



Technology Executive Committee

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Draft policy brief on leveraging data to accelerate financing for climate technologies in buildings and infrastructure

Cover note

A. Background

1. As per activity C.2.1 of its rolling workplan, the TEC is to explore the use of low and near zero emission materials in buildings, green building codes and green zoning systems that promote energy efficiency and resilience, with a view to support countries in the implementation of their NDCs.
2. At TEC 29, the TEC agreed to develop a policy brief on “Leveraging data to accelerate financing for climate technologies in buildings and infrastructure” in 2026.
3. At TEC 31, the TEC considered the draft policy brief prepared by the Global Alliance for Buildings and Construction (GlobalABC) and the Massachusetts Institute of Technology (MIT) Climate Policy Center under the guidance of the open-ended activity group. The TEC requested the open-ended activity group to revise the policy brief, taking into account comments provided by TEC members at the meeting, and to present the final draft, which is to include key messages and recommendations for the COP and the CMA, at TEC 32.

B. Scope of the note

4. The annex to this note contains the revised draft policy brief: Leveraging data to accelerate financing for climate technologies in buildings and infrastructure.

C. Possible actions by the Technology Executive Committee

5. The TEC will be invited to consider the revised draft policy brief and provide guidance to the open-ended activity group, with a view to finalizing it after TEC 32.

Annex

**Draft policy brief on leveraging data to accelerate financing
for climate technologies in buildings and infrastructure**

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1. Executive Summary

Purpose of this Brief

This brief is directed primarily at national governments, public finance institutions, and multilateral bodies involved in climate policy and green finance. It provides actionable guidance on how to close the data-finance gap in the buildings sector, enabling policymakers to make decisions about disclosure mandates, green taxonomies, public procurement, and financing incentives. Where relevant, it also speaks to subnational governments, development banks, and project developers. The recommendations are designed to be adapted to different levels of institutional capacity and market maturity, including in developing countries, especially in small island developing States (SIDS) and least developed countries (LDCs).

Policy Objective

Governments should establish the enabling conditions through data infrastructure, regulation, and targeted incentives to close the building sector's data-finance gap and unlock at-scale climate investment in low-carbon buildings and infrastructure.

1. The Problem: A Sector Central to Climate Goals Remains Underfinanced

Despite their enormous potential to reduce emissions, create jobs, and enhance resilience, low-carbon buildings remain significantly underfinanced. Globally, buildings account for nearly 40% of energy-related CO₂ emissions (IEA, “Buildings”), yet only a small fraction of climate finance flows into this sector, especially toward deep decarbonization and life-cycle emissions reductions.

The central challenge is not a lack of technology or capital, but a lack of reliable, comparable data to demonstrate climate performance, reduce investment risk, and attract funding at scale. Financial actors lack standardized, actionable information to evaluate and price the climate performance of building projects. As a result, low-carbon solutions often appear riskier or less profitable than they truly are, while carbon-intensive investments are made with an inflated sense of confidence.

This data-finance gap is especially acute in developing countries, especially in SIDS and LDCs, where institutional capacity is limited, data systems are nascent, and the construction sector is growing rapidly. Without targeted support, these markets risk locking in high-carbon building stock for decades.

2. Why It Matters Now: A Closing Window of Opportunity

The global finance system is undergoing a fundamental transformation. Investors and financial institutions face growing pressure to align with net-zero targets and climate disclosure frameworks. Regulatory environments are evolving rapidly, with many jurisdictions moving toward mandatory reporting of climate risks and ESG performance. Multilateral development banks are increasingly linking funding to measurable, verifiable mitigation outcomes.

Built assets are long-lived, often exceeding 50 years. Decisions made today about how buildings are designed, constructed, and retrofitted will lock in emissions trajectories for decades. Without strategic action on data, policy, and incentives now, the building sector risks remaining on the

margins of climate finance despite being central to climate solutions. The window to shape these investment flows is narrowing.

3. What Governments Can Do: Three Pillars to Close the Data-Finance Gap

Governments should act across three mutually reinforcing pillars. The sequencing and design of interventions must reflect each country's market maturity and institutional capacity. In early-stage markets, including many developing countries, priority should be placed on building foundational data systems, providing technical assistance, and deploying de-risking mechanisms before advancing to more demanding requirements.

Data

Governments should mandate standardized, transparent, and verifiable carbon data, especially whole-life carbon accounting, to accurately assess financial risk, reward climate performance, and align with emerging disclosure norms. Without it, low-carbon buildings remain undervalued and underfinanced. In developing countries where full-scale data systems are not yet feasible, governments should recognize established third-party certifications (such as EDGE, LEED, or DGNB) as qualifying proxies in the interim.

Policy

National governments and public institutions have the mandate and tools to reshape building markets through lifecycle standards, disclosure rules, and green public procurement. Governments should design policies that create stable long-term signals for investors and innovators. Policy ambition should be calibrated to market readiness: jurisdictions with nascent frameworks should begin with information tools and basic disclosure requirements, while more advanced markets should move toward mandatory performance standards.

Incentives

Governments should deploy targeted financial incentives, including carbon pricing, tax credits, guarantees, and integration with international carbon markets, to bridge cost and perception gaps. These tools are most effective when tied to verifiable performance data. In markets with limited regulatory frameworks, incentives serve as the critical first lever to attract early movers and demonstrate viability to private investors.

4. Expected Outcomes: Buildings as an Engine of Climate-Aligned Investment

With appropriate enabling environments, buildings can become a leading engine of low-carbon investment, job creation, and climate resilience. Coordinated action across data, policy, and incentives will reduce investment risk, improve the bankability of climate-aligned projects, and mobilize private capital at the scale required. Transparent performance data and policy certainty will connect supply-side reforms within financial institutions to demand-side activation among developers and building owners, creating a self-reinforcing pipeline of green building investment. Ultimately, this will allow the building sector to contribute fully to national climate targets, inclusive economic development, and long-term resilience, including in the most vulnerable economies.

a. Key Messages

- i. Buildings are central to climate and economic goals, yet finance remains misaligned.
- ii. The global finance system is shifting; policymakers must help the building sector catch up or risk falling behind.
- iii. Without reliable, comparable and contextually relevant data, low-carbon buildings are undervalued and underfinanced.
- iv. Better building performance data and early-stage business-case metrics improve investment pricing, lowers perceived risk, and attracts capital to climate-aligned buildings.
- v. Policy instruments and tools are available to improve the incorporation of building performance data and have been demonstrated to correct market distortions and unlock green financing for buildings.

b. Recommendations

The following recommendations are structured into short-, medium-, and long-term horizons to support phased implementation. Each action identifies primary responsible actors and corresponds to the policy instruments described in detail in Section 6 (Policy Instruments and Tools).

Governments should adapt sequencing to their institutional capacity and market maturity. In developing countries, especially SIDS and LDCs, early emphasis on technical assistance and foundational data systems is essential before advancing to more demanding requirements.

Short-Term Actions (1–2 Years)

- vi. Launch voluntary whole-life carbon disclosure pilots for new public buildings and major renovations, aligned with international standards (ISO, EN, IPCC, ISSB). In developing countries, recognize established third-party certifications (EDGE, LEED, DGNB) as qualifying interim measures where national data systems are not yet in place. *Responsible actors: National governments (Ministries of Environment, Finance, and Works), development finance institutions, and technical assistance providers.*
- vii. Provide training and capacity-building programs for developers, investors, financial institutions, and public officials on interpreting and acting on building emissions data. Governments should prioritize technical assistance to developing economies, especially to SIDS and LDCs, where the data-finance gap is most pronounced. *Responsible actors: National governments, multilateral development banks, and international technical cooperation programs.*
- viii. Integrate verified building carbon performance data into existing or emerging national green finance taxonomies. Where taxonomies do not yet exist, governments should recognize established certifications (LEED, EDGE, DGNB) as qualifying criteria for concessional financing and green bonds, with clearly defined performance tiers for transparent classification. *Responsible actors: Ministries of Finance, central banks,*

and financial regulators; multilateral development banks where taxonomies are under development.

- ix. Deploy targeted financial incentives, including blended finance, green guarantees, and concessional loans, to de-risk early-mover investments in low-carbon buildings. In markets with limited regulatory frameworks, these incentives serve as the primary lever to build a pipeline of bankable green projects. *Responsible actors: Development finance institutions, Ministries of Finance, MDBs.*

Medium-Term Actions (3–5 Years)

- x. Establish mandatory whole-life carbon disclosure requirements for new buildings and major renovations, including both operational and embodied emissions. Frameworks should include locally calibrated performance baselines and be scaled to market readiness, relying on simplified approaches for early-stage markets and more comprehensive requirements for more advanced jurisdictions. *Responsible actors: National governments (Ministries of Environment, Works, and Housing); supported by standard-setting bodies and international technical assistance.*
- xi. Implement green public procurement mandates requiring publicly financed and publicly owned buildings to meet minimum performance thresholds. Governments should lead by example, creating baseline market demand for climate-aligned construction and supporting professional capacity throughout supply chains. *Responsible actors: National and subnational governments; Ministries of Finance and Public Works; procurement agencies.*
- xii. Establish national building performance databases centralizing operational and embodied emissions data. Governments should deploy open-access digital tools for whole-life carbon accounting and require independent third-party verification aligned with international frameworks (ISO, EN, IPCC, ISSB). MRV systems should capture energy, water, and embodied impacts and be interoperable with national NDC tracking systems. Developing country governments should seek technical and financial support to build these systems. *Responsible actors: National governments; statistical agencies; climate finance and technology bodies; MDBs providing technical assistance.*

Long-Term Actions (6+ Years)

- xiii. Transition from voluntary disclosure to binding performance standards, including mandatory embodied carbon limits, whole-life carbon targets, and phase-out timelines for high-carbon materials. Governments should progressively tighten thresholds as market capacity matures, ensuring policy evolution is paired with sustained capacity support, particularly in developing countries. *Responsible actors: National governments; regulatory bodies; building standards agencies.*
- xiv. Integrate building sector emissions reductions into Article 6 of the Paris Agreement, enabling verified reductions to access international carbon markets. Governments should develop robust MRV frameworks for buildings-related carbon credit transactions to ensure environmental integrity and generate new revenue streams for

low-carbon projects. *Responsible actors: National governments; climate finance authorities; carbon market regulators; international bodies including UNFCCC.*

- xv. Leverage accumulated building performance data and mature market capacity to mobilize private capital at scale, reducing dependence on public de-risking instruments. Governments should enable performance-based financing where market actors can independently evaluate and price climate risk across building portfolios. *Responsible actors: National governments; financial regulators; institutional investors; commercial banks.*

2. Introduction

Buildings and infrastructure represent both a significant challenge and opportunity in global efforts to address climate change. Together, they are responsible for nearly 40% of global energy-related CO₂ emissions (IEA, “Buildings”), making the built environment one of the largest contributors to climate change. At the same time, buildings represent a significant share of national wealth, public spending, and employment, particularly in growing urban areas within developing countries, especially in small island developing states (SIDS) and least-developed countries (LDCs).

While many regulatory and finance innovations have emerged in parts of the world, this policy brief places a strong focus on their applicability and adaptation in developing and emerging economies, where the data-finance gap is most pronounced and urban growth is accelerating.

Decisions made today about how buildings are constructed, retrofitted, or demolished will lock in emissions trajectories for decades. Built assets are long-lived, often exceeding 50 years. As a result, the carbon intensity of current investments in buildings and infrastructure will have profound consequences for future generations.

Research consistently shows that every USD 1 invested in low-carbon, energy-efficient buildings generates multiple returns, including lower energy costs, healthier indoor environments, job creation, and increased climate resilience (OECD, “Building Climate Resilience”). Yet, despite this generous return on investment and the building sector’s significant contribution to global greenhouse gas (GHG) emissions, the sector remains critically underfinanced in the global climate agenda. Deep decarbonization pathways, particularly those targeting both operational and embodied emissions, have yet to receive the capital flows necessary to deploy and scale across the globe.

3. Global Shifts in Climate Finance

Fortunately, global finance is undergoing a fundamental transformation, driven by growing recognition of climate risk and the urgent need to align capital flows with international climate goals. Investors and financial institutions are under increasing pressure to demonstrate alignment with net-zero targets and climate disclosure frameworks. Examples of current initiatives are the Task Force on Climate-Related Financial Disclosures (TCFD), the International Sustainability Standards Board (ISSB), and the EU Taxonomy (TCFD, “Final Report”; ISSB, “IFRS S1 and S2”).

At the same time, regulatory environments are evolving quickly, with many jurisdictions moving toward mandatory reporting of climate risks, emissions data, and environmental-social-governance (ESG) performance. These changes are shaping the way investment decisions are made and what qualifies as a “sustainable” or climate-aligned asset.

Multilateral and development finance institutions are also shifting their priorities, increasingly linking funding to mitigation outcomes that are measurable, reportable, and verifiable. This reflects a broader push to ensure climate finance delivers real, traceable results, particularly in sectors with high mitigation potential.

Multilateral development banks (MDBs) such as InterAmerican Development Bank (IDB), World Bank, and Asian Development Bank (ADB) rarely finance building projects directly. Instead, they provide capital or guarantees to domestic financial intermediaries, such as commercial banks, that ultimately determine the terms and uptake of green finance. As a result, national policy frameworks and local capacity play a critical role in enabling MDB-aligned projects to scale. Ensuring that local institutions have the tools and incentives to evaluate climate performance is essential to leverage multilateral support effectively.

Meanwhile, market demand for sustainable and green assets is growing, with more capital seeking climate-aligned portfolios. Despite this growing demand, the building sector remains underrepresented. A key reason for this is the lack of standardized, transparent, and comparable building data, making it difficult for investors to evaluate and price climate performance of building projects.

These global shifts in finance, while creating new opportunities, do not automatically benefit all countries equally. For developing economies, especially SIDS and LDCs, many of the disclosure frameworks and standards driving this transformation, such as TCFD and ISSB, were designed primarily for sophisticated financial markets with established regulatory infrastructure.

Domestically, many of these countries lack the institutional capacity, technical expertise, or data systems needed to meet the reporting requirements these frameworks demand. Where MDB financing is available, its uptake depends heavily on the capacity of domestic financial intermediaries to apply green criteria, a capacity that is often limited in lower-income markets (OECD, “Building Climate Resilience”). Closing this gap requires targeted technical assistance and simplified entry points, as outlined in the capacity-building recommendations in Section 1b (Short-Term Action ii).

4. Building Performance Data is the Missing Link

Financial institutions rely on [building performance data to evaluate the risk and return](#) of individual investments, but in the building sector, emissions and performance data are often:

- **Fragmented** across different formats, tools, and jurisdictions
- **Inaccessible** to external stakeholders and investors
- **Non-standardized**, making comparisons across projects difficult

This data gap obscures the value of investing in climate-smart buildings and obstructs competitive financing.

Two key types of emissions data relevant to financial decision-making are:

- **Operational carbon**, including emissions from energy use associated with HVAC systems, appliances, and lighting, measured over the lifetime of a building.
- **Embodied carbon**, including emissions associated with the construction materials and processes, including material production, transportation, installation, and end-of-life treatment.

Combining operational and embodied carbon emissions across the entire lifecycle of an asset yields a [whole-life carbon assessment \(WLCA\)](#) (RICS, “Whole Life Carbon Assessment”). The WLCA maintains a limited focus on carbon emissions, often with a 50-year lifecycle scope, in contrast to the consideration of a broader range of environmental impacts included in traditional [lifecycle assessments \(LCAs\)](#) (ISO, “ISO 14044”). Despite the importance and immense utility of WLCAs in fully understanding the climate impact and financial resilience of a building, they remain underutilized in most markets, particularly in developing economies. Table 1 describes several different building performance data frameworks currently in use.

Table 1. Comparative Overview of Building Carbon Metrics in Selected Frameworks and Standards

Framework / Country	Operational Carbon	Embodied Carbon	Whole-Life Carbon	Lifecycle Scope	Notes
France – RE2020	Mandatory measurement and performance thresholds	Mandatory limits for new residential buildings from 2022	Yes (calculated but embodied currently weighted higher)	50-year period	Progressive tightening of thresholds by 2031
UK – Future Homes Standard / RICS	Energy performance required by building	RICS Whole-Life Carbon Assessment	Partial / recommended via RICS	Variable (RICS recommend)	UKGBC and LETI promote

	regs; optional metering tools	optional but gaining traction	WLC methodology	s cradle-to- grave)	WLC assessments
<u>Germany – Building Energy Act (GEG)</u>	Mandatory energy efficiency standards, based on EnEV	Optional, included in DGNB certification	Partial / integrated in sustainability certifications	50-year or design life (DGNB)	No legal limits on embodied carbon yet
<u>Netherlands – BENG / MPG</u>	Nearly Zero Energy Building (nZEB) standard required	Mandatory MPG (material performance) score for embodied carbon	Partial / MPG addresses embodied; operational separate	50-year lifespan standard	MPG must meet threshold ≤ 0.8 €/m ² /year
<u>United States – LEED / State Codes</u>	LEED credits for energy efficiency; varies by state	Optional LEED credits; state-led pilots (e.g., Buy Clean CA)	Partial / only in advanced certifications	Depends on project scope	No federal requirement ; varies by jurisdiction
<u>India – ECBC / GRIHA</u>	ECBC requires minimum energy performance	Embodied carbon included in GRIHA voluntary rating	Partial in voluntary schemes	Project-based, no national LCA requirement	Data availability and enforcement are challenges
<u>Colombia – Green Taxonomy (2022)</u>	Includes operational thresholds for green classification	Recognizes embodied carbon in green definitions	Yes, included in green investment taxonomy	Whole-life, non-prescriptive	Linked to access to green finance
<u>Sweden – Klimatdeklaration</u>	Required for permitting, via energy declarations	Mandatory for new buildings ≥ 100 m ² since 2022	Yes, but used primarily for transparency	Estimated 50-year basis	No maximum limits yet, but review

					planned for 2025
Global - IFC's EDGE	Requires minimum 20% improvement over baseline	Requires minimum 20% improvement over baseline	Currently covers all major lifecycle stages and developing to cover all stages	Estimated 50-year lifespan of buildings	Covers 100% operational carbon neutrality through EDGE Zero Carbon plus partial embodied carbon.

In developing countries, the data challenge is compounded by structural constraints. Building permit systems are often paper-based or fragmented across municipalities; professional capacity to conduct whole-life carbon assessments is limited; and software tools designed for high-income markets may not reflect local material supply chains, construction typologies, or climate conditions. As a result, internationally recognised frameworks such as RICS Whole Life Carbon Assessment or ISO 14044 lifecycle assessment methodology (ISO, “ISO 14044”) are rarely applied. In these contexts, simplified tools, such as the IFC EDGE platform or the PEEB Policy Toolbox (PEEB/AFD, “PEEB Policy Toolbox”), offer more accessible entry points. Policymakers in developing countries should prioritise deploying these tools and building local capacity to use them before advancing to comprehensive mandatory disclosure regimes, in line with Short-Term Actions i and ii in Section 1b.

5. What Investors Need: De-Risk, Return, and Confidence

Across all types of investments, investors seek [predictable, risk-adjusted returns](#), and climate considerations are becoming an increasingly important part of the return on investment (ROI) equation. This dynamic is particularly pronounced in real estate markets, which are characterized by long asset lifetimes, capital-intensive investments, and risk-averse financing practices, reinforcing reliance on established technologies and business models.

However, climate risks are no longer a hypothetical consideration; these risks are actively reshaping investment decisions across sectors, including buildings and infrastructure.

The [climate risks](#) most relevant to buildings can be broadly categorized as:

- [Physical risks](#), such as extreme weather events, flooding, heatwaves, and sea-level rise, which can damage assets and disrupt operations, and
- [Transition risks](#), including future policy changes (e.g., carbon pricing, building codes), stranded assets, and reputational exposure, all of which can reduce asset values and profitability.

Benefits associated with the [adaptation characteristics of a building](#) (e.g. resilience to flooding or heat) are already sometimes factored into ROI valuation models, due to their immediate and local impacts (NGFS, “Adapting Central Bank Operations”). But benefits associated with mitigation characteristics (e.g., reduced carbon emissions) are more likely to be undervalued or not factored into ROI valuations at all, resulting in incomplete or distorted investment decisions. This is most likely because the financial benefits associated with mitigation are typically indirect, long-term, and globally distributed, making them more difficult to quantify with traditional investment models.

To bridge this data-finance gap, **clear, standardized, and verified carbon performance data at the building level is essential**. This data will empower investors to:

- Understand their exposure to regulatory or reputational risk,
- Accurately price climate-related benefits and costs into ROI valuations, and
- Make informed decisions about long-term asset performance.

A globally consistent standard, calibrated to local baselines, can standardize inputs/outputs for energy, water, and materials, enabling comparable, verifiable metrics for finance (e.g., IFC’s EDGE tool and certification)

While investors are a critical gatekeeper in the pipeline for green buildings, the demand for green finance tends to originate with project developers and asset owners. In many building projects, however, this demand for green financing is currently latent or underdeveloped due to limited awareness of its potential benefits or associated conditions. Building owners may not know that concessional rates, guarantees, or certifications can improve their access to capital, or they may avoid these routes intentionally due to the complexity or lack of visibility. Creating a pipeline of climate-aligned buildings therefore requires simultaneous action on both sides of the market: supply-side reforms within financial institutions and demand-side activation among developers and building owners. Transparent performance data and policy certainty are essential to connect these

two sides and move projects from concept to bankability. Policymakers can play a key role in mobilizing this latent or underdeveloped demand for green financing by making these pathways more accessible, transparent, and attractive.

These dynamics are especially pronounced in developing country contexts, where investors may have limited familiarity with green building products, formal appraisal methods rarely account for energy performance, and mortgage or project finance markets are shallow. Physical climate risks such as flooding and extreme heat are often more acute in low-income countries, yet transition risks, such as regulatory shifts and stranded assets, may feel more abstract given nascent building codes and enforcement. In these markets, first-mover barriers are particularly high, and the role of public incentives, including blended finance, green guarantees, and concessional lending, is correspondingly more important (EDGE Buildings, “EDGE in Colombia”; PEEB/GIZ, “Handbook for Article 6”). The short- and medium-term incentive actions set out in Section 1b are designed with these realities in mind.

6. Policy Instruments and Tools

Closing the data-finance gap in buildings requires more than improved building performance metrics. It requires a supportive policy environment that increases demand, reduces risk, and guides capital flows. Drawing from the [International Energy Agency's policy package](#) approach, policy levers into three categories were organized: **Regulation**, **Information**, and **Incentives**.

The following recommendations are primarily directed at national and subnational governments and public institutions, which have the mandate to set policies, standards, and incentives. However, many tools, particularly those under information and incentives, can also inform the practices of project developers, asset owners, and investors, especially where voluntary standards or tools are deployed in markets where regulation is still evolving. The tiered implementation pathway for these tools is set out in the short-, medium-, and long-term recommendations in Section 1b.

The choice and sequencing of policies and financing instruments must reflect the level of market maturity, data infrastructure, and institutional capacity of a given jurisdiction. In early-stage markets, priority should be placed on foundational data systems, technical assistance, and de-risking mechanisms, while more advanced markets can transition toward performance-based regulation and private capital mobilization. For example, in jurisdictions with minimal building performance policies currently in place, information tools and basic disclosure rules, alongside more immediately achievable targets such as reductions in operational-phase carbon, where track records and returns on investment are more mature, may be the most impactful changes to make first, whereas jurisdictions that already have voluntary building codes and data collection may benefit from implementing mandatory regulations or incentives.

a. Regulation

Regulatory clarity can dramatically shift investment priorities by internalizing the carbon impacts of buildings and defining the market eligibility for green finance. The medium- and long-term recommendations in Section 1b (Actions vi, vii, and ix) translate the regulatory options below into a sequenced implementation pathway.

Regulatory tools establish clear expectations and set a level playing field, creating stable conditions for low-carbon building investments. As more building performance data is measured and becomes available, regulatory frameworks can be expanded to account for whole-life emissions and performance benchmarks.

Key policy options include:

- Mandatory whole-life carbon and energy standards for new buildings and major renovations, ensuring climate alignment across the building stock.
- Develop sectors specific metrics for high intensity assets (e.g., data centers, hospitals) that reflect operational profiles (e.g., PUE) alongside water and materials metrics.
- Embodied carbon limits and phase-out timelines of high-carbon materials and practices, targeting emissions embedded in materials and construction processes.

- Minimum information disclosure requirements, such as digital building passports or emissions certificates, to support valuation and comparison.

Green public procurement mandates, requiring public agencies to lead by example and create baseline market demand while supporting professional capacity.

b. Information

Reliable, comparable, and accessible data systems reduce uncertainty, build investor confidence, and unlock financial investment. The short- and medium-term recommendations in Section 1b (Actions i, ii, and viii) describe how governments can operationalize the information tools set out below.

Information tools help to overcome fragmented data landscapes and support consistent measurement and reporting of climate performance. These systems reduce transaction costs associated with evaluating individual projects and enable private actors to identify and pursue low-carbon opportunities.

Key policy options include:

- Open-access digital tools for whole-life carbon and energy accounting, tailored to national contexts and user capacities.
- Standardized methodologies and verification protocols, aligned with international frameworks (e.g., ISO, EN, IPCC, ISSB).
- Provide a simple, standardized assessment tool that estimates savings, costs, and payback against local baselines to reduce transaction costs and support aggregation.
- National building performance databases, centralizing operational and embodied emissions data to enable benchmarking and risk assessment.
- Update benchmarks periodically to tighten baselines as market practice improves, maintaining ambition while reflecting market evolution.
- Training and awareness campaigns for developers, investors, and public officials, enhancing capacity to interpret and act on emissions data.

In contexts where robust national data systems are still under development, third-party certification schemes such as LEED, EDGE, or DGNB can provide critical proxies for building performance. These certifications offer standardization, comparability, and credibility for assessing the carbon footprint and efficiency of building projects (EDGE Buildings, “EDGE in Colombia”; USGBC, “LEED v4.1”). Policymakers can formally recognize these certifications as qualifying criteria for green taxonomies, subsidies, or concessional financing, bridging short-term data gaps while supporting market alignment with global benchmarks.

c. Incentives

Incentives make low-carbon choices more competitive and can be structured to reward data transparency and lifecycle performance. The short- and long-term recommendations in Section 1b (Actions iv, x, and xi) describe how governments can sequence these tools from early-mover incentives toward market-driven financing.

Incentive mechanisms can correct market distortions and address first-cost barriers for climate-aligned buildings, particularly where regulatory mandates are infeasible. Incentives also help create “early movers”, especially in emerging markets with nascent green finance ecosystems.

Return on investment expectations vary across markets, particularly between developed economies and those in the Global South. In less mature sectors, higher upfront costs and limited experience with green construction can lead to longer perceived payback periods. Policymakers should use targeted incentives, guarantees, or concessional finance to bridge this expectation gap.

Key policy options include:

- Carbon pricing instruments targeted at buildings (e.g., carbon taxes, rebates), creating a direct price signal for emissions.
- Green guarantees, concessional loans, and blended finance mechanisms to de-risk investments and attract private capital.
- Tax credits and investment allowances for verified low-carbon upgrades, retrofits, and materials.
- Integration with [Article 6 of the Paris Agreement](#), allowing verified emissions reductions from building projects to access international carbon markets and generate revenue streams.

The Programme for Energy Efficiency in Buildings (PEEB), supported by GIZ and other partners, has developed [practical guidance on implementing Article 6 mechanisms for building sector mitigation projects](#). This includes frameworks for measuring, reporting, and verifying emissions reductions, structuring carbon credit transactions, and ensuring environmental integrity in buildings-related carbon market participation (PEEB/GIZ, “Handbook for the Development of Article 6 Mitigation Contributions in the Buildings Sector”).

While incentives can accelerate early adoption, they are often insufficient without corresponding regulations or penalties. Many jurisdictions lack strong “sticks” in the buildings sector such as performance-based compliance, emissions caps, or financial penalties for inefficient assets. This creates an uneven playing field in which green buildings must compete on unequal terms with high-emission alternatives. Over time, policy sequencing should aim to evolve from voluntary incentives toward binding performance standards, supported by robust monitoring, reporting, and verification (MRV) systems. This approach increases market certainty and ensures that public incentives are not diluted by concurrent investment in carbon-intensive buildings.

Table 2. Policy Instruments and Tools: Cost-Effectiveness and Leverage Potential

Category	Policy Tool	Government Cost	Private Finance Leverage	Comments
Regulation	Lifecycle carbon/energy standards	Low	High	Creates clear benchmarks for new investments and reduces future retrofit costs.
	Embodied carbon limits and phase-out timelines	Low to Moderate	Medium to High	Signals long-term market shift; encourages innovation in low-carbon materials.
	Mandatory building performance disclosure (e.g. passports)	Moderate	Medium	Enables risk assessment, supports data transparency, and aligns with global taxonomies.
	Green public procurement	Moderate	High	Government purchasing power can catalyze market uptake and drive supply chain shifts.
Information	Open-access carbon accounting tools	Moderate (initial investment)	Medium	Reduces friction in project design and financing; useful for SMEs and public developers.
	Standardized methodologies and verification protocols	Low	Medium	Enables comparability, MRV, and trust in reported emissions.
	National building performance databases	Moderate to High	Medium	Improves decision-making across the value chain; requires consistent updates and governance.

	Training and awareness programs	Low to Moderate	Low to Medium	Builds technical capacity, especially in emerging markets and subnational governments.
Incentives	Carbon pricing (e.g. tax or rebates)	Revenue-raising / Moderate	High	Effective when paired with data infrastructure; price signal improves investment calculus.
	Integration with Article 6 and international carbon markets	Moderate	High	Enables new revenue streams for verified low-carbon projects; needs strong MRV.
	Green guarantees, concessional loans, blended finance	High	Very High	De-risks first-mover projects and attracts private capital; useful for deep retrofits.
	Tax credits and investment allowances for green upgrades	Moderate to High	High	Time-bound incentives can accelerate early adoption, especially in retrofit markets.

For building developers and owners to want to choose green financing, it must not only be environmentally preferable but also more accessible and financially competitive. If green loans carry higher interest rates or excessive administrative hurdles, market actors will continue to opt for conventional financing. Policymakers must design incentives (e.g., tax credits, blended finance, or green subsidies) that tilt the financial equation in favor of low-carbon projects.

Table 3. Policy Tools and Stakeholder Audiences

Policy Tool	Primary Audience	Secondary Audience
Lifecycle carbon standards	National governments	Local authorities, developers
Embodied carbon limits and phase-out timelines	National governments	Material manufacturers, developers

Mandatory building performance disclosure and consumption tools (e.g., passports)	National governments	Financial institutions, developers
Green public procurement	National and local governments	Suppliers, construction sector
Open-access carbon accounting tools	National and local governments	Project developers, consultants
Standardized methodologies and verification protocols	Standard-setting bodies, Governments	Verification bodies, developers
National building performance databases	National governments	Investors, developers, local authorities
Training and awareness programs	Governments, Educational institutions	Project developers, municipalities
Carbon pricing (e.g., tax or rebates)	National governments	Financial institutions, project developers
Integration with Article 6 and international carbon markets	National governments	Carbon market stakeholders, project developers
Green guarantees, concessional loans, blended finance	Development banks, Ministries of Finance	Commercial banks, project developers
Tax credits and investment allowances for green upgrades	National governments	Property owners, developers
Co-benefits monetization assessment frameworks (including job creation and local economic impacts)	National and local governments	Investors, developers, municipalities

7. Selected Case Studies

Project/Program Name	The Green Fund – Development Bank of South Africa
Brief Description of Project / Program	The Green Fund is a blended finance facility managed by the Development Bank of Southern Africa (DBSA) that offers grants and concessional loans to pilot and scale up green and low-carbon initiatives. It supports projects in sustainable infrastructure, including green buildings, energy efficiency, renewable energy, waste and water management, and climate resilience. The Fund is designed to de-risk investments and catalyze private sector capital by providing early-stage finance, technical assistance, and performance incentives.
Location	South Africa (national scope, with projects implemented in multiple provinces such as Gauteng, Western Cape, KwaZulu-Natal)
Climatic Zone (or other categorization)	Predominantly warm temperate, semi-arid and subtropical zones
Level of Economic Development (or other categorization)	Upper-middle income country; emerging market with growing urbanization and sustainability policy frameworks.
Building Type(s)	• Public and commercial buildings • Mixed-use developments • Affordable housing with sustainability features • Energy-efficient retrofit projects
Building Performance Data	Projects supported by the Green Fund are evaluated based on measurable environmental performance criteria including energy savings, water efficiency, greenhouse gas emission reductions, and waste reduction. While there is no single mandatory whole-life carbon standard, proposals must demonstrate robust baseline data and quantifiable performance improvements over business-as-usual. Monitoring and reporting frameworks emphasize operational energy and emissions performance.

Policy Tools and Instruments	● Grant funding to cover early-stage project risk ● Concessional loans to improve financial viability ● Technical assistance for project preparation and performance measurement ● Alignment with South Africa's climate policies, including the National Climate Change Response and Green Economy Strategy ● Private sector engagement incentives to leverage additional capital
Impacts	● Mobilization of private investment into green building and sustainable infrastructure ● Demonstrated energy and water savings in funded projects ● Increased deployment of climate-aligned practices among developers and local authorities ● Enhanced project bankability and replication potential ● Strengthened capacity of project sponsors and financiers in climate investment
Additional Information	The Green Fund operates as a catalytic finance mechanism, explicitly aiming to crowd in private capital and share risk in early-stage green projects. It has become a key policy instrument in South Africa's transition to a low-carbon economy by bridging public-sector leadership and private-sector finance.

Project/Program Name	<u>EDGE (Excellence in Design for Greater Efficiencies) - Colombia</u>
Brief Description of Project / Program	EDGE is an IFC-developed green building certification system designed to make resource-efficient buildings fast, affordable, and scalable in emerging markets. In Colombia, the EDGE program has been implemented with support from the World Bank Group to encourage private sector investment in energy-, water-, and materials-efficient buildings. The program provides a standardized tool, certification, and market recognition to help developers design, finance, and deliver low-carbon buildings while reducing costs and risks.
Location	Colombia (national implementation, with projects concentrated in major urban centers such as Bogotá, Medellín, Cali, and Barranquilla)
Climatic Zone (or other categorization)	Multiple climatic zones, including tropical, temperate, and highland climates, reflecting Colombia's geographic and climatic diversity.
Level of Economic Development (or other categorization)	Upper-middle-income country; emerging market with a growing construction sector and increasing demand for sustainable urban development.
Building Type(s)	● Residential (multi-family housing, social housing) ● Commercial (offices, retail) ● Hospitality ● Mixed-use developments

Building Performance Data	EDGE certification requires projects to demonstrate, at the design stage, minimum performance improvements of: • At least 20% reduction in energy use • At least 20% reduction in water use • At least 20% reduction in embodied energy in materials Performance is assessed using the EDGE software tool, which provides standardized, comparable metrics and third-party verification. While EDGE does not require a full whole-life carbon assessment, it serves as a practical proxy for operational and partial embodied carbon performance in markets with limited data availability.
Policy Tools and Instruments	• Voluntary green building certification recognized by financial institutions • IFC technical assistance to developers, banks, and public authorities • Integration of EDGE certification into green finance eligibility criteria • Preferential financing and incentives from domestic banks for EDGE-certified projects • Alignment with Colombia's Green Taxonomy and sustainable finance frameworks
• Impacts	• Increased private sector participation in green building markets • Improved access to green finance for developers through reduced perceived risk

	● Measurable reductions in energy and water consumption across certified buildings ● Market transformation by establishing a clear, data-driven benchmark for building efficiency ● Strengthened capacity among developers, financiers, and local professionals
Additional Information	EDGE has been particularly effective in Colombia as a transitional tool, bridging data and capacity gaps while building the foundation for more advanced lifecycle-based standards. The program demonstrates how simplified, standardized performance data can unlock private finance in emerging markets and support alignment with MDB climate objectives.

8. Annex I: Case Study Methodology

The case studies presented in this policy brief were selected to illustrate the practical application of the three-pillar framework (Data, Policy, and Incentives) outlined in this document. The selection methodology aimed to achieve geographic diversity, demonstrate different policy approaches, and represent varying levels of market maturity.

Selection Criteria

Case studies were evaluated against the following criteria:

- 1. Policy Instrument Coverage:* Priority was given to examples that demonstrate at least one of the three policy categories (Regulation, Information, or Incentives) described in the Policy Instruments and Tools section. Cases that combine multiple approaches were particularly valued, as they illustrate how complementary policies can reinforce each other.
- 2. Geographic and Economic Diversity:* Case studies were sought from different geographic regions and economic contexts to demonstrate applicability across varying levels of market maturity. The two completed case studies represent developing economies in different regions: Africa (South Africa) and Latin America (Colombia).
- 3. Data-Finance Linkage:* Selected cases explicitly connect building performance data to financial decision-making or market outcomes. Examples include programs that use energy performance certificates, building certifications (EDGE, LEED), or verified emissions data as qualifying criteria for financing, penalties, or market access.
- 4. Demonstrated Impact on Finance Flows:* Preference was given to initiatives with evidence of shifting investment behavior, mobilizing private capital, or achieving measurable emissions reductions. Examples include programs that have attracted institutional investment, scaled private sector participation, or demonstrated cost-effectiveness in de-risking green building projects.
- 5. Transferability and Scalability:* Cases were selected based on their potential for replication or adaptation in different national contexts. This includes both successful models that can be scaled up or transferred to similar markets and cautionary examples that highlight implementation challenges or the need for context-specific design.

Sources and Validation

Case study candidates were identified through multiple channels:

- Recommendations from the UNFCCC TEC Members and the Expert Advisory Group
- Published reports and evaluations from multilateral development banks (World Bank, IFC, Asian Development Bank, InterAmerican Development Bank) and national development finance institutions
- Documentation from international green building certification programs (EDGE, LEED) and national regulatory frameworks
- Peer-reviewed research and policy analyses from international organizations (IEA, UNEP, OECD)

Each case was validated through official government sources, program documentation, or published impact assessments to ensure accuracy and relevance. Where possible, quantitative outcomes (e.g., emissions reductions, financing volumes, market share changes) were included to demonstrate effectiveness.

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10. Glossary

The following terms are used throughout this policy brief. Definitions are intended for a general audience and reflect the usage of these terms in the context of climate finance and the built environment.

Article 6 (Paris Agreement): The section of the 2015 Paris Agreement that establishes frameworks for countries to voluntarily cooperate in achieving their climate targets increase ambition, sustainable development and poverty eradication. This framework includes transparency and accounting framework to engage bilaterally, mechanism established for multilateral cooperation managed by UNFCCC and non-market-based approaches. Article 6 allows countries and project developers to trade verified emissions reductions across borders, creating potential revenue streams for low-carbon projects such as energy-efficient buildings.

Bankability: The degree to which a project is considered viable and attractive enough by lenders and investors to secure financing. A “bankable” project has sufficiently clear risk profiles, returns, and documentation to qualify for loans, bonds, or equity investment.

Blended Finance: A financing approach that combines public or philanthropic funds with private investment to reduce risk and attract capital to projects that would otherwise be considered too risky or insufficiently profitable. In the buildings sector, blended finance is often used to make early-stage or innovative low-carbon projects commercially viable.

Carbon Pricing: A policy tool that puts a direct price on greenhouse gas emissions, either through a carbon tax (a fixed charge per tonne of CO₂ emitted) or an emissions trading scheme (a cap on total emissions, with companies buying and selling permits). Carbon pricing creates a financial incentive to reduce emissions by making carbon-intensive activities more expensive.

Concessional Finance / Concessional Loans: Loans or other financial instruments offered on more favourable terms than those available in the commercial market, such as lower interest rates, longer repayment periods, or grace periods. Concessional finance is typically provided by development banks or governments to support projects with public benefits, such as low-carbon buildings, that may not yet be commercially competitive.

Data-Finance Gap: The disconnect between the availability of reliable building performance data and the information needs of investors and financial institutions. When buildings lack standardized, verifiable data on their carbon performance, investors cannot accurately assess risk or value climate-related benefits, making it harder to attract financing for low-carbon projects.

De-Risking: Measures taken to reduce the perceived or actual financial risk associated with an investment, making it more attractive to private investors. In the context of green buildings, de-risking tools include government guarantees, first-loss provisions, and technical assistance that improve investor confidence in low-carbon projects.

Embodied Carbon: The greenhouse gas emissions associated with the production, transportation, installation, and disposal of the materials used to construct a building. Unlike operational carbon (which relates to energy use during a building’s lifetime), embodied carbon is released before a building is even occupied, and cannot be reduced through energy-efficiency measures alone.

ESG (Environmental, Social, and Governance): A framework used by investors and companies to evaluate performance and risk across three non-financial dimensions: environmental impact (such as carbon emissions and resource use), social considerations (such as labour practices and community impact), and governance (such as board structure and transparency). ESG criteria are increasingly used to guide investment decisions, including in the built environment.

Green Bond: A type of debt instrument used to raise capital specifically for projects with environmental or climate benefits. Proceeds from green bonds must be used for eligible green activities, such as energy-efficient buildings or renewable energy. They are subject to reporting and verification requirements to ensure the funds are used as intended.

Green Finance Taxonomy: A classification system established by a government or regulatory body that defines which economic activities and investments qualify as “green” or environmentally sustainable. Taxonomies provide a common language for investors, lenders, and policymakers, helping to direct capital toward genuinely low-carbon activities and prevent “greenwashing.” Examples include the EU Taxonomy for Sustainable Activities and Colombia’s Green Taxonomy.

Green Guarantee: A commitment by a government, development bank, or financial institution to cover a portion of the losses if a green investment fails. Guarantees reduce the risk to private lenders and investors, making it more attractive to finance low-carbon building projects, particularly in markets where green construction is still emerging.

Green Public Procurement: A policy requiring government agencies and publicly funded institutions to prioritise the purchase of goods, services, and infrastructure that meet defined environmental or climate standards. In the buildings sector, this means requiring that publicly financed construction and renovation projects achieve minimum carbon performance standards, using government spending power to stimulate market demand for low-carbon construction.

ISSB (International Sustainability Standards Board): An international body established in 2021 under the IFRS Foundation to develop global baseline standards for sustainability-related financial disclosures. ISSB standards are designed to help investors and financial markets assess climate and sustainability risks consistently across companies and sectors worldwide.

LDC (Least Developed Country): A United Nations designation for countries with the lowest levels of socioeconomic development, characterised by low income, limited human capital, and high economic vulnerability. LDCs face particular challenges in accessing climate finance and building technical capacity to implement green building standards.

MDB (Multilateral Development Bank): An international financial institution owned by multiple member countries that provides loans, grants, and technical assistance for development projects, particularly in lower- and middle-income countries. Key MDBs referenced in this brief include the World Bank, the Asian Development Bank (ADB), and the Inter-American Development Bank (IDB). MDBs play a critical role in channelling climate finance to the building sector through domestic financial intermediaries.

MRV (Measurement, Reporting, and Verification): A system for consistently measuring greenhouse gas emissions or other environmental impacts, reporting them in a standardized way, and verifying their accuracy through independent review. In the buildings sector, MRV systems

demonstrate that claimed emissions reductions are real and credible, particularly when projects seek to access climate finance or carbon markets.

NDC (Nationally Determined Contribution): A country's national climate action plan submitted under the Paris Agreement, setting out its climate action including for reducing greenhouse gas emissions and adapting to climate change. NDCs are updated every five years and represent the primary mechanism through which countries communicate their climate ambitions to the international community.

Operational Carbon: The greenhouse gas emissions produced by a building during its use, primarily from the energy consumed for heating, cooling, lighting, and appliances. Operational carbon is distinct from embodied carbon, which covers emissions from construction materials and processes. Reducing operational carbon typically involves improving energy efficiency and switching to low-carbon energy sources.

Physical Risk (Climate): The financial and operational risks to assets, businesses, and economies arising from the direct physical impacts of climate change, such as flooding, extreme heat, storms, and sea-level rise. For buildings, physical risks can damage or destroy property, disrupt operations, and reduce asset values. Lenders and investors are increasingly required to disclose and account for physical climate risk in their portfolios.

SIDS (Small Island Developing States): A group of small island and low-lying coastal countries recognised by the United Nations as facing particular vulnerabilities to climate change, including rising sea levels, extreme weather events, and limited land area. SIDS often have limited institutional capacity and financial resources to transition to low-carbon building practices, making targeted international support especially important.

Stranded Asset: An asset that has suffered an unanticipated or premature loss in value, often due to changes in regulation, technology, or market conditions related to climate change. In the buildings context, a stranded asset might be a property that becomes unsellable or unleaseable because it fails to meet future energy performance standards, or one that is rendered economically unviable by rising flood risk.

Sustainability-Linked Instrument: A financial product (such as a loan or bond) whose terms are tied to the borrower's achievement of pre-defined sustainability or climate performance targets. Unlike green bonds, which restrict the use of proceeds, sustainability-linked instruments reward or penalise overall performance against agreed indicators, such as reducing a building portfolio's carbon intensity.

TCFD (Task Force on Climate-related Financial Disclosures): An international body established by the Financial Stability Board in 2015 to develop voluntary recommendations for how companies and financial institutions should disclose their climate-related risks and opportunities. TCFD recommendations have been widely adopted and have influenced mandatory climate disclosure regulations in many jurisdictions.

Transition Risk (Climate): The financial risks arising from the shift toward a lower-carbon economy, including changes in policy (such as carbon pricing or stricter building codes), technology developments, and shifts in market and investor sentiment. For buildings, transition

risks include the potential for carbon-intensive properties to lose value or face financial penalties as regulatory requirements tighten.

Whole-Life Carbon Assessment (WLCA): A method of measuring the total greenhouse gas emissions associated with a building across its entire lifespan, from the extraction of raw materials and construction, through its operational life, to demolition and disposal. By combining both embodied and operational carbon, a WLCA provides a more complete picture of a building's climate impact than energy performance measures alone.

Third-Party Certification (Green Building): An independent verification by an accredited organisation that a building meets defined environmental performance standards. Common schemes referenced in this brief include LEED (Leadership in Energy and Environmental Design, administered by the US Green Building Council), EDGE (Excellence in Design for Greater Efficiencies, developed by IFC/World Bank for emerging markets), and DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen, a German sustainability rating). These certifications provide standardised, comparable signals of climate performance, particularly useful in markets where national data systems are still developing.
