023

[7] EUROPEAN COMMITTEE FOR STANDARDIZATION - CEN (2019). EN 15804:2012+A2:2019 - Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. European Committee for Standardization.

[8] STAPEL, E. B. et al. (2024). Type III Environmental Product Declarations – The perils and pitfalls of digitalization. IOP Conf. Ser.: Earth Environ. Sci. 1402 012024.

[9] HOXHA, E., PASSER, A., SAADE, MRM., TRIGAUX, D. SHUTTLEWORTH, A., PITTAU, F., ALLACKER, K., HABERT, G. Biogenic carbon in buildings: a critical overview of LCA methods. Buildings and Cities, 1 (1) (2020), pp. 504-524, 10.5334/BC.46/

[10] HÄKKINEN, T.; PESU, J.; SIISKONEN, S-T; VARES, S. (2022). National emissions database project for infrastructure construction: availability of emissions data for infrastructure construction, assessment methods and plan for compiling the database. Publications of the Finnish Transport Agency 11/2022.

[11] EUROPEAN COMMITTEE FOR STANDARDIZATION - CEN (2012). EN 15804:2012 - Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. European Committee for Standardization (superseded).

[12] CARDOSO, V.E.M., SANHUDO, L., SILVESTRE, J.D. et al. Challenges in the harmonisation and digitalisation of Environmental Product Declarations for construction products in the European context. Int J Life Cycle Assess 29, 759–788 (2024). https://doi.org/10.1007/s11367-024-02279-w

[13] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION - ISO (2017). ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. International Organization for Standardization, Geneva. Available at: https://www.iso.org/standard/61694.html

[14] TENG, Y., LI, C. Z., SHEN, G. Q., YANG, Q., & PENG, Z. (2023). The impact of life cycle assessment database selection on embodied carbon estimation of buildings. Building and Environment, 243, 110648.

[15] BUNDESINSTITUT FÜR BAU-, STADT- UND RAUMFORSCHUNG – BBSR (2023). *ÖKOBAUDAT – Life Cycle Assessment Data for Construction*. Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), Bonn: German Federal Ministry for Housing, Urban Development and Building. 2023. Available at: https://www.oekobaudat.de [Accessed 8 June 2025].

[16] INFORMATION INTÉGRÉE ENVIRONNEMENTALE ET SANITAIRE - INIES (s.d.). *Base INIES: La base nationale des déclarations environnementales et sanitaires des produits de construction et équipements du bâtiment*. Paris: Association HQE – Alliance. Available at: https://www.inies.fr [Accessed 8 June 2025].

[17] ROYAL INSTITUTION OF CHARTERED SURVEYORS – RICS (2024). Whole life carbon assessment for the built environment. Professional Standard. Global. 2nd edition, September 2023, v. 2, November 2023. Effective from 1 July 2024. Available at: https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/construction-standards/whole-life-carbon-assessment. [Accessed 8 June 2025]

[18] SWEDISH NATIONAL BOARD OF HOUSING, BUILDING AND PLANNING – BOVERKET (2024). Climate database from Boverket. https://www.boverket.se/en/start/building-in-sweden/developer/rfq-documentation/climate-declaration/climate-database/ [Fetched 2024-11-13]

[19] NATIONALE MILIEUDATABASE–NMD /NATIONAL ENVIRONMENTAL DATABASE (2022). Environmental Performance Assessment Method for Construction Works. Calculation method to determine environmental performance of construction works throughout their service life, based on EN 15804. Version 1.1. March 2022.

[20] KOORDINATIONSKONFERENZ DER BAU- UND LIEGENSCHAFTSORGANE DER ÖFFENTLICHEN BAUHERREN – KBOB (2024). Life cycle assessment data in the construction sector. Coordination Conference of the Construction and Property Bodies of Public Building Owners - KBOB: September 3, 2024. Available at: https://www.kbob.admin.ch/de/oekobilanzdaten-im-baubereich [Accessed 8 June 2025].