

Financing Transformation

A Guide to Green Building for Green Bonds and Green Loans

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2024

JUNE

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With thanks to:

- NABERS
- Australian Sustainable Finance Taxonomy
- Andefena
- New Zealand Green Building Council
- Green Building Council South Africa

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Foreword

From the CEOs

Sustainable finance instruments, such as green loans and green bonds, are increasingly being utilized by companies committed to decarbonization to access the capital needed for their transition. These instruments are essential for driving the shift towards a low-carbon economy, offering financial incentives for sustainable practices. However, limited understanding of how the real estate sector can access sustainable finance is holding back progress and opportunities are being missed. In addition, the proliferation of taxonomies has resulted in a diverse set of mechanisms to define what green buildings are, at least for purposes of sustainable finance.

This global alliance underscores that the world's major sustainability rating systems are in harmony—not only regarding climate science but also in how we can ensure that all buildings transition to a decarbonised future. As we navigate a global sustainable finance revolution, this partnership holds the potential to unlock significant benefits for investors, developers and owners of real estate along with the environment and the people who live, work and play in the buildings the real estate industry provides. Together, we are excited to take this important first step.

The integration of major building certification systems like BREEAM, HQE, LEED, Green Mark and Green Star into this guide provides a practical framework for unlocking sustainable finance. This alignment ensures that the path to green buildings is paved with robust, scientifically backed methodologies that financial institutions around the world can trust and invest in. Our partners, GRESB, Climate Bonds Initiative (CBI) and Carbon Risk Real Estate Monitor (CRREM) ensure that our collective efforts are in lockstep with the most rigorous decarbonisation trajectories.

The journey towards a sustainable future is not without challenges. The transformation of the finance sector to fully embrace and drive environmental sustainability requires a reshaping of traditional practices and norms. We're confident that this guide will push us closer to a world where sustainable development is not just an option but the foundation of all our economic activities.

Together, we look forward to establishing a new benchmark for global sustainability.

The organisations represented in this document are the owners of building certification systems used by the real estate industry worldwide to demonstrate best practice to world leading outcomes in the built environment. Over the years, their standards have introduced concepts and benchmarks into the mainstream and created market demand to ensure that these are delivered. You can learn more about these organisations at the following links:

A-HQE GBC www.hqegbc.org

BRE – www.bregroup.com

GBCA – www.gbca.org.au

SGBC – www.sgbc.sg

USGBC – www.usgbc.org

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Green Building Council

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Chief Executive Officer
Alliance HQE-GBC France

About our organisations



Together, we
look forward to
establishing a new
benchmark for
global sustainability.

Why we've created this paper

1. "Green building" in this context is both a noun and a verb. As a noun, green buildings are specific deliverables funded by bonds or loans. As a verb, green building is a process used to design, build, and operate real estate with reference to sustainable practices and performance.

This guide focuses on green 'use of proceeds' instruments, specifically green bonds and green loans, the EU Taxonomy for sustainable finance and the Climate Bonds Initiative Standard.

Future work may include the release of guides on 'general purpose' instruments (section 3.2), additional sustainable taxonomies (section 3.3), and social bonds and loans (see section 4.5).

Purpose

Sustainable finance instruments, such as green loans and green bonds, are increasingly being utilised by companies committed to decarbonisation to access the capital needed for their transition. These instruments are essential for driving the shift towards a low-carbon economy, offering financial incentives for sustainable practices. However, limited understanding of how the real estate sector can access sustainable finance is holding back progress and opportunities are being missed. In addition, the proliferation of taxonomies has resulted in a diverse set of mechanisms to define what green buildings are, at least for purposes of sustainable finance.

This guide is inspired by the Green Building Council of Australia's and the Australian Sustainable Finance Institute's landmark report, [Unlocking the Value: A Practical Guide to Sustainable Finance for the Real Estate Sector](#). It takes a broader, global perspective on green building¹ and sustainable finance, recognising the importance of international collaboration and standardisation. The aim is to clarify the connections between global green building practices and current sustainable finance practices, with a specific focus on green bonds and loans. The guide achieves this by reviewing a comprehensive set of green building certifications commonly used by international investors, exploring their fundamental characteristics, and explaining their application in green bonds and loans.

To provide a more thorough understanding, this guide delves into the criteria and methodologies behind major building certification systems such as BREEAM, Green Mark, Green Star, HQE and LEED. It discusses how these certifications align with the goals of sustainable finance, detailing their role in enhancing transparency, accountability, and environmental performance. Furthermore, the guide examines case studies of successful green finance projects, highlighting best practices and lessons learned to provide practical insights for stakeholders.

We hope this guide will help institutional investors, and financial institutions understand how to effectively specify the use of green building certifications in financial instruments, enabling them to make informed investment decisions that support sustainability goals. Additionally, we aim for it to be a valuable resource for owners and developers of green buildings seeking new capital sources, offering guidance on how to align their projects with the requirements of green finance instruments. By bridging the knowledge gap and fostering a better understanding of sustainable finance, we hope these tools will accelerate the real estate industry's critical work in creating better, more sustainable buildings that benefit both people and the environment.

Ultimately, the goal is to inspire a collective effort towards a sustainable future, where the built environment plays a pivotal role in addressing climate change and promoting environmental stewardship. By leveraging sustainable finance, we can unlock the full potential of green buildings, driving innovation and progress in the real estate sector while contributing to global sustainability targets. This guide is a step towards that vision, providing the knowledge and tools needed to harness the power of green finance for a greener, more resilient future.

How to read this paper

This guide is divided into several sections. It is designed to help you understand the relevant finance mechanisms, the real estate sector, the multiple frameworks that drive and support sustainable finance, guidance on how to address each sector, and case studies.

CHAPTER	DESCRIPTION
1. Purpose	Describes the purpose of the paper, and gives a quick summary of the findings.
2. The opportunity in numbers	Highlights key financial information, relevant to understand the opportunity that green buildings provide to the market.
3. Understanding sustainable finance	Details general concepts in sustainable finance such as bonds, loans, and key concepts like use of proceeds, as well as a comparison of multiple taxonomies.
4. General concepts in the global green building industry	Defines general terms used by the sector such as emission scopes, market-based accounting, and other concepts. Also assists in understanding how to use decarbonisation tools and rating tools together.
5. Real estate rating systems	Highlights a sample of the most commonly used rating systems worldwide.
6. Green Building and Use of Proceeds	Provides sample targets and model language that can be used to access sustainable finance for use of proceeds. Also provides guidance for second party opinion providers.
7. Case studies	Showcases examples of how the above has been successfully used to drive positive change in the international real estate sector.
8. References and other documents	Provides additional reading material that may be of interest.
9. Appendix A	Contains detailed analysis of all frameworks and benchmarks.

What is needed for the built environment to succeed?

2. [Sustainability in Building Construction – A Multilevel Approach – IOPscience](#)

3. Guin, Benjamin and Korhonen, Perttu, Does Energy Efficiency Predict Mortgage Performance? (January 31, 2020). Bank of England Working Paper No. 852 (2020), Available at SSRN: <https://ssrn.com/abstract=3532373> or <http://dx.doi.org/10.2139/ssrn.3532373>

4. [Energy efficient Mortgages Action Plan \(EeMAP\), Energy Efficient Mortgages Initiative](#)

5. [Health & Wellbeing Framework – World Green Building Council \(worldgbc.org\)](#)

6. [What You Need to Know about Impact Investing | The GIIN](#)

7. [The Role of Financial Services in Society | World Economic Forum \(weforum.org\)](#)

Climate change, resource depletion and impacts on people and nature are global megatrends that the built environment must address.

In response to these megatrends, the built environment has focused on four strategic imperatives: climate action, resource efficiency & circularity, health & wellbeing, and ecological stewardship & biodiversity. Issues related to these, such as resilience, biodiversity and nature loss, and a stronger focus on social impacts, are rising in importance.

Climate Action: Sustainable finance in the real estate sector is a necessary tool for climate action. Put simply, green building requires capital to design, build, and operate better, more sustainable places. By developing and investing in green buildings and sustainable infrastructure, the sector can significantly reduce its carbon footprint for both operational emissions and upfront carbon emissions. The integration of sustainability assessments into real estate decision-making processes can lead to more environmentally friendly construction practices where embodied or upfront carbon is reduced.² Furthermore, green mortgages and energy-efficient loans can incentivise homeowners and developers to invest in low-carbon technologies and renewable energy systems, contributing to the global effort to combat climate change.^{3,4}

Health & Wellbeing: Sustainable finance in the real estate sector can yield significant health benefits. Investments in green buildings can improve indoor air quality, reduce noise pollution, and promote healthier lifestyles, thereby contributing to public health. The World Green Building Council reports that green buildings can improve occupant health and wellbeing, leading to productivity benefits for businesses.⁵ Moreover, sustainable finance can support the development of health facilities and services within real estate developments, contributing to health equity and resilience. Lastly, sustainable finance in the real estate sector can contribute to social equity and wellbeing. By investing in affordable and inclusive housing, the sector can address social inequalities. The Global Impact Investing Network highlights the potential of impact investing in real estate to generate measurable social and environmental impact alongside a financial return.⁶ Furthermore, by considering ESG factors, investors can support real estate developments that promote community engagement, fair labour practices, and inclusive environments, thereby contributing to societal wellbeing.⁷

8. [Circularity Accelerator – World Green Building Council \(worldgbc.org\)](#)

9. [Financing the Circular Economy | Ellen MacArthur Foundation \(thirdlight.com\)](#)

Resources & Circularity: The real estate sector can also contribute to addressing resource depletion through sustainable finance.

By prioritising investments in buildings that incorporate circular economy principles, such as the use of recycled materials and waste reduction strategies, the sector can significantly reduce material usage and tangentially reduce the environmental and social impacts of resource extraction and manufacture in supply chains. Efforts are already in place to create environmental performance indicators in real estate,⁸ which can guide the industry towards more sustainable resource use and build a more circular supply chain.⁹

Ecological Stewardship & Biodiversity: The real estate sector increasingly recognises its contributions to ecological stewardship and biodiversity. Over half of the global economy depends on nature. As we see our urban landscapes grow, the built environment is directly and indirectly impacting habitat, ecosystems, species and water quality and availability. This is happening through consumption, fragmentation and replacement of natural cover with impermeable surfaces. The built environment has a critical role to play in supporting the regeneration of nature through direct development but also through its supply chain.

Below.

University of Pennsylvania,
Gutmann College House
| LEED Silver | LEED BD+C:
New Construction |
Photo: © Jeffrey Totaro



2.1

The opportunity in numbers

10. [Buildings – Energy System – IEA](#). Accessed May 2024

11. Referred to as [Local Law 97](#)

12. From 2022, retrofitted buildings must be 40% more energy-efficient versus 2005 post-renovation levels post-renovation in Singapore.

2.1.1 The need

Buildings account for over 30% of global energy use and more than a quarter of emissions.¹⁰ The technology to decarbonise the built environment exists, but we must scale and accelerate its adoption to ease the path for other sectors.

Today, top projects achieve near net-zero performance across various property types. Advanced design and delivery processes enable these projects to be cost-effective. For instance, BREEAM-certified The Edge in Amsterdam, Green Star-rated Heritage Lanes in Brisbane, Green Mark-certified Keppel Bay Tower, HQE-certified Origine in Paris and LEED-rated Yale School of the Environment are leading examples. However, high-performance design still carries a premium, driving the need for sustainable finance.

Critically, the majority of the buildings that will exist in 2050 are already standing. This means millions of existing buildings must be upgraded, creating a vast demand for capital. Examples like retrofitting programs in New York City¹¹ and Singapore¹² show the potential for significant energy savings and emissions reductions. Sustainable finance is essential for this transition.

The details of this challenge vary by country, regions and jurisdictions as small as towns or cities. Yet there are common themes around the world. New development must deliver buildings that operate at or near net zero emissions, with minimal or zero on-site combustion and thoughtful consideration for energy supply. This includes understanding and mitigating upfront (embodied) emissions from construction processes and materials. Existing buildings must become dramatically more efficient and, over time, shift from on-site fossil fuel combustion to clean energy. This will be accompanied by efforts to improve water conservation, reduce waste streams, and eliminate harmful refrigerants.

All of this requires capital from investors willing to:

- Accept risks for new technology.
- Scale existing solutions.
- Prioritise social impact and just transition.

Investing in green buildings can provide significant benefits. Economically, they can reduce operational costs through energy savings, often lowering utility bills and increasing property values. Socially, green buildings can enhance occupant health and employee productivity, improve air quality, and foster community resilience.

Investors and financial institutions are crucial in providing the needed capital. Green bonds and loans have already funded numerous projects worldwide but it's not nearly enough to decarbonise the built environment. Policymakers must create supportive regulations and incentives, while developers, architects, and engineers integrate sustainability into their projects. Communities and occupants play a vital role in supporting these initiatives.

We need all stakeholders. We need them now. We need all buildings to become green to protect our communities and our planet.

Accelerated climate action will only come about if there is a many-fold increase in finance. Insufficient and misaligned finance is holding back progress.

Christopher Trisos, IPCC Scientist, Lead Author
Intergovernmental Panel on Climate Change report 2023

2.1.2 The barriers

There are several barriers hindering this revolution:

- **Limited understanding of characteristics and effective strategies to use rating tools in finance mechanisms:** Many finance stakeholders are unfamiliar with the criteria and methodologies behind major green building certifications such as BREEAM, LEED, Green Star, Green Mark and HQE. This knowledge gap can hinder the effective utilisation of these tools in securing sustainable finance. This is a gap this paper hopes to reduce.
- **Unrealistic or inconsistent performance expectations across the building lifecycle:** There can be discrepancies in expected performance based on design versus actual outcomes, leading to dissatisfaction and mistrust among stakeholders.
- **Complexity and high transaction cost:** Current financial instruments rely on bespoke processes or second party opinions that are independent of industry practices, rather than relying on existing instruments that are used by industry. This increases complexity and adds additional costs to identifying whether an asset is green.
- **Misaligned priorities between stakeholders (e.g. landlord, tenants, and investors):** Different stakeholders often have conflicting priorities. For example, landlords may focus on long-term asset value, tenants on immediate operational costs, and investors on short-term returns.
- **Technical misalignments between property-related processes and finance-related processes:** A net zero development can take many years before final verification that it has achieved net zero status, creating challenges in aligning financial timelines with project milestones.
- **Differences in policy, climate, regulation, and historic conditions create variation in opportunities and constraints on project performance:** Regional variations can complicate the standardisation of green building practices and the application of universal finance mechanisms. For example, differences in the definition of stranding risk between the US and Europe means that the mitigation activities will be different.
- **Limited Access to Capital:** Smaller developers and projects in less economically developed regions may struggle to access the capital needed for green building projects, despite the potential for significant environmental benefits.

13. Source: Bloomberg. Please note that the below data is illustrative only as some bonds may not be notified to Bloomberg and / or captured incorrectly.

2.1.3 The opportunities

There is a rise in sustainable finance products designed for use in property, making it easier for real estate businesses to align funding to their values and sustainability strategies.

The real estate industry is a key contributor to the global sustainable finance debt market (across loans and bonds). According to BloombergNEF, total issuance volume (USD equiv.) for the real estate sector in 2021 and 2022 are \$178bn and \$127bn respectively. That equates to approx. 10% and 8% of the total sustainable finance issuance volume for 2021 and 2022 respectively.



TABLE 1

Sustainable Finance Labelled Bonds – Real Estate Sector Global (Note amounts in US\$)¹³

Amt issued, USDbn	Global bond market				Sustainable Finance Label RE, % total RE	Sustainable Finance Label RE, % Sustainable Finance Label all	Total RE, % total all
	Real estate (RE)		All				
	Sustainable Finance-labelled	Total	Sustainable Finance-labelled	Total			
2020	36.5	575.8	481.3	60,911.90	6.3%	7.6%	0.9%
2021	86.4	1,149.60	530.4	58,594.60	7.5%	16.3%	2%
2022	46	883.7	328.2	53,483.80	5.2%	14%	1.7%
H1 2023	12.2	531.8	180.8	27,746.20	2.3%	6.7%	1.9%

How can sustainable finance benefit the real estate sector?

- **Access to Capital:** Many financial institutions and investors are increasingly incorporating ESG criteria into their lending and investment decisions. Property developers and owners who embrace sustainable finance principles may have better access to capital and lower borrowing costs.
- **Regulatory Compliance:** Sustainable finance provides capital to meet increasingly stringent regulatory frameworks related to ESG factors including building codes and energy efficiency standards, and emissions reductions targets. Complying with these regulations can reduce legal and financial risks.
- **Long-Term Resilience:** Sustainable properties are generally more resilient to the physical and regulatory challenges associated with climate change. This resilience can protect the property's value and financial performance over time.

3 Understanding sustainable finance

There are two main types of sustainable finance:

- **Use of Proceeds** – where the money is exclusively being invested in identified green or social projects.
- **General Purpose** – entity level finance where borrowers are incentivised to meet pre-agreed sustainability targets, but the money can be used for broader purposes.

Under both these types of financing, there are two main types of instruments: bonds and loans. Each has different principles, governing bodies, core components and key characteristics. All sustainable finance products are underpinned by a set of core components: a set of requirements that borrowers are required to meet. These differ according to whether it's a Use of Proceeds or General-Purpose instrument. **This guide focuses on Use of Proceeds only, situations where green building are often specified as an outcome or can be used to ensure accountability in design, construction, and operation. Future versions will be released to include General Purpose instruments.**

FIGURE 1
Characteristics and requirements of key types of sustainable finance – bonds and linked-loans

Financial instrument	Bond or Loans				
	Bonds	Loans			
Governing body(ies)	International Capital Markets Association (ICMA)	<ul style="list-style-type: none"> • Loan Syndications and Trading Association (LSTA) • Loan Market Association (LMA) • Asia Pacific Loan Market Association (APLMA) 			
Key characteristics	<ul style="list-style-type: none"> • Targets set at the outset, with progress reported yearly • External assurance recommended at the start • Pricing using penalty (i.e. interest rate will increase) • Second Party Opinions are disclosed into the public domain • Require a Public Sustainable Finance Framework 	<ul style="list-style-type: none"> • Targets set and reviewed yearly • External assurance required • Pricing can be discount (i.e. interest will decrease) and penalty • Second Party Opinion is not disclosed • Don't require a Sustainable Finance Framework 			
Purpose	Proceeds directed to projects	Proceeds directed to general performance			
Criteria	Use of proceeds	General Purpose (linked)			
Core components	<ol style="list-style-type: none"> 1. Use of proceeds 2. Process for evaluation and selection 3. Management of proceeds 4. Reporting 	<ol style="list-style-type: none"> 1. Selection of Key Performance Indicators 2. Calibration of Sustainability Performance Targets (SPTs) 3. Bond Characteristics 4. Reporting 5. Verification 			
Bond Framework	<table border="1"> <tr> <td>The Green Bond Principles</td> <td>The Social Bond Principles</td> <td>The Sustainability Bond Guidelines</td> </tr> </table>	The Green Bond Principles	The Social Bond Principles	The Sustainability Bond Guidelines	The Sustainability-Linked Bond Principles
The Green Bond Principles	The Social Bond Principles	The Sustainability Bond Guidelines			
Loan Framework	<table border="1"> <tr> <td>Green Loan Principles</td> <td>The Social Loan Principles</td> <td></td> </tr> </table>	Green Loan Principles	The Social Loan Principles		The Sustainability-Linked Loan Principles
Green Loan Principles	The Social Loan Principles				



Second Party Opinions and Third-party assurance

As well as forming part of the bond and loan principles, the use of external third parties to provide verification and assurance of sustainable finance transactions is emerging as best practice in sustainable finance.

Second-party Opinion (SPO) – typically performed by external consultants. Opinions are normally limited to the issuer's alignment to bond and loan principles such as sustainable finance frameworks, use of proceeds criteria and ambitiousness of KPIs. No assurance is obtained.

Third-party assurance – typically performed by professional accounting or audit firms. Assurance is provided in accordance with recognised auditing and assurance standards, typically to a limited assurance level. Assurance for bonds and loans include assurance over allocation of funds, expected impacts of the sustainable debt instrument and performance against KPIs and SPTs.

Third-party assurance and Second Party Opinions play a critical role in sustainable finance through enhancing stakeholder confidence in the sustainable finance transaction.

Chapter 6.2 has important information for Second Party Opinion providers on how to avoid greenwashing claims and ensure sustainable finance outcomes go well beyond minimum legal practice. It also provides guidance on how to review claims during reporting requirements against verification frameworks.

3.1

Use of Proceeds: the 5 instruments

With Use of Proceeds instruments, money is *exclusively* invested in green or social projects. The types available are explained below.

Type	Frameworks	Purpose
Green Bond	<i>Green Bond Principles</i>	Finance or re-finance new and/or existing eligible projects with environmental benefits
Green Loans	<i>Green Loan Principles</i>	Finance or re-finance new and/or existing eligible projects with environmental benefits
Social Loans	<i>Social Loan Principles</i>	Finance or re-finance new and/or existing eligible Social Projects
Social Bonds	<i>Social Bond Principles</i>	Finance or re-finance projects that address or mitigate a specific social issue and/or seek to achieve positive social outcomes for a target population(s)
Sustainability Bonds	<i>Various</i>	Finance or re-finance a combination of Green and Social Projects in line with both Green Bond Principles and Social Bond Principles

3.1.1 What projects are eligible?

Generally, 'green' instruments apply to projects focused on positive environmental impacts, while 'social' instruments are for socially-oriented projects. Sustainability instruments need to satisfy both criteria.

Eligible for Green Bonds & Green Loans

Typical projects include energy efficiency upgrades on existing portfolios, new developments, and provision of on-site renewable energy. Possible broader uses could include climate adaptation upgrades, EV charging roll out, or reuse and or recycling for a circular economy.

- Renewable energy installations
- Energy efficiency upgrades
- Pollution prevention and control systems
- Environmentally sustainable management of living natural resources and land use
- Conservation of terrestrial and aquatic biodiversity
- Sustainable water and wastewater management
- Climate change adaptation
- Circular economy
- Electrification

Eligible for Social Bonds & Social Loans

In real estate, most pure social bonds and loans are used for affordable or social housing – very few are issued by corporates.

- Affordable basic infrastructure
- Access to essential services
- Affordable housing
- Employment generation
- Socioeconomic advancement and empowerment

Eligible for Sustainable Bonds

Typically, these projects will be eligible for green financing (such as an energy efficient development). But they also include at least one component that qualifies for social financing – such as affordable housing, employment generation or community infrastructure.

3.1.2 Core Components

Core Component	What the ICMA requires from issuers to meet that component	Pathway to compliance for real estate
Use of proceeds	Clearly communicate the eligibility of the project to the investor.	Identify projects that are in line with the eligibility criteria of the relevant principles, and are verified by nationally recognised schemes, or should they not exist, through international verification frameworks. See Chapter 6 for suitable benchmarks for project-based targets.
Process for project evaluation and selection	Clearly communicate to investors: <ul style="list-style-type: none"> • The project's sustainability objectives. • The process you have followed to determine its eligibility for sustainable financing. • Any additional information on processes you have used to identify and manage perceived risks associated with the project (environmental and social). 	Demonstrate how the evaluation and selection of this project relates to your organisation's strategy. As a minimum, the project should: <ul style="list-style-type: none"> • Be aligned to your company's overarching sustainability and business strategy. • Meet your company's minimum standards. • Have governance processes embedded across every stage to ensure sustainability outcomes will be achieved. • Have the relevant selection criteria embedded into the bid or investment decision process. <p>See Chapter 6 for suitable benchmarks for project-based targets and provides model language that can be used to describe the above.</p>

Core Component	What the ICMA requires from issuers to meet that component	Pathway to compliance for real estate
Management of proceeds	Track the use of funding in an appropriate manner. For every eligible project, you must have a formal internal process that is linked to your lending and investment operations for eligible projects. In addition, ICMA encourages that the issuer's management of proceeds be supplemented by an external auditor, or other third party, to verify the methods and allocation of funds.	In real estate, the management of proceeds is typically done in two ways: <ul style="list-style-type: none"> • Tracking: where the allocation of funds is tracked through to each project (for example in portfolio upgrades where specific funds are allocated and tracked to an energy efficiency initiative across multiple buildings). • Earmarking: where the funds are earmarked for certain projects but not tracked to those specific initiatives (typically done when the eligible projects may change over time, for example financing a complex development pipeline).
Reporting	Issue an annual report that includes: <ul style="list-style-type: none"> • A description of eligible projects that have been allocated funding. • The amounts allocated to each project. • The expected or actual impact (environmental or social), using qualitative performance indicators and, where feasible, quantitative indicators. • Key assumptions and methodologies of impact. 	When disclosing environmental impacts, real estate companies can lean on green rating systems, supplemented by additional reporting information. For Green Bonds and Green Loans, the ICMA Harmonised Framework for Impact Reporting outlines core indicators that need to be reported for energy efficiency projects and green building projects. They also outline other sustainability indicators for green buildings that can be reported. For Social Bonds and Social Loans, indicators are less harmonised, but the ICMA Harmonised Framework for Impact Reporting for Social Bonds does include sample criteria that can be used to report against. Regardless, best practice also suggests that reports should be externally audited or verified by a third party.

3.2

General Purpose instruments: the two types

With General Purpose instruments, money can be used for broader purposes, but borrowers are incentivised to meet pre-agreed sustainability targets. There are two main General-Purpose products available.

Type	Frameworks	Description
Sustainability-Linked Loans	Sustainability-Linked Loan Principles	Any types of loan instruments and/or contingent facilities (including bonding lines, guarantee lines or letters of credit) which incentivise the borrower's achievement of ambitious, predetermined sustainability performance objectives or Key Performance Indicators.
Sustainability-Linked Bonds	Sustainability-Linked Bond Principles	Any type of bond instrument where the issuer achieves predefined Sustainability or Environmental Social Governance (ESG) objectives or Key Performance Indicators, within a predefined timeline.



Right.
CapitaSpring
Singapore I Green
Mark Platinum

3.2.1 Setting suitable targets for real estate companies

The goal of Sustainability-Linked Loans and Bonds is to improve the borrower's sustainability profile over the long term, by aligning the loan terms to the borrower's performance. This is done via the use of Key Performance Indicators. For each of these, a Sustainability Performance Target is then set. ICMA keeps a [register](#) of relevant, but not exhaustive, KPIs to real estate and construction activities. Examples are noted below:

	Construction	Real estate
Environment		
Climate change (GHG Emissions and Energy)	●	●
Water	●	●
Waste	●	●
Raw material sourcing and recycling	●	●
Biodiversity	●	●
Social		
Access and affordability	●	●
Community & Human rights	●	
Occupational Health & Safety	●	
Diversity, equity, and inclusion	●	●
Just transition	●	
Working condition	●	●
Governance		
Value chain	●	
Business ethics	●	●
Product governance	●	

Sustainability-Linked Loans have typically been used by real estate companies at corporate level meanwhile, Sustainability-Linked Bonds have been issued for REITs, funds or pure leasing companies. Both instruments have typically favoured KPIs for absolute Scope 1 and 2 emissions, or emissions intensity per m² of the underlying real asset portfolio or fund, as the Sustainability Performance Target. To meet the requirements for both Sustainability-Linked Loans and Bonds, it's increasingly common for real estate companies to include downstream Scope 3 targets, as well as Scope 1 and 2.

3.2.2 Core components of general purpose instruments

Core Component	Loan Market Association requirements to meet the component	Pathway to compliance for real estate
Selection of KPIs	<p>Sustainability-Linked Loans and Bonds align the loan terms to the borrower's performance using one or more KPIs to the Sustainable Performance Targets (SPT). KPIs should be:</p> <ul style="list-style-type: none"> • Relevant, core and material to the borrower. • Measurable or quantifiable on a consistent methodological basis. • Able to be benchmarked using an external reference (so the correlating SPTs can be assessed in context). 	<p>Typical KPIs of green financing are Scope 1 and 2 emissions, with Scope 3 becoming more commonplace.</p> <p>KPIs for corporate-level social financing tend to focus more on workplace outcomes (related to things like such as gender equality, training, health & safety).</p>
Calibration of Sustainable Performance Targets (SPT)	<p>Setting targets involves setting SPTs that:</p> <ul style="list-style-type: none"> • significantly exceed regular practices. • compare to external references. • match the borrower's sustainability strategy. • be set before or at loan origination. <p>Cross benchmarks should consider:</p> <ul style="list-style-type: none"> • The borrower's 3-year history. • Current sector standards. • Relevant regional scientific targets. <p>Disclosure should include:</p> <ul style="list-style-type: none"> • Expected target achievement date. • Verified reference point. • Conditions for baseline adjustment. • Plan to achieve the SPTs. • Uncontrollable factors affecting target achievement. 	<p>The selected KPIs and SPTs must be material connected to its sustainability / ESG strategy.</p> <p>In large organisations, a corporate target can be used as a disaggregated target for a fund or portfolio, as long as the fund or portfolio was part of the baseline year assessment and ongoing corporate emissions boundary.</p> <p>With Sustainability-Linked Bonds, the SPT is usually set as a mid-point of the bond.</p> <p>With Sustainability-Linked Loans, the SPT is tested every year, with the margin adjustment being applied to the loan for the following year.</p> <p>The level of ambition of SPTs is typically assessed based on their 1.5 Degree alignment, using Second Party Opinions (SPOs). Climate Bonds Initiative has been used for Sustainability-Linked Bonds. Alternatively for both Sustainability Linked Loans and Bonds, GRESB scores, or Green Building Certification for the portfolio or other portfolio ratings can also be used.</p>
Loan Characteristics	An economic outcome is linked to whether the SPTs are met.	No differences in loan characteristics that are specific to the real estate sector.
Reporting	<p>Borrowers must update lenders with information that allows them to monitor the performance of the SPTs and assess whether the SPTs remain ambitious and relevant to the borrower's business.</p> <p>These reports must be issued annually at a minimum, and the LMA recommends they are made publicly available where appropriate.</p>	<p>No differences in reporting that are specific to the real estate sector.</p> <p>Aligning the reporting cycle of the loan to corporate or fund reporting will avoid multiple reporting cycles, reduce resourcing needs for the borrower.</p>
Verification	Borrowers must obtain independent and external verification of their performance against each SPT. The LMA recommends that this verification is also made publicly available where appropriate.	No differences in verification that are specific to the real estate sector. Including the SPTs in the auditor's current assurance scope of work will avoid doubling up.

3.3

Sustainable finance taxonomies

14. Information for this analysis came from several sources, including the taxonomies themselves. However this report, [The New Geography of Taxonomies](#), Natixis Green & Sustainable Hub, was of particular assistance.

For purposes of this guide, the focus will be on the European Taxonomy for Sustainable Finance, as it has served as the reference point for all other taxonomies. Based on a review of the criteria, being aligned with the EU Taxonomy would likely result in alignment with other taxonomies, at least with regards to real estate activities.

However, as there are specific differences, future revisions will expand to cover other taxonomies, particularly those where there are significant diversions.

Finally, as part of this work, opportunities have been identified to make taxonomies more fit-for purpose with regards to driving additional transformation in the built environment. A future report will tackle these recommendations.

A sustainable finance taxonomy is a classification system that guides investors and stakeholders in evaluating economic activities' sustainability. It categorises activities based on their environmental and social impacts, aligning with global objectives like the Paris Agreement and the Sustainable Development Goals (SDGs).

Taxonomies are useful to define eligible outcomes from investment products. Despite the growth of green bonds, inconsistent and unclear information has led to market fragmentation and greenwashing risks. Taxonomies attempt to provide consistent standards to reduce risk and uncertainty about investment outcomes. They do this by providing:

- Objective criteria to define sustainable activities and evaluate the sustainability of investments and operations.
- Foundation requirements for social and environmental protections.
- A shared language between investors and issuers.

Sustainable taxonomies are being introduced worldwide. There are, at the time of writing; more than 20 sustainable finance taxonomies. Most taxonomies include the built environment within their criteria, usually related to:

- New building construction
- Installation of new equipment in buildings
- Building acquisition and ownership
- Building renovations

These relate to the most typical uses of funding arising from loans or bonds in the real estate sector.

Some taxonomies define only 'green' criteria – or compliant criteria (environmentally sustainable). Other taxonomies, such as the Singapore Asia Taxonomy, include a traffic-light system to define an amber, or transition criteria – criteria that facilitate achieving a 1.5°C in the future. Transition criteria are most useful for improving existing buildings, but less relevant to new construction where green building rating tools provide clear, accessible definitions for high performance.

Most taxonomies have climate change mitigation and climate adaptation as key environmental activities. Several taxonomies add additional criteria such as social outcomes, circular economy, biodiversity and nature, pollution, and others. The taxonomies are organised around the provision of 'significant' criteria, and the provision of 'do no significant harm' criteria. This means that an entity wanting to label an investment as sustainable because it meets the taxonomy criteria will need to ensure the investment meets the 'significant' criteria for the relevant topic (e.g. Climate Change Mitigation), and where relevant, complies with all other 'do no significant harm' criteria.

There are several influential taxonomies globally – the European Taxonomy, the CBI Taxonomy, and arguably the ASEAN Taxonomy. Most country-level taxonomies globally use these taxonomies as the basis for theirs, with some adding additional criteria (Mexico's includes social objectives), with others simplifying and adapting the criteria but keeping the core objectives.

Table 3.3.1. provides a breakdown of current taxonomies that target the real estate sector.¹⁴

TABLE 3.3.1

Released taxonomies that include real estate activities as of April 2024

Country Taxonomy	Release date	System	Economic Activity			Criteria		Priority						Recognised rating tools					
			New Construction & refurbishments	Buildings Acquisition & Ownership	Building renovations	Substantial contribution	Do no significant harm	Climate Change Mitigation	Climate Change Adaptation	Water	Circular Economy	Pollution prevention	Biodiversity & nature	BREEAM	Green Mark	Green Star	LEED	HQE	Notes
ASEAN Taxonomy	2021	Traffic light	●	●	●	●	●	●	●		●			●	●				*Alternative GBC programs are accepted
Bangladesh Sustainable Finance Policy	2020	Green	●			●	●	●	●	●	●	●	●					●	Also recognises CASBEE, EDGE, GRIHA
CBI Green Taxonomy	2013	Traffic light	●	●	●	●		●									●	●	Distinct location specific schemes are recognised as proxies
China Green Bond Endorsed Projects Catalogue	2021	Green	●	●	●	●		●		●		●	●						
Colombia Green Taxonomy	2022	Green	●	●	●	●	●	●	●	●	●	●	●					●	
EU Taxonomy on sustainable finance	2020	Green	●	●	●	●	●	●	●	●	●	●	●						
Georgia Sustainable Finance Taxonomy	2022	Green	●	●	●	●		●	●			●	●	●					Also recognises WELL and EDGE
Hong Kong (Green)	2024	Green	●			●		●										●	Also recognises NABERS, EDGE, and BEAM Plus
Malaysia Climate Change and Principle-Based Taxonomy	2021	Traffic light		●				●	●					●				●	Also recognises GRESB, CEEQUAL, and Malaysia's GBI
Mexico Sustainable Taxonomy	2023	Green	●											●	*	*		●	Also recognises WELL, EDGE, LBC and others
Singapore Asia Taxonomy (Green & Transitioning)	2023	Traffic light	●	●	●	●		●							●	●	●	●	*alternative GBC programs are accepted
South Africa Green Finance Taxonomy	2022	Green	●		●	●	●	●	●	●	●	●	●				●		Also recognises EDGE and certifications that have been provided official recognition
South Korea K-Taxonomy	2021	Green	●	●	●	●	●	●	●	●	●	●	●						
Sri Lanka Green Finance Taxonomy	2022	Green	●	●	●	●		●											

Taxonomies in development include: [Australia \(Sustainable\)](#), [Canada \(Green & Transition\)](#), [Chile \(Sustainable/Green\)](#), [Costa Rica \(Green\)](#), [Dominican Republic \(Green\)](#), [India \(Green\)](#), [Kenya](#), [New Zealand \(Climate\)](#), [Panama \(Green\)](#), [Rwanda \(Green\)](#), [United Kingdom \(Green\)](#).

3.4

The Climate Bonds Initiative (CBI)

Investor demand for climate bonds is strong and is expected to increase in line with the delivery of quality products into the market. However, investor concerns about the credibility of green labelling are also growing. Standards, assurance & certification will be essential to improve confidence and transparency, which in turn will enable further strong growth in the market.

Today, the Climate Bonds Standard and Certification Scheme is an easy-to-use screening tool that provides a clear signal to investors and intermediaries on the climate integrity of Certified Climate Bonds. A key part of the Standard is a suite of sector-specific eligibility Criteria. Each sector-specific Criteria sets climate change benchmarks for that sector that are used to screen debt instruments, assets and/ or entities, so that only those that have climate integrity, either through their contribution to climate mitigation, and/or to adaptation and resilience to climate change, will be certified. These sector-specific Criteria are determined through a multi-stakeholder engagement process, including Technical Working Group and Industry Working Group, convened, and managed by Climate Bonds, and are subject to public consultation. Finally, they are reviewed and approved by the Climate Bonds Standard Board (CBSB). The second key part of the Climate Bonds Standard (CBS) is the overarching [Climate Bonds Standard v4.0](#). Certification under this Standard confirms that debt instruments, assets, or entities meet sector specific criteria published under the Climate Bonds Standard.

3.4.1.1 Climate Bonds Low-carbon Buildings Criteria

The Low-Carbon Buildings Criteria pertain to eligible assets and projects related to building investments, encompassing both commercial and residential properties with the potential to meet the stringent standards set forth in the Climate Bonds Criteria. Use-of-Proceeds instruments and Assets, and in some circumstances Sustainability-Linked Debt Instruments and Entities can be Certified using these Criteria. These Certifications are based on the emissions performance of the underlying residential and/or commercial buildings and/ or the built environment, depending on the focus.

Climate Bonds latest Low-carbon Buildings Standard was published in December 2023. The latest standard has additional requirements compared to the previous version of the standard. In addition to the requirements for reducing carbon emissions, the standard has criteria requiring:

- No new fossil fuels used for heating, hot water, cooking and on-site electricity generation
- The building provides the necessary infrastructure to support electric mobility where on-site car parking is provided
- Shift to all-electric buildings, and
- For new buildings, report on whole-life carbon assessment (all modules).

3.4.1.2 Eligibility criteria for buildings and built environment projects

There are two routes to eligibility for Certification of Use of Proceeds instruments, Assets, Sustainability Linked Debt instruments and Entities relating to buildings and/ or the built environment:

- Absolute Performance Improvement Pathway, or
- Relative Performance Improvement Pathway.

The diagram below illustrates these eligibility pathways. Pathway 1 can be used for Certifications relating to buildings/ building portfolios. Pathway 2 can be used for Certifications relating to buildings/ building portfolios and those relating to built environment projects.

Below.

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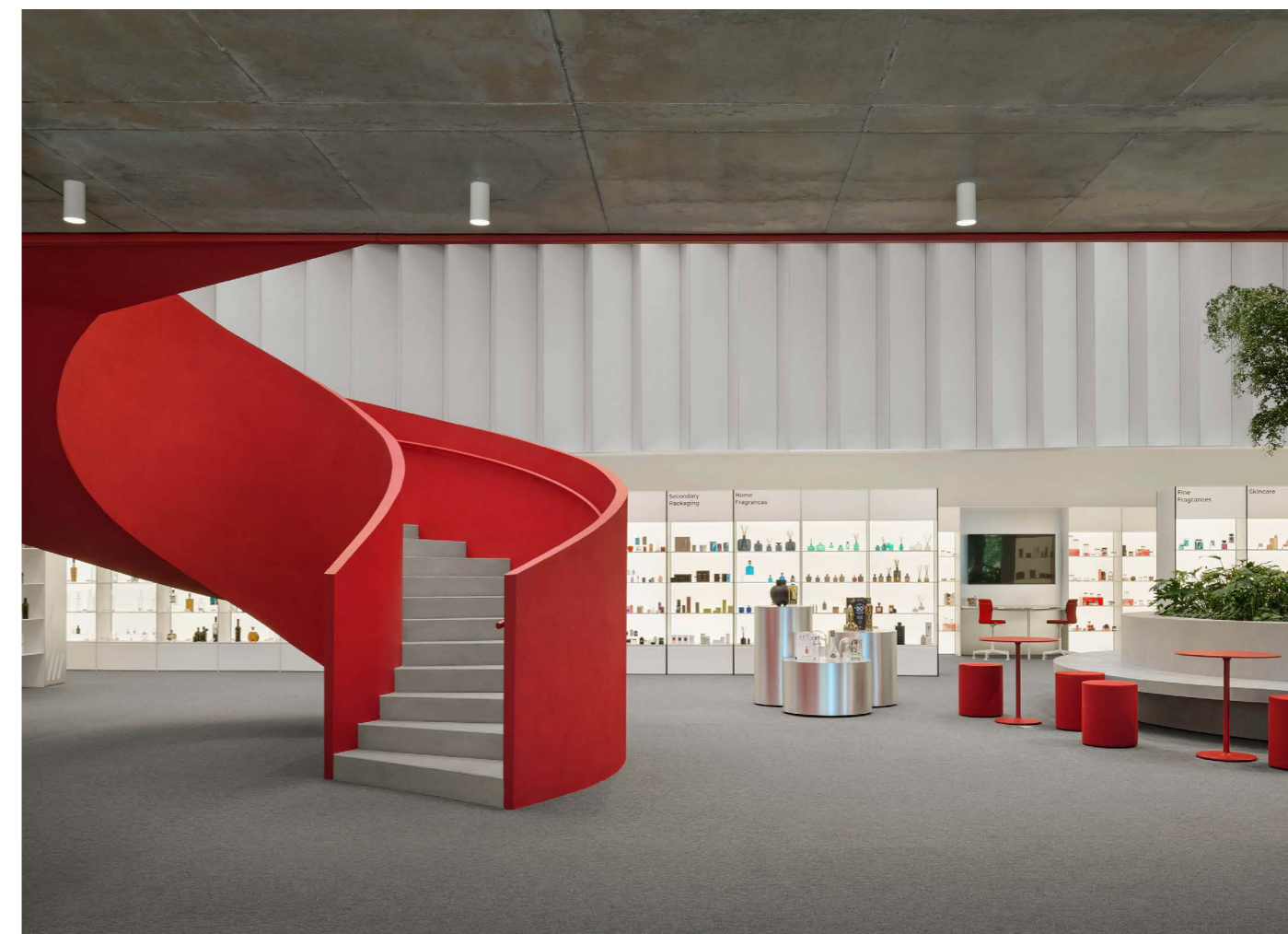
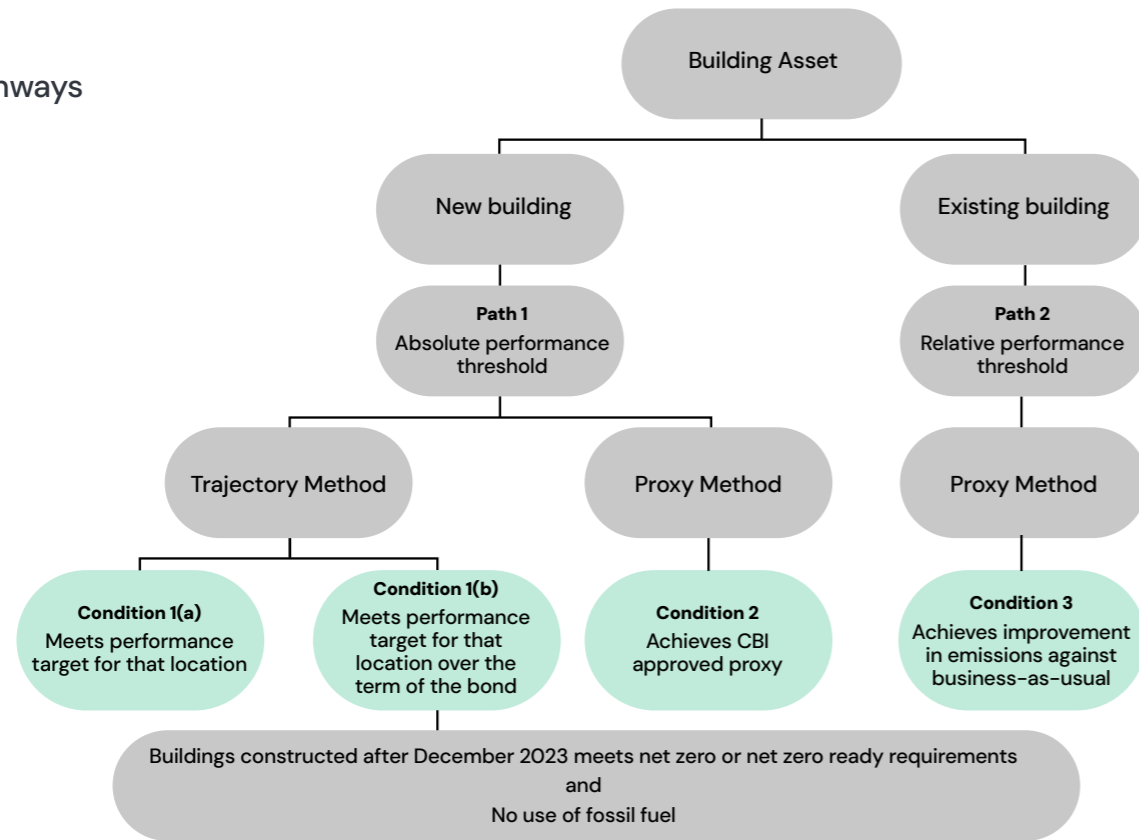


FIGURE 2
Certification pathways



3.4.1.3 For new buildings to gain certification:

- Low carbon trajectories are calculated for each city and established by taking a baseline representing the top 15% in terms of carbon intensity (kg CO₂/m².) and drawing a linear line down to zero carbon in 2050. This rate of decarbonisation is considered to be broadly in alignment with the Paris Climate Agreement and a 1.5°C warming scenario.
- If a borrower’s asset or portfolio is aligned with this trajectory, they can gain a Climate Bonds Certification. And even if it doesn’t, they can still qualify for certification retrospectively, providing they can demonstrate comparable improvement to their portfolio’s performance over the life of the bond.
- In addition, the building must be fully electric, and the building’s emissions from materials and construction must be reported.

3.4.1.4 For building upgrades to gain certification:

- The upgrade has to achieve a CO₂ emissions reduction target determined by the term of the bond. For a 5-year bond, the CO₂ emissions reduction target is 30%. For a 30-year bond, the target is 50%.
- No new fossil fuel installations are made, and work is done to electrify the building.

3.4.1.5 Climate Bonds and rating tools

The Climate Bonds standard also recognises rating tools as proxies of its criteria under certain circumstances (mostly where local emissions curves have not been set). Green Star, LEED, and others are recognised. Green Star Buildings and Green Star Homes are recognised fully in Australia, whereas LEED rated buildings that meet the 30% improvement on ASHRAE 90.1 are also deemed compliant.

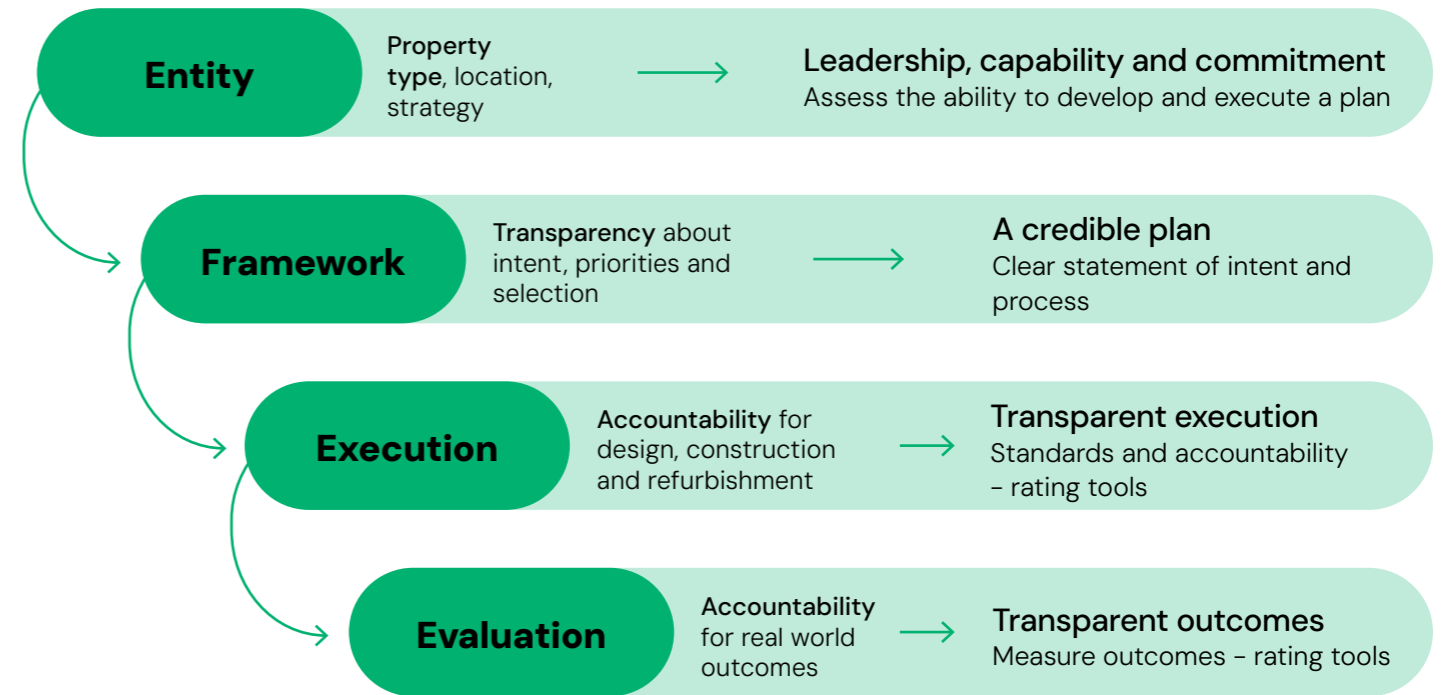
3.5
The sustainable finance process

Sustainable finance is about financing what is already green today and what is transitioning to green over time. It is important to recognise that the impact of sustainable finance is determined by the whole process – from the inception of financing through execution and evaluation.

Essential elements in the sustainable financing process include:

- 1 Entity characteristics and management (the ability to effectively define, manage and select eligible projects).
- 2 Establishing the robust Green or Sustainable Finance framework.
- 3 Project execution (management of proceeds).
- 4 Project monitoring and evaluation (the impact reporting).

Holistic green building rating systems support each phase of the process by providing an actionable definition for leadership characteristics, ensuring accountability in the execution, and a framework for credible evaluation. Effective financing benefits from the coordinated use of rating systems during each phase of the process.



The following short sections describe these elements in more detail.

3.5.1.1 Entity characteristics and management

An effective sustainable finance process is led by through the execution a clearly defined plan.

Confidence in the ability for the entity to effectively manage the end-to-end development and operations process, including vision, targets, tool selection, vendor supervision, project execution, performance monitoring, and more. This requires competent individuals who are often experienced and credentialed green building professionals. Entity level processes benefit from having clear green building commitments and procurement policies for developing, acquiring, or operating a building – this provides the confidence and certainty to lenders, fund and development managers. This can be further demonstrated through environmental, social, and governance (ESG) benchmarks, such asGRESB, where higher ratings reflect a more mature and capable entity.

3.5.1.2 Green or Sustainable finance framework

Use of proceeds-style financing (i.e., most green building-based green debt) requires a guiding document called a “green or sustainable finance framework”. This document describes the vision for the financing instrument and the process the entity will use to select and execute projects. The framework is typically aligned with standards such as the International Capital Markets Association Green Bond and/or Green Loan Principles. First generation frameworks often provide simple statements that proceeds will be used for certain types of development projects, including achievement of a specified level of green building certification. More advanced frameworks might describe project selection strategies designed to maximise impact (e.g. efficiency improvements), along with requirements to link design and construction certification with continued operational certification.

Frameworks specifying green building outcomes should establish clear expectations for performance outcomes, e.g. energy or emissions performance. These may be described with respect to code, decarbonisation pathways, or other benchmarks. In turn, these outcomes should be explicitly linked to requirements for development and operation. **Chapter 6 provides model language that can be used to develop the finance framework and impact reporting.**

3.5.1.3 Project execution

Green building certification provides the basis for accountability in project design and execution. Rating systems provide a shared language to describe specific project goals, including leadership opportunities and minimum safeguards (a.k.a., prerequisites). Rating systems can be used holistically, e.g. requiring a certain overall level of certification, or in a directed fashion, e.g. requiring design to exceed code by X%. Either case uses a rating system to define a design goal and provide a clear structure of documentation or accountability (e.g. on-site assessment).

Entities should use rating systems to set requirements for practice and performance and use certification to provide accountability.

3.5.1.4 Project evaluation

For some first-generation financing instruments, design and as built building certification alone was sufficient evidence of the impact of the investment. This is tangible and defensible given the 3rd party assurance that rating tools provide.

Moving forward, financiers, investors and indeed some taxonomies, increasingly expect entities to link the intention of the initial design rating with on-going measured performance. Evidence that the building is indeed operating as a Green Building is rightfully becoming a market expectation.

Rating tools play a central role in this process through the operational or in use certifications which are grounded in real world measured performance. High-quality finance frameworks are not complete until intentions are reflected in real world measured outcomes and the impacts clearly reported.

Entities must have the skills and resources needed to connect design ratings with operational certifications. These are complementary skill sets and technical capabilities.

3.5.2 Integration

These elements work together to define and deliver social and environmental outcomes. They function as an integrated process, where green building rating systems and certifications contribute to each stage, from design, construction, operations and refurbishment, creating specific requirements for resources and expertise. This integrated approach ensures that Green Building rating tools and sustainable finance effectively supports the transition to greener, more resilient buildings. By maintaining a clear, accountable connection between capital and impact, stakeholders can trust that their investments are driving genuine progress toward sustainability.

3.6



The GRESB Standards provide the basis for the systematic assessment of the management and performance of real asset companies and funds around the world. The Standards are governed by the GRESB Foundation, an independent, mission-based non-profit organisation, which updates the content of the assessments on an annual basis.

Changes to the Standards are thoroughly researched and reviewed by several Foundation advisory groups and are ultimately approved by the Foundation Board, which is composed of a GRESB Members and Partners from around the world. These updates are published online and made freely accessible to the market. For more information about the Foundation and future areas of development for the Standards, please review the 2024 Roadmap available [here](#).

FIGURE 9
GRESB benchmarks 14 aspects of real estate management and performance

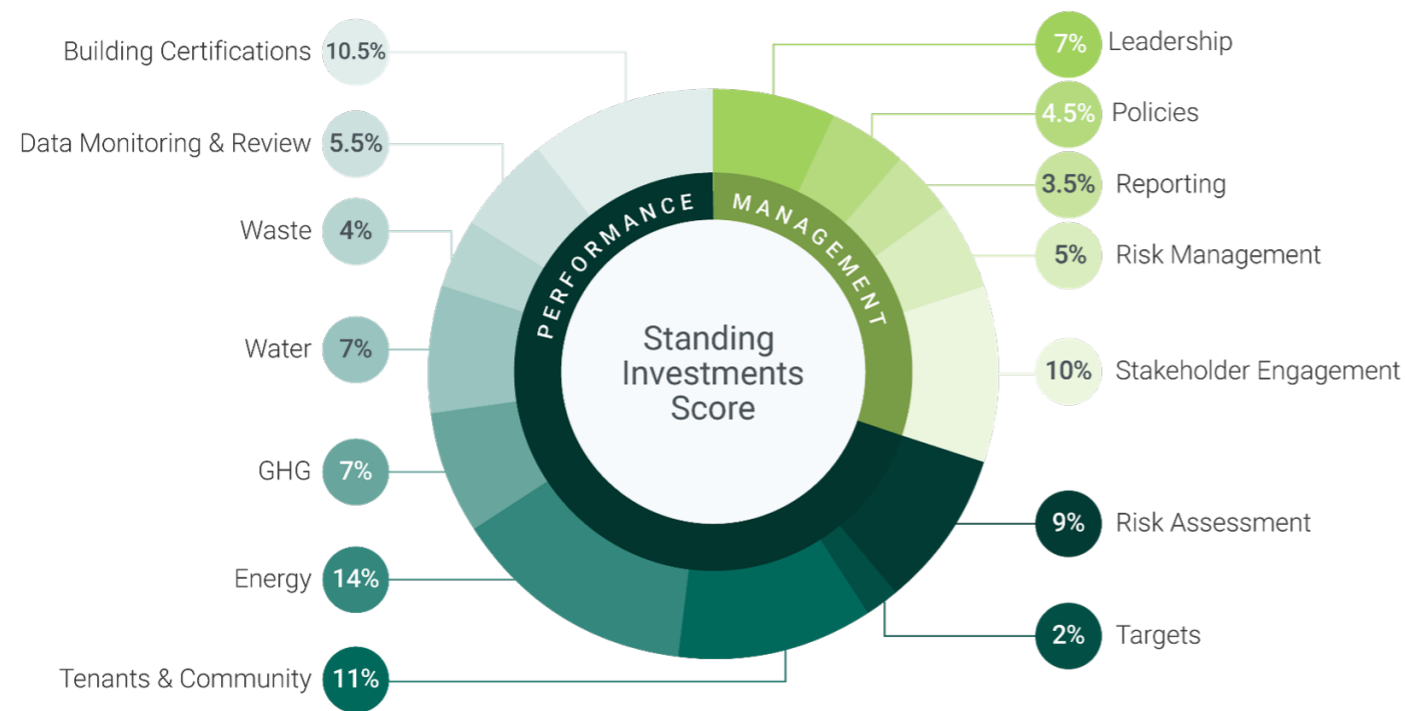
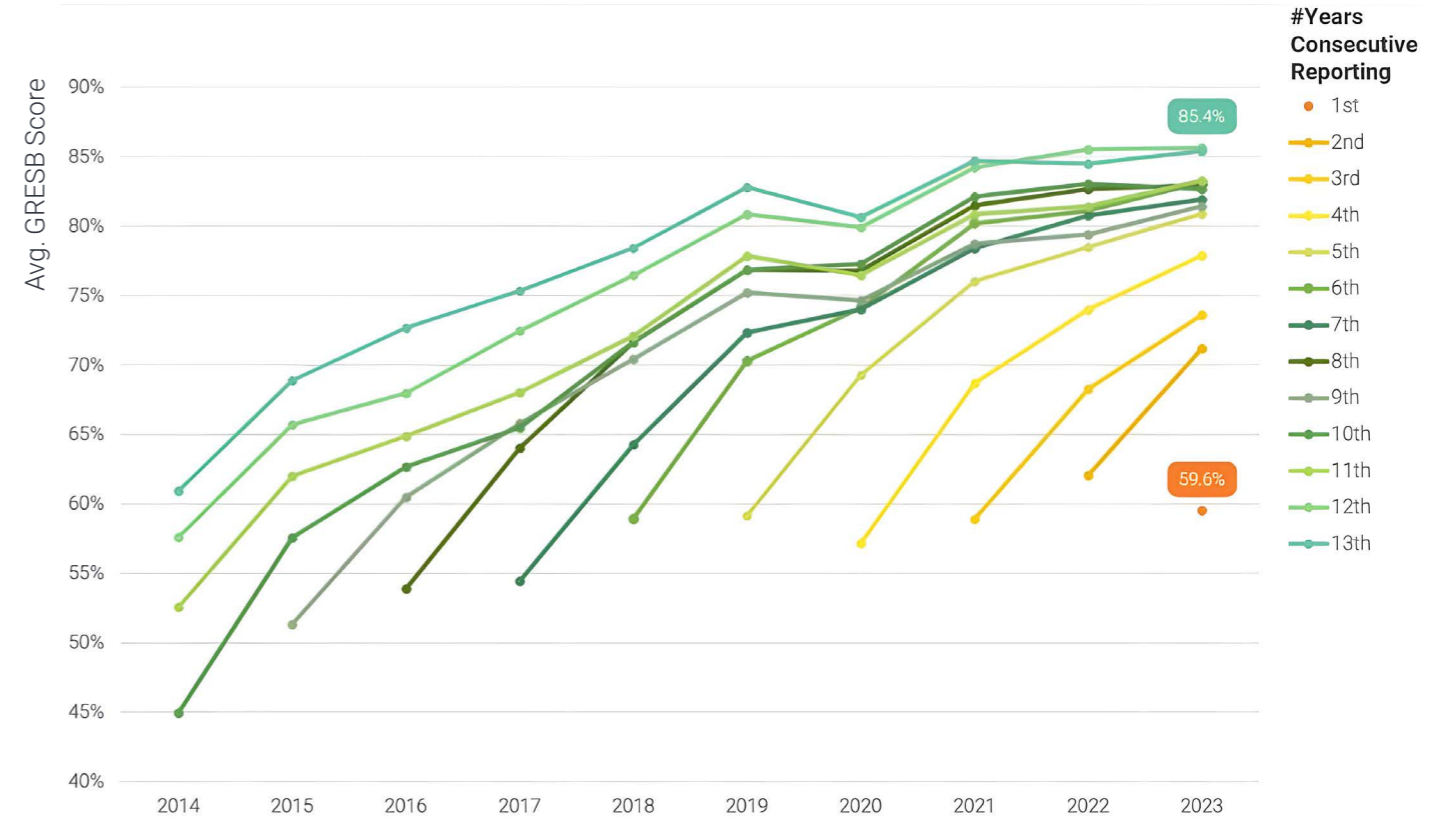


FIGURE 10
Improvement in overall GRESB scores based on duration of participation, from 1 to 13 years.



Each year, real asset companies and funds submit environmental, social and governance (ESG) data, reflecting both their management and performance to the GRESB assessments. This data is validated, then scored and benchmarked against the asset or portfolio's peers. At scale, the results help drive investor-led market engagement and transformation, and ultimately competitive differentiation for sustainable assets.

As evidence of GRESB's significance on the real asset industry, the Assessments are increasingly being used as evidence of strong ESG-related performance. Through this mechanism, borrowers can incentivise improved sustainability performance, reduce costs and increase access to capital, while lenders can better manage risk and demonstrate sustainability-related commitments to regulators and investors.

Participation in GRESB provides transparency for investors and encourages managers to improve portfolios over time. This is backed up by requirements for annual performance reporting covering energy, emissions, water, and water. Participation also drives significant cultural change, including internal leadership and communications.

4

General concepts in the global green building industry

4.1

Understanding asset energy and emissions profiles

There are broadly speaking three main sources of emissions in a building:

- Operational emissions – emissions from the consumption of energy (fuel or electricity) and direct refrigerant emissions from leakage. Of all these, on average, the largest source of emissions is electricity, then fossil fuels (natural gas, oil, diesel, etc), and finally refrigerants.
- Embodied emissions – emissions from the manufacture and transport of building materials, and construction, maintenance, and end-of-life activities. These are known as upfront emissions, in-use emissions, and end-of-life emissions. Of these three, upfront emissions are the largest by far, with these occurring at the beginning of building works.
- Other emissions include from fugitive emissions (i.e. refrigerants), waste emissions and water consumption emissions.

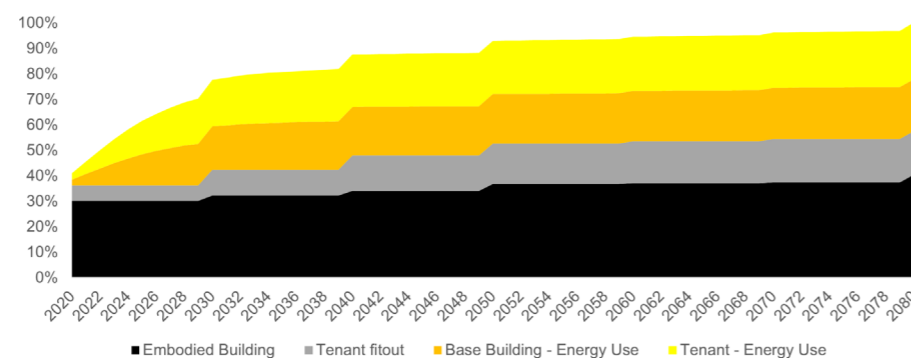
The combination of all these emissions is typically known as ‘whole-life’ carbon emissions.

Operational emissions can be modified over time, with emissions decreasing as buildings electrify and the grid decarbonises. Meanwhile most of the embodied emissions from a building are upfront emissions – they cannot change once the building has been built.

Operational emissions are heavily influenced by two factors – energy consumption at the asset level, and the emissions factor of the energy consumed. For most all-electric buildings, the decarbonisation of the grid will drive most emissions reduction – with this being particularly true for tenant emissions. For embodied carbon emissions, it is both design solutions, reuse of existing materials and refurbishment of existing assets, and material choices (such as reusing materials) that will drive emissions down, particularly those upfront.

For a new, high-performing office building, most of the emissions are likely to be from operational emissions, where tenant emissions are being included. But, depending on the building, and its location (the electricity grid it draws energy from) this split can now be closer to 50% operational and 50% embodied (such as is the case in Australia). As electricity grids decarbonise, the split will shift rapidly to most emissions being from embodied carbon particularly upfront. The total emissions for a building, including fitouts operational emissions is shown below:

FIGURE 3
Example of an all-electric building's emissions profile in Australia. Due to the grid decarbonisation, most emissions will be from upfront carbon for the building, and over time, the fitout.



15. PCAF released guidance for accounting for real estate emissions [here](#).

16. While these terms vary by country, the goal is to consider consumption from equipment that is embedded into the asset and has a long life, equipment that is impacted by the building's design and façade, or equipment that is necessary to maintain the health, safety, and comfort of occupants – regardless of ownership.

Because of this, care should be taken to keep emission accounts separate – in line with the Greenhouse Gas Emissions Protocol. In other words, each emission type should be driven to zero, without one emission source (e.g. renewable electricity) being used to offset other emissions (e.g. upfront carbon). Based on the experience of the authors of this document, the recommended approach is to disaggregate emissions¹⁵ reporting for the portfolio across distinct measures and set targets against each such as:

- Whole building energy consumption and emissions including the energy/fuel source (e.g. natural gas, diesel, electricity), with split targets and accounting for the below (preferred):
 1. Regulated energy consumption or primary energy demand¹⁶ (HVAC, lighting, hot water, lifts, and other building services)
 2. Unregulated energy consumption (occupant equipment, plug loads, appliances, and similar)
- Building upfront carbon – for new buildings or refurbishments (structure, envelope, systems, finishes)
- Tenant or fitout upfront carbon (fitout elements, furniture, and similar)
- Other emissions (refrigerants)

While the above are simplified recommendations, GRESB and the authors of this document plan to release future guidance on decarbonisation target setting for the built environment.

4.2

Decarbonising in line with a 1.5C trajectory

17. [Tracking Buildings](#), IEA, 2023.
18. CRREM was updated in 2022. Thanks to the support from GBCA, SGBC and other Green Building Councils, the updates resulted in more granularity for countries like Australia, and updated datasets for multiple countries. There was also a change in how the energy curves are presented, with the number reflecting actual energy consumption rather than net energy demand.
19. SBTi has developed embodied carbon pathways as a reference in their pilot buildings standard, but these have not been localised.

In line with the Paris Agreement target of net zero carbon by 2050, the investment community, through programs like the Net Zero Asset Owners Alliance, has set itself the target of ensuring their investments are performing in line with what is known as a Paris aligned, or 1.5C trajectory. The trajectory is aimed to be science based, where the total carbon budget is allocated throughout the economy, to each sector, and to distinct actors, and distributed across time. The approach was popularised by the Science-based Targets Initiative (SBTi) where the method was established with the aim to influence large scale corporate actors. They quickly expanded, with the first real estate company to sign being Landsec.

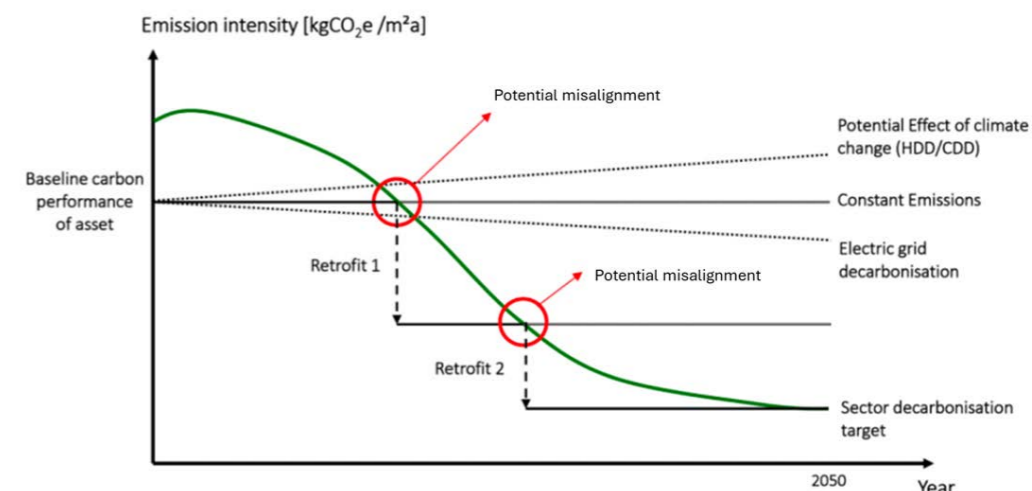
There are several decarbonisation curves that have been created over the years, from Climate Bonds leading targets (see section 3.4) to energy curves reductions issued by IEA,¹⁷ and the preferred ones by investors in Europe: SBTi and the Carbon Risk Real Estate Monitor (CRREM). All of these methodologies look at the portfolio performance (a collection of assets or investments), not individual asset performance. All these methodologies rely on understanding the portfolio's operational emissions, which in turn require information to be secured from assets.

4.2.1 Understanding how to use sectorial decarbonisation curves

In line with science-based approaches, a methodology for developing sectorial and regional decarbonisation curves for the real estate sector was developed and first released in 2018 and updated over time. The initiative is known as CRREM. Since then some institutional investors, asset managers, financial institutions and other entities, have been using CRREM to assess their portfolios for alignment. Besides using the resources offered via the CRREM website for free, the derived pathways are now also available in many commercial tools on the market. CRREM is also endorsed by many international industry organisations like EPRA, PCAF, SBTi, IIGCC, NZAOA, UNEP FI and many more.

The CRREM target decarbonisation pathways for the built environment, as is similar in principle with other pathways, were developed via downscaling of the global carbon budgets. Pathways were created to align with both 1.5°C and (alternatively) 2°C increases in global warming – and they target both emissions intensity (kgCO_2/m^2) and energy intensity (kWh/m^2).¹⁸ CRREM provides operational emissions decarbonisation curves only at this stage.¹⁹ It is important to note that CRREM takes a 'whole building' approach, meaning that it includes all energy consumption from the building's services and fittings (also known as regulated) and energy consumption by building users (also known as unregulated). Furthermore, it is possible to only benchmark energy related emissions, emissions related to fugitives or all GHG.

20. This diagram is simplified for purposes of explaining how CRREM could be used. In reality, the asset's emissions would fall over time rather than remain constant as grid's continue to decarbonise worldwide. CRREM's target setting tool accounts for grid decarbonisation.
21. CRREM recognises market based methods for accounting for renewable energy. Since the decarbonisation-pathways are calculated on a location-based dataset, CRREM recommends to assess assets on a like-for-like basis with the location-based approach (to identify exposure to transition risk on asset level).
22. In version 2, CRREM revised its energy curves to be about energy consumption. The energy curves follow the same theory of change. Being above the curve means assets within a portfolio may be using more energy than it should, which will make it not be aligned with where the sector needs to be. The energy curves are about energy consumption, the amount of energy used regardless of the source – the only option to become more aligned is to reduce energy consumption, introducing on-site solar, or purchasing renewables has no effect.
23. In simple terms, the CRREM energy curves are calculated based on the potential amount of renewable energy available in 2050 on the planet. The location of where the energy is, for purposes of the calculation is irrelevant, only that it exists.



The diagram²⁰ above summarises the principle of how CRREM works:

- The black line represents a portfolio's baseline and future carbon performance in terms of the greenhouse gas (GHG) intensity calculated as the amount of annual greenhouse gas emissions per the portfolio floor area. Emission figures include only operational emissions, those directly generated by the on-site combustion of fossil fuels for heating and indirect emissions (caused using district heating and/or electricity consumption).
- The green curve represents the target decarbonisation pathway of a portfolio in a specific country that aligns with a certain climate target (1.5°C). For a portfolio to be aligned with the sectorial curve, emissions intensity must stay below the target value of this curve. If it doesn't, the portfolio is misaligned – the asset or portfolio is emitting above the sectorial decarbonisation curve – this could mean the asset is at risk from a carbon perspective (referred to as transition risk by CRREM).
- In the illustration above, the example portfolio fulfils the requirements at the very beginning but will be misaligned at some point in the future. In this case, only appropriate retrofit measures to reduce GHG emissions would enable the building to meet the future emission ceilings – in most cases becoming more energy efficient and electrifying, or because the measure is carbon, purchasing renewable energy.²¹

In version 2, CRREM revised its energy curves to be about energy consumption.²² The energy curves follow the same theory of change. Being above the curve means assets within a portfolio may be using more energy than it should, which will make it not be aligned with where the sector needs to be. The energy curves are about energy consumption, the amount of energy used regardless of the source – the only option to become more aligned is to reduce energy consumption, introducing on-site solar, or purchasing renewables has no effect.²³

24. <https://www.dbs.com.sg/corporate/sustainability/our-path-to-net-zero>

25. <https://www.ocbc.com/group/sustainability/banking-on-net-zero>

26. <https://www.uobgroup.com/sustainability/sustainable-banking/net-zero-commitment-page>

4.2.2 Important considerations

It is worth noting that CRREM sectorial decarbonisation and energy curves are an average of the sector, not a target. However, they are a useful mechanism for understanding the portfolio within a context of a broader decarbonisation strategy and they provide a valuable framework for conversation between an asset owner and an investor or financier.

Decarbonisation pathways work best when considering averages of portfolios with a large number of buildings, proportional to the distribution of the market that it is analysing. The top-down nature of the analysis means that the closer the portfolio is to the data used, the more confidence one has that the result is accurate. Therefore, when analysing large portfolios, say for financed emissions across a bank's entire portfolio, there will likely be a significant amount of correlation. Whereas when applied to an individual asset, the result should be used as a guide for conversation, and not as a strict criterion for investment decisions.

27. CRREM, ULI, and the Lawrence Berkeley National Lab partnered to create more granular curves for the US and Canada. A draft for comment was [released](#) in April.

28. Several projects are in progress, including one for Australia to review the energy curves with the assistance of GBCA and NABERS. More information should be available in the future.

Sectorial decarbonisation and energy curves also rely on having accurate data for their development and on understanding the local market. This is an area where CRREM has been partnering with local expert knowledge over time, with significant efforts in North America²⁷ being the most recent example (see footnote 30 for other examples). However, as of this writing, there are still challenges, for example:

- Embodied carbon pathways developed by SBTi have not yet been localised and are using a small sample at this time.
- There have been data issues in several countries, found after the fact, that can impact the amount of energy or carbon allocated to a sector (e.g. changes to Australian grid decarbonisation projections).
- There can also be issues in energy allocations. CRREM energy curves end points in hot weather climates are notoriously strict. Places like Singapore, Australia, Hong Kong, and some areas in the Mediterranean have stringent efficiency targets in comparison to their temperate climate peers. This may be the result of poor data which would result in a mis-assignment of energy budgets.²⁸
- Operational carbon decarbonisation pathways are particularly influenced by grid decarbonisation factors projections, especially where buildings mostly rely on electricity. In Queensland (a hot-weather state in Australia) for example, where heating is limited, most buildings could theoretically comply with SBTi carbon curves (and likely CRREM), by simply waiting for the grid to decarbonise. Conversely, in countries with largely all electric buildings, but limited grid decarbonisation trajectories, complying with the SBTi curves will be highly problematic.

In Singapore, DBS,²⁴ OCBC²⁵ and UOB²⁶ banks use CRREM to assess their alignment of the real estate portfolios which they finance across the globe to a 1.5C climate target. This approach allows the banks to evaluate their overall portfolio performance in a manner that recognises the diverse and complex nature of the real estate sector, and account for dynamic (changing) portfolios.

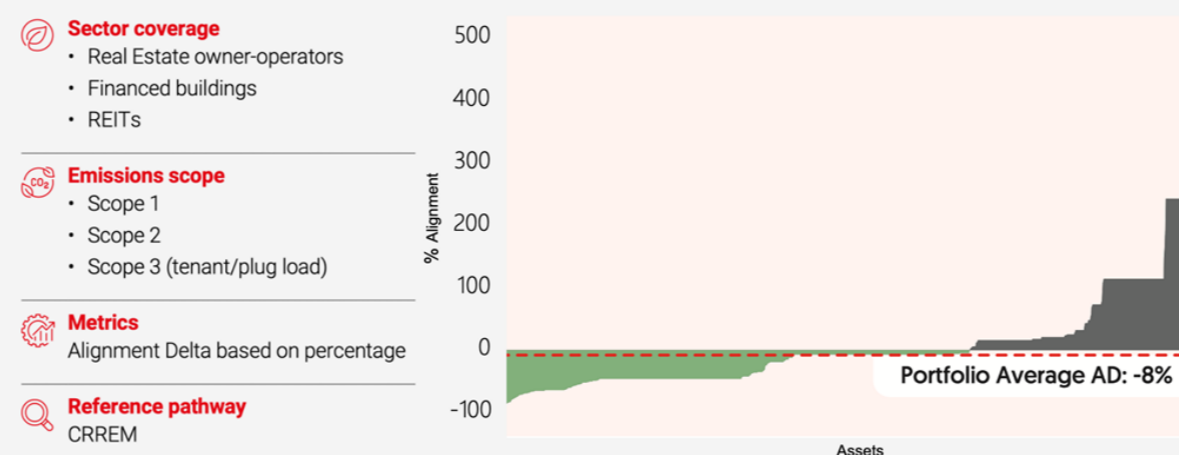


FIGURE 3

Example of how OCBC use CRREM at a portfolio level. Here each asset is compared to its respective CRREM carbon intensity value to give its % alignment. This is weighted by the financed portfolio to give the portfolio alignment delta (Portfolio AD – the dotted red line). Through this a single percentage figure expresses if the portfolio is aligned or deviating from the sectoral pathway. The aim is to be consistently <0%.

The alignment delta approach allows for portfolios to change, without bias to building typology or geography, whilst still tracking overall alignment to the 1.5 climate target.

4.2.3 Verifying performance against decarbonisation curves

Comparing against sectorial decarbonisation curves like CRREM or SBTi's requires accurate operational data from assets, an area where rating tools that focus on the operational life cycle phase excel. Rating tools like BREEAM In Use, Green Mark In-Operation, Green Star Performance, NABERS Energy, and LEED O+M all capture and verify data needed to ensure that the information provided as part of a CRREM assessment is accurate.

Rating tools also provide additional granularity that sectorial decarbonisation curves cannot provide. For example, Green Star Performance has specific electrification targets for buildings in Australia, in line with national priorities ensuring alignment. Meanwhile, a sectorial decarbonisation curve won't highlight the value of the electrification activity in a country but will highlight the need to do something to decarbonise. By combining credible rating systems with sectorial analysis, one can have the means to know how to decarbonise assets, not just that they are misaligned.

Finally, rating systems worldwide continue to work with partners like GRESB, Climate Bonds, CRREM, and SBTi to ensure their decarbonisation trajectories are credible, accurate, and relevant. This partnership continues to offer market relevant standards and verification, with assurance that the tools investors and real estate providers rely on are in line with the Paris-aligned 2050 targets.

4.3

Asset management, entity reporting and carbon accounts

The Greenhouse Gas Accounting Protocol defines emission categories for corporate entities, or scopes. The three scopes are:

Scope 1 – Direct emissions, which occur from sources that are owned or controlled by the company.

Scope 2 – Electricity indirect GHG emissions, which occur from the generation of purchased electricity consumed by the company.

Scope 3 – Other indirect GHG emissions, which occur because of the company's activities, but come from sources they do not own or control. Scope 3 includes fifteen different categories, for which the most important ones are Cat 1 'Purchased goods and services', Cat 2 'Capital Goods', Cat 11 'Use of Sold Products', and Cat 13 'Downstream leased assets'.

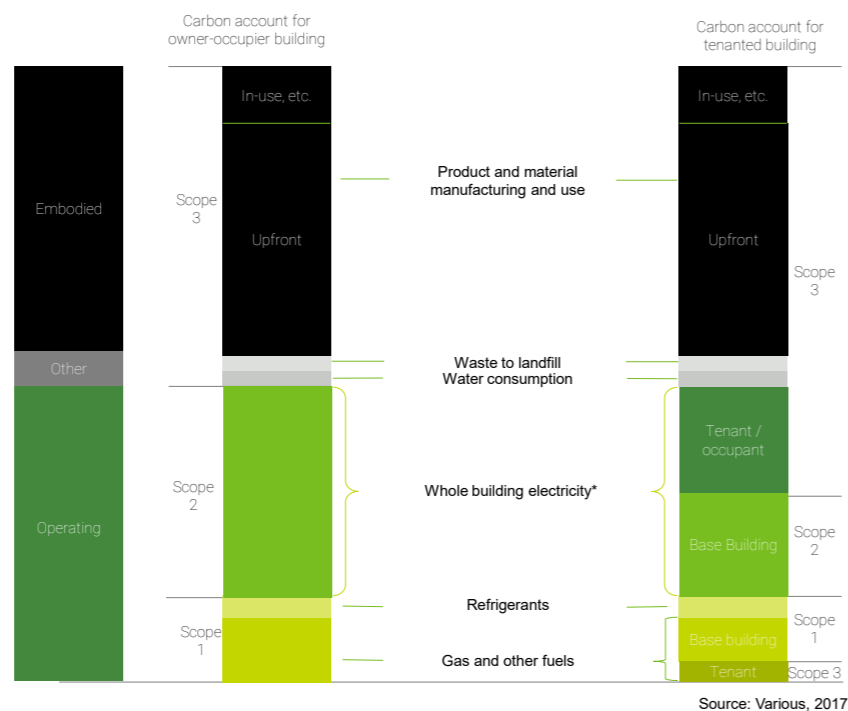
While at the asset level emissions can be divided into embodied and operational emissions, assigning these to an entity's scope changes based on who owns the building, and how it is managed. The two most common options for managed assets are owner occupier, and leased assets.

As the name suggests, owner occupier buildings are those where the occupant also owns the building. In these cases, the owner is accountable for all emissions associated with energy used in the building in their Scope 1 & 2 boundaries. This includes base building emissions, which are generated by the use, maintenance, and replacement of core systems like the air conditioning, ventilation, heating and hot water, common area lighting and car park ventilation. It also includes the emissions from day-to-day operations (such as equipment or appliances within tenancies).

When a building isn't occupied by its owner, it's typically leased. In these cases, the owner is still responsible for all the building's emissions – however the base building emissions are part of their Scope 1 & 2, while the tenant emissions from day-to-day operations are reported as Scope 3 (specifically Category 13 Downstream leased asset emissions).

It is possible to map these emissions to an entities' scope of emissions, but there are nuances based on the operating model for an asset, depending on metering, leasing, and stakeholders involved. The diagram below illustrates an example of how the sources of emissions for an office building are accounted by the building owner entity depending on whether the building is owner occupied or it is a tenanted building.

FIGURE 4
Diagram showing how operational and embodied carbon emissions at an asset level are accounted for in different types of buildings.



4.4

Carbon accounting methods for electricity emissions (scope 2)

The Greenhouse Gas Protocol provides two methods to account for Scope 2 emissions – the location-based method and the market-based method. They're designed to provide a comprehensive and nuanced understanding of an organisation's electricity-related carbon footprint. Where available, the Protocol recommends that both methods be used, as they provide relevant, but distinct information.

- **Location-based method:** This approach uses average emission factors that reflect the average carbon intensity of grids on which electricity consumption occurs (also known as "grid-average" emission factor). This method reflects where energy is consumed. This method doesn't consider any green energy purchases that a company may make.
- **Market-based method:** This approach reflects the emissions from electricity that an entity has purposely chosen (or its lack of choice) and contracted. It allows companies to claim specific types of power resources. For this method, companies need to apply emission factors from contractual instruments, and show custody of the attributions for the renewable energy source that includes the emission profile.

The dual reporting requirement in the GHG Protocol Scope 2 Guidance ensures that companies transparently report their efforts to procure low carbon electricity and allows for the comparison of companies' emissions based on a geographically consistent emission factor.

Both methods help companies to better understand their energy supply chains, develop strategies to reduce emissions, and make progress towards global sustainability goals.

4.5

The social impacts of the built environment

The measures of success in real estate have been defined first by capital benefits, then by environmental impact reductions. It is only recently that social and health outcomes have been considered as an investment metric. This is due to the lack of agreement on metrics for the real estate sector. Performance metrics for measuring environmental impacts are now mature – the same is not the case for social impacts in the built environment.

There are several frameworks that can be used to measure increased equity and social impact, noting that more work is needed. The most used is the [UN Sustainable Development Goals](#) which reflect the growing global commitment to social value, encouraging governments, organisations, and individuals to prioritise positive impact and contribute to a more equitable and sustainable future.

While this growing commitment towards social and environmental sustainability, diversity and inclusion through sustainable finance investment is extremely positive, there is a need for coordinated, common approach within the built environment sector to reduce duplication and provide clarity on how social value can be created, measured, and reported.

Opportunities for improvement

We performed a scan of multiple frameworks as part of the development of this document. While 'green' criteria was well developed and easy to translate, the same was not the case for 'social' criteria, with significant gaps on criteria for the social value of good building interventions. This is particularly true on the basis of health-related criteria – with the key one being essentially related to toxics in materials or air quality. However, issues related to acoustics, thermal comfort, light quality have significant design-related interventions that are not captured by neither green nor social criteria effectively. There will be future work done to develop potential criteria for discussion with the relevant bond and loan providers either through updates to this guide or through other means.



Real estate verification frameworks were developed out of a need to define, document, and certify performance and best practices in the design, construction and operation of buildings. Rating systems have multiple, interconnected components:

- A supporting community – typically a group of professionals with a shared interest in defining green buildings with respect to verifiable practices and performance.
- A system of governance – the mechanism used to understand and codify the values and priorities of the community.
- Rating tools – the collection of requirements, practices, and performance used to assess the sustainability of spaces, buildings, and places.
- Certification processes – the mechanism used to evaluate alignment or compliance with requirements, such as document review or on-site assessment.
- Accredited professionals – a group of professionals trained and credentialed to understand and apply rating tools and certification processes.
- Auditors (verifiers, raters, or assessors) – a group of subject matter experts who independently evaluate buildings' compliance with sustainability criteria through rigorous document reviews and/or on-site inspections.



These fundamental components have been assembled into hundreds of building systems. They share an aspiration to increase market transparency and drive positive change. They vary in their scope, rigor, approaches to evaluation, and relationship to policy and regulation. Some are voluntary, others act as both a policy lever and as a voluntary mechanism or as mandatory to receive monies from the national funding scheme.

The rating tools represented in this guide are used in several taxonomies internationally and are commonly referenced by investors and real estate companies within their frameworks. All the rating tools bar one are holistic rating tools addressing multiple elements of sustainability and performance, with NABERS Energy being included as it is relevant to GBCA's Green Star.

BREEAM®



greenstar

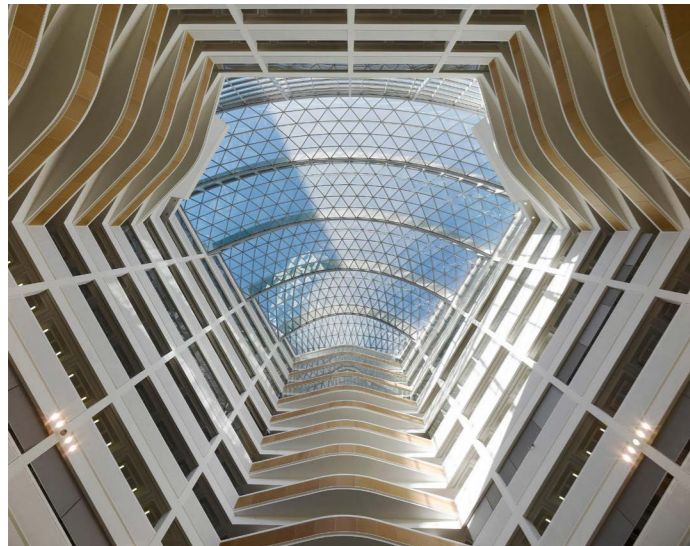


NABERS

5.1

BREEAM®

BREEAM is the leading science-based suite of validation and certification systems for a sustainable built environment. Developed by BRE, a profit-for-purpose organisation with over a century of building science expertise, BREEAM is an internationally recognised and respected framework for measuring and certifying sustainability performance across the entire building lifecycle for commercial and residential assets.



Above.
One Angel Square, The Co-op HQ Manchester. BREEAM rated outstanding

Above right.
Copenhagen, City Development Area Nordhavn, Portland Towers Corporation. BREEAM rated very good

Since 1990, BREEAM's third-party certified standards have helped improve asset performance at every stage, from design through construction (BREEAM New Construction), to operation (BREEAM In-Use) and refurbishment (BREEAM Refurbishment & Fit-Out).

Over 995,000 BREEAM certificates have been issued in 75 countries worldwide, and hundreds of thousands more buildings in more than 100 countries have started their journey using BREEAM's holistic approach to achieve ESG, health and net zero goals.

BREEAM rewards sustainability performance and through independent, third-party certification, BREEAM assesses an asset's environmental, social, and economic performance against established benchmarks to evaluate a building's specification, design, construction and use.

BREEAM takes a holistic approach to sustainability, focusing on key areas like reducing carbon emissions across the full building lifecycle, promoting comprehensive health and wellbeing and asset resilience.

BREEAM®

Always Beyond Legislation



The technical standards consider the inter-relationship of all facets of sustainable real estate, driving higher and higher performance from client portfolios.

BREEAM builds confidence and value in a project by providing independent certification that demonstrates wider benefits to individuals, businesses, society, and the environment. It can maximise returns through higher market value, managing risks, and attract tenants with desirable places to live, work, and thrive.

Developers and asset owners can assess a building's sustainability performance against BREEAM's science-based benchmarks and through certification, provide transparency of sustainability risks and opportunities to stakeholders. Certification is done through an independent, third-party Assessor, trained and licensed by BRE to conduct assessments which are robustly quality assured before certification is issued. The technical standard encourages solutions that deliver environmental benefits whilst managing risk and providing opportunities to protect and grown asset value.

BREEAM standards provide a solution for real estate funds, asset owners, developers and occupiers look for a truly independent mark to validate their sustainability achievements and navigate the pathway towards decarbonisation, net zero, EU Taxonomy compliance and future asset resilience. As a set of global standards, the BREEAM family also support compliance in other global markets well beyond Europe, including the US & APAC as examples. We do this through adaptation of the technical standards to different global geographies and markets. For example, we have a version of BREEAM In-Use that has been refined specifically for the US market.

BREEAM Version 7

BREEAM Version 7 (V7) is a comprehensive update focusing on whole-life carbon and energy issues, applicable to the New Construction, In-Use, and Refurbishment and Fit-Out schemes. Delivered via a new digital platform, this version introduces several significant improvements designed to provide enhanced environmental performance and financial value to investors.

BREEAM V7 aligns carbon measurement metrics across all BREEAM standards, ensuring consistent and comparable data throughout a building's lifecycle. This enables better decision-making and carbon performance tracking. BREEAM V7 integrates with other prominent reporting frameworks, including the EU Taxonomy, adding substantial stakeholder value.

A key feature is the clear framework for showing a building's progress towards achieving net zero carbon. With net zero carbon performance increasingly being required through legislation and market demands growing, understanding the performance gap is critical to protecting the long-term value of the asset. The enhanced requirements for benchmarking upfront and embodied carbon emphasise the need to assess and improve carbon performance from the outset, promoting long-term sustainability.

BREEAM V7 emphasises the quantified and measured performance of buildings over specific processes. Performance-based metrics, including both embodied and operational carbon, and transparency through certification, encourage optimisation across the asset's lifecycle. This approach rewards innovative, high-performance buildings, helps identify opportunities to enhance asset value through sustainability performance, and provides flexibility in achieving sustainability goals.

Benefits for clients:

- Seamless transitions between different BREEAM schemes enables insights to support informed decision-making and strategic planning.
- Enhanced connectivity with third-party systems integrates BREEAM within broader sustainability strategies, increasing its functionality and effectiveness.

By emphasising whole-life carbon and providing transparency for pathways to net zero carbon as part of a holistic sustainability approach, BREEAM V7 supports the real estate sector to decarbonise while delivering significant commercial value at the asset level through improved performance and enhanced reporting capabilities.



Discover more of the benefits of BREEAM [here](#)

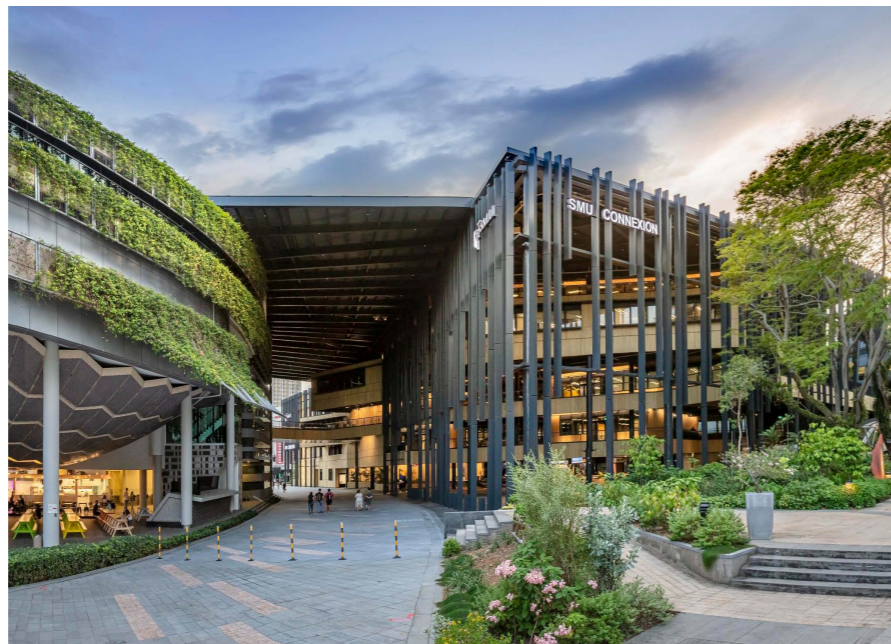
Above.
BREEAM Library of
Birmingham UK. BREEAM
rated excellent

5.2



Developed by Singapore’s Building and Construction Authority (BCA) in 2005, Green Mark (GM) evolved rapidly as the leading green building rating tool for the urbanised tropics and is a key instrument of Singapore Green Building Masterplan, and other national policies on environmental sustainability. Green Mark has a strong focus on verifiable measured building performance.

Right. Singapore Management University, SMU Connexion, Certified Green Mark Platinum (Zero Energy)



The latest version, Green Mark 2021, provides holistic certification for residential and non-residential new buildings and existing buildings undergoing refurbishments. For buildings in operation, Green Mark 2021 In Operations provides assurance through measured performance data that these buildings are operating at the same high performance levels. Data Centres, District, and Interior fit-out projects can be certified under respective dedicated criteria (GM for Data Centre, District, Healthier Workplaces, Retail, Supermarket, Restaurants and Laboratories).

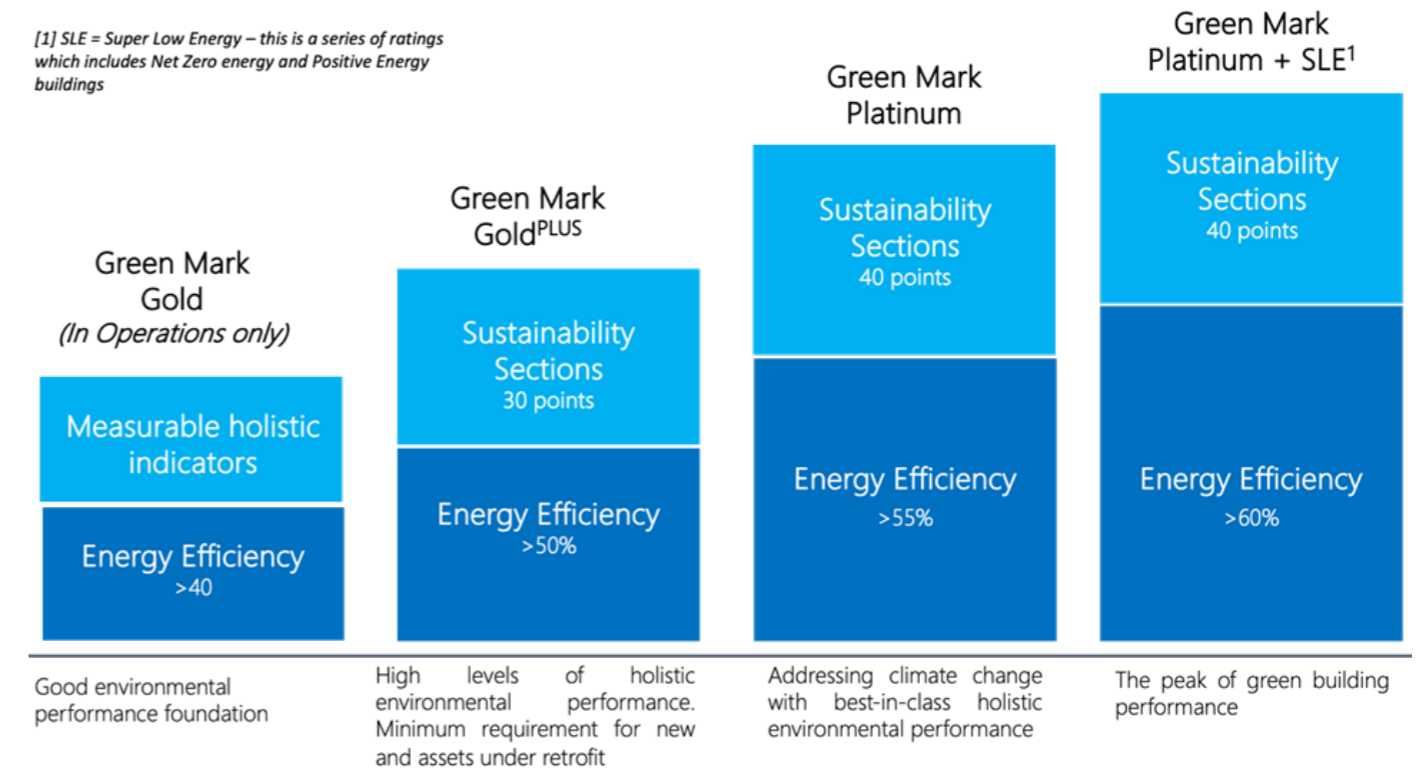
Green Mark 2021 (including In-Operation) creates a unified performance standard across the building lifecycle. This approach provides market assurance that a Green Mark certified building is delivering on its environmental promise at all times. Green Mark is widely used outside of Singapore in the tropics with certified projects in Malaysia, Thailand, Indonesia, Vietnam, Myanmar, China as well as Tanzania, and Rwanda. In Singapore there are more than 2,500 buildings certified (as of December 2023).

Green Mark’s holistic ratings uses the following rating scale:²⁹

FIGURE 5

The Green Mark rating scale for new buildings, existing buildings under retrofit and buildings in operation buildings. The rating scale for in operation includes a ‘Gold’ level, to encourage buildings with legacy ratings to maintain their certification, and work towards higher ratings. The sustainability sections allow exemplary performance to be rewarded through the earning of a ‘badge’ in that section.

[1] SLE = Super Low Energy – this is a series of ratings which includes Net Zero energy and Positive Energy buildings



29. BCA Green Mark 2021 also has an SLE (Super Low Energy) certification. This purely certifies the best-in-class energy performance of the project. However, for the intent of the paper we refer to the full, holistic, Green Mark 2021 certification.

The certification process involves submitting detailed information to BCA, reviewed by internal or appointed independent external assessors to ensure criteria compliance, interactive assessment sessions with project parties and verification with on site performance measurements. A letter of award is issued upon achieving the Green Mark rating, and the Green Mark of certificate is issued after site verifications, conducted for new buildings and existing buildings under retrofit upon completion.

Image.
Parkroyal Collection at
Pickering Certified Green
Mark Platinum



Discover more of the benefits of the Green Mark Certification Scheme [here](#)



An internationally recognised rating system that aims to create healthy, resilient, and positive places for people and the natural environment. Green Star covers new buildings (Green Star Buildings), existing buildings (Green Star Performance), new homes (Green Star Homes), new fitouts (Green Star Fitouts), and precincts (Green Star Communities).

Green Star uses a rating scale to measure and reward projects that achieve best practice or above in their sustainability outcomes. Green Star rated buildings, fitouts and precincts can achieve a Green Star certification of 4 – 6 Star Green Star. Existing building operations assessed using the Green Star – Performance rating tool can achieve a Green Star rating of 1 – 6 Star Green Star.

Green Star is the most used holistic rating system in Australia by far, with more than 4000 certifications awarded, and a further 3000 registered. Green Star is also available in New Zealand (Green Star NZ), under license to Te Kaunihera Hanganga Tautaiiao | the New Zealand Green Building Council (NZGBC), and Africa (Green Star SA) under license to the Green Building Council of South Africa (GBCSA). Those two organisations manage the rating system for certification purposes, relying on GBCA for approval for changes to the standard for their local conditions.

Projects achieving 4 Star Green Star rating represent Best Practice, 5 Star represent Australian Excellence, and 6 Star represent World Leadership in sustainable design and construction. In summary, the certification process for the rating system involves a rating applicant providing detailed information to GBCA (or NZGBC and GBCSA). GBCA then arranges an independent, third-party assessor (one or multiple experienced industry professionals) to review the information provided. The assessor(s) review the documentation and award a score, which determines their rating.

FIGURE 6

The Green Star rating scale for new buildings. The rating scale for existing buildings includes a 1, 2, and 3 Star rating to encourage any building to enter the program and work towards a certified 4 star rating as a minimum.



5.3.1.1 NABERS Energy and Green Star

In operation since 1999, NABERS is one of Australia’s most successful government initiatives for the built environment. It is composed of four programs (Water, Waste, IE, and Energy) all based on actual building performance.

NABERS Energy, assesses the actual energy efficiency performance of buildings across Australia (1999), New Zealand (2012), and the UK (2022). The program can award a rating to a base building, a whole building, or tenancy. Independent assessors conduct the ratings, which are audited and verified by NABERS.

Ratings are communicated through a 6-star scale and are available for most sectors. NABERS Energy includes a Renewable Energy Indicator showing the proportion of a building’s energy sourced from on-site or off-site renewables.

NABERS is widely considered one of the key programs that has helped Australian property companies become world leaders in building energy efficiency. It is a trusted, valuable program, that, where relevant, is used as a pathway for Green Star in Australia. This collaboration has yielded significant value for the Australian property, with NABERS setting the measurement mechanism, and Green Star setting the requirements that teams must meet. Most recently, GBCA has been supporting NABERS to develop an upfront carbon benchmark for Australia’s built environment to be released in 2025.

Image.
Heritage Lanes, 80 Ann Street,
Brisbane Australia. 6 Star Green
Star Buildings v1. ©Trevor Mein
2023



Discover more of the benefits of Green Star [here](#)

5.4



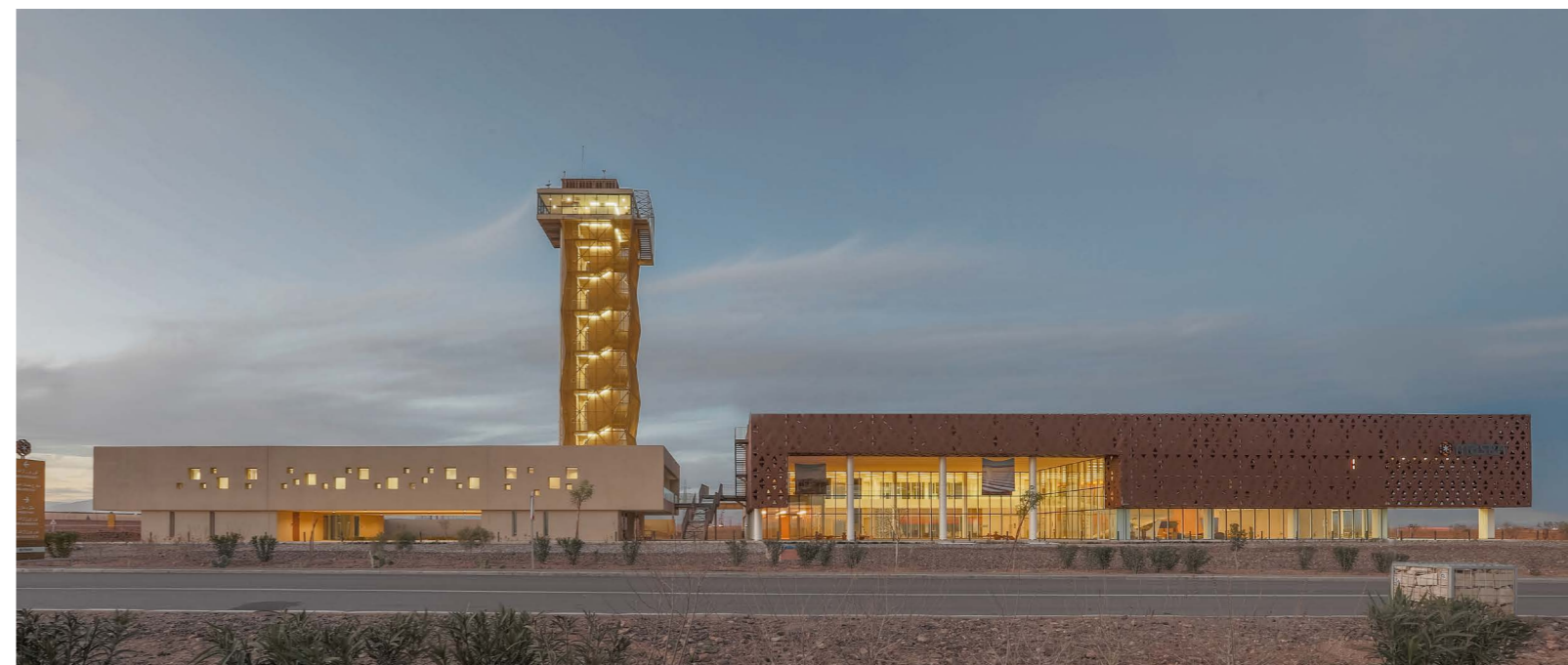
HQE (Haute Qualité Environnementale) is a comprehensive French green building certification system established in 2004 that has evolved over two decades into a globally recognised standard for creating and operating high-performing sustainable buildings. HQE provides a robust framework for minimising environmental impact, enhancing quality of life, safeguarding minimum economic performance, and ensuring strong project governance.

The certification offers a single, holistic rating scheme applicable to new construction, renovation, and existing buildings in operation, considering the building's entire life cycle. This approach ensures a consistent set of criteria, (with some potentially not applicable or relevant depending on the project type). This process balances best practices with leadership strategies to set challenging benchmarks for overall sustainable building definitions and performance.

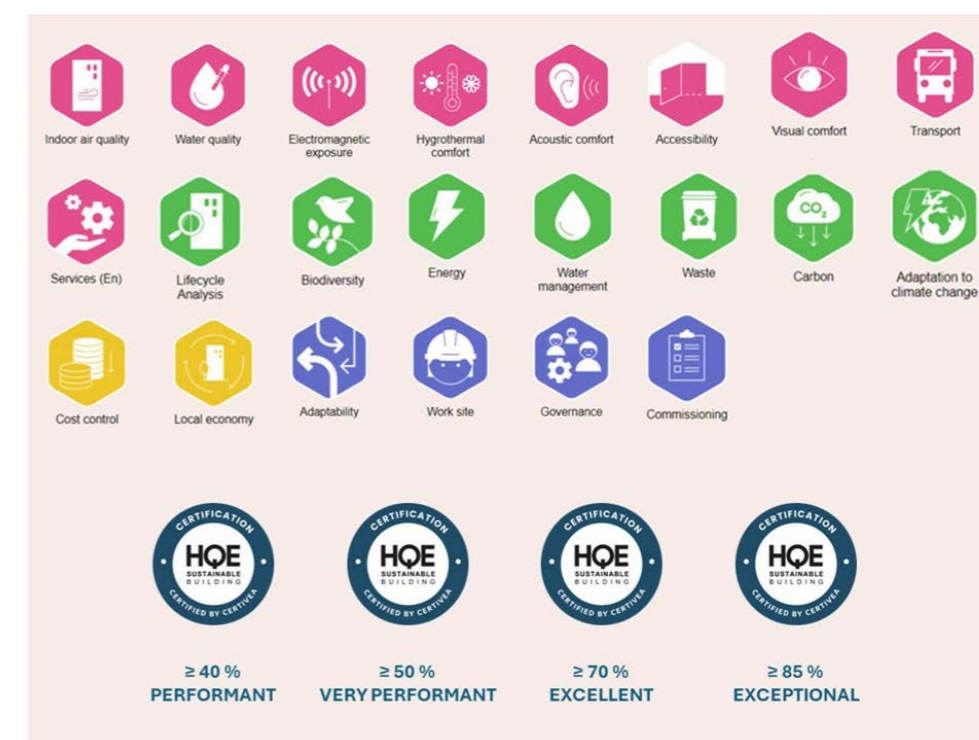
HQE certifications serve as an independent corroboration of sustainability achievements, helping real estate stakeholders navigate decarbonisation, biodiversity, climate change adaptation, and EU Taxonomy compliance. The system has also been adapted for various global markets, including a version specifically refined for Brazil and South America.

HQE-certified buildings aim to reduce climate change impacts, preserve biodiversity, provide healthier indoor environments for occupants while reducing energy, water, and waste. These buildings offer higher market value, lower operating costs, and contribute to achieving ESG objectives and the SDGs.

By combining comprehensive technical requirements, global adaptability, and independent verification, HQE empowers real estate stakeholders to create a more sustainable built environment.



Above.
HQE Construction.
Noor Solar Power Plant
Conference center
Ouarzazate Morocco.
Exceptional





Above.
HQE Construction. Lycée
Français Hanoi Vietnam.
Very Performant

Discover more of the benefits of HQE [here](#)



LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. It provides a framework for creating and operating high performing buildings that advance decarbonisation, quality of life, and ecological stewardship. Supported by a vast industry of dedicated organisations and individuals aiming for market transformation, LEED certification is globally recognised as a symbol of sustainability achievement. There are over 197,000 LEED projects across 186 countries and territories.

Since its founding in 2000, U.S. Green Building Council (USGBC) has evolved LEED to address new markets and building types, advances in technologies and best practices, and new research insights. LEED is applicable to all building types and phases, including new construction, interior fit-outs, operations, maintenance, and core and shell. LEED offers different rating systems for various project types, such as Building Design and Construction (BD+C), Interior Design and Construction (ID+C), Building Operations and Maintenance (O+M), Neighborhood Development (ND), Communities, Cities, and Homes.

The LEED green building rating systems are voluntary, consensus-based, and market-driven. The technical basis on which LEED is built seeks a balance between requirement of existing best practice and voluntary incorporation of leadership strategies. LEED sets a challenging yet achievable set of benchmarks that define green building. The development process is based on principles of transparency, openness, and inclusiveness.

LEED-certified buildings aim to reduce global climate change contributions, enhance human health, protect water resources, support biodiversity, and promote sustainable material cycles. LEED buildings are beneficial for businesses, people, and the environment. They have higher resale values, lower operational costs, and contribute to achieving ESG and decarbonisation goals. For occupants, they provide healthier indoor spaces and support community health. Environmentally, LEED buildings reduce energy and water usage, utilise renewable energy, create less waste, and help tackle climate change.

FIGURE 7

USGBC tracks the operational performance of many LEED-certified buildings. Energy use, emissions intensity, and occupant satisfaction improve with higher levels of certification.

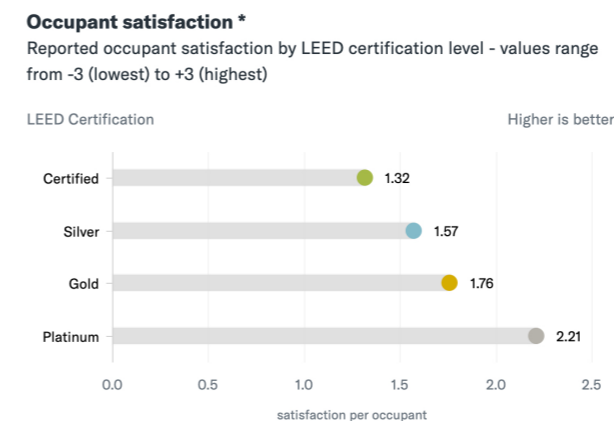
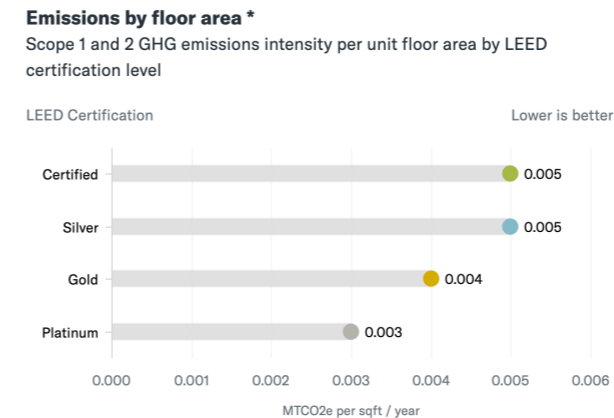
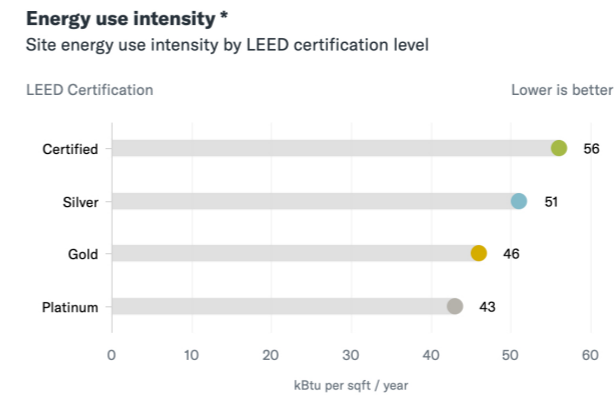


Image.
Invesco HQ | LEED Platinum
| LEED ID+C: Commercial Interiors | © Ryan Vizzions



Right.
CW Tower | Bangkok, Thailand
| LEED Gold | Photo: ©CW
Towers Company Limited

LEED v5

LEED v5 represents a significant update to the certification system, with a renewed focus on decarbonisation, resilience, health, equity, and ecosystem conservation. This new version focuses on three primary goals that significantly influence the certification's scoring system: climate action, which accounts for 50% of possible points; quality of life, accounting for 25%; and ecological conservation and restoration, also at 25%. These goals are interwoven across the certification through specific principles aimed at enhancing building performance and sustainability.

Significant changes in LEED v5 include:

- The restructuring of prerequisites and credits to emphasise decarbonisation, including separate points for energy efficiency and carbon reduction measures. This includes recognising strategic decarbonisation plans for existing buildings – long-term strategies that dramatically reduce emissions and aggressively improve energy efficiency.
- The inclusion of social equity and carbon literacy as core components, with new prerequisites such as the Social Impact Assessment and Operational Carbon Projection.
- A more pronounced focus on resilience, with requirements for comprehensive assessments of climate resilience and adaptive design strategies.

The new version also features refined categories like Materials & Resources, which now includes credits for low-carbon materials and lifecycle assessment, reflecting a push towards more sustainable construction practices. LEED v5 continues to evolve the rating system with pilot credits being integrated into the main system, reflecting ongoing feedback and testing.

FIGURE 8

Every credit and prerequisite in LEED v5 has a connection to decarbonisation, quality of life and/or ecological conservation, and this is clearly annotated throughout the rating system.



Discover more of the benefits of LEED [here](#)

5.6 Holistic rating systems and tools in more detail

		BREEAM	Green Mark	HQE	
Building Stage		Planning; Construction; Operational; Retrofits.	Planning; Construction; Operational; Retrofits.	Planning; Construction, Operational; Retrofits.	
Type of System		Holistic, voluntary	Holistic, voluntary/ mandatory for key (strategic) land sales sites and public buildings.	Holistic, voluntary.	
Origin		United Kingdom	Singapore	France	
Description		BREEAM is the world's leading science-based suite of validation and certification systems for sustainable built environment.	Green Mark is a leading holistic rating system, with a strong focus energy performance and efficiency, decarbonisation, health and wellbeing as well as climate resilience. Used in Singapore and regionally within Asia.	HQE (Haute Qualité Environnementale) is an international certification that evaluates a building's environmental performance, occupant health and comfort, economic efficiency, and responsible management throughout its entire life cycle. management throughout its entire life cycle.	
Assessment process		Assessments are conducted by Assessors trained and licensed by BRE to determine the rating achieved. On-site verification is required as part of the process and the assessments undergo a rigorous quality assurance process by BRE before certification can be issued.	Two independent assessors within the BCA or independent external assessors to conduct assessment for the project including interactive sessions, documentation review, and through onsite verifications.	HQE verification involves third-party audits by independent auditors at each project stage – design, construction, and operation. Auditors evaluate documentation and conduct site visits to ensure the building meets HQE's criteria before certificate issuance by CERTIVEA.	
Governance		BREEAM acts with impartiality and in line with its UKAS (UK Accreditation Service) accredited processes. BREEAM works alongside industry experts during the scheme development and approval process. BREEAM has been adapted for 7 markets by National Scheme Operators (see Additional Notes) who are required to follow the same governance process and the versions signed off by BRE as being appropriately aligned with the International version of BREEAM.	Green Mark is developed in consultation with industry & reviewed by expert technical and industry Advisory Groups. Oversight through the Green Building Advisory Committee with escalation to the BCA Management Board, made up of a higher level of public and private members.	HQE sustains rigorous governance standards to ensure impartiality and consistency across its global operations. Its certification process is accredited by COFRAC (Comité Français d'accréditation) in compliance with the NF EN ISO/IEC 17065:2012 standard, requiring competence, consistent operation, and impartiality of certifying bodies. HQE collaborates with industry experts in developing and approving HQE's schemes, and independent third-party auditors carry out the audits. National Scheme Operators might adapt methodologies to local markets, but must align with HQE's structure, and follow the same governance processes.	
Type	New construction	BREEAM New construction, Home Quality Mark (UK Residential only)	Green Mark 2021	HQE Sustainable Building (Bâtiment Durable) HQE Residential (NF Habitat HQE)	
	Building operations	BREEAM In-Use	Green Mark 2021 (In Operation)	HQE Sustainable Building (Bâtiment Durable) HQE Residential (NF Habitat HQE)	
	Fitouts	BREEAM Refurbishment & Fit-out	Green Mark Healthy Workplace/Retail/Restaurant/Supermarket/Laboratory	HQE Sustainable Building (Bâtiment Durable)	
	Precincts & Districts	BREEAM Communities	Green Mark for Districts	HQE Sustainable Urban Planning (Aménagement Durable)	
Coverage	Version	v6	v7	Green Mark 2021	HQE 2023
	Energy use	●	●	●	●
	Fossil fuel free		●	○	●
	Upfront carbon reductions	●	●	●	●
	Rewards offsetting beyond reductions	●	●	●	
	Products and materials	●	●	●	●

	BREEAM		Green Mark	HQE
Version	v6	v7	Green Mark 2021	HQE 2023
Coverage	Climate change adaptation	●	●	●
	Health & Wellbeing	●	●	●
	Waste	●	●	●
	Water Use	●	●	●
	Transport & place	●	●	●
	Biodiversity & nature	●	●	●
	Social sustainability	●	●	●
	Notes:			Economic performance
Rating Scale	High	Outstanding	Platinum SLE	Exceptional
		Excellent, Very good	GoldPLUS, Platinum	Excellent, Very performant
	Low	Good, Pass (operations only)	Gold (operations only)	Performant
Certification Validity	New construction or refurbishment	Does not expire	3 years from construction completion	1 year from construction completion
	Assets in use	3 years	3 years from certification	3 years from certification or 5 years from certification (depending on the contract)
Managing Entity	BRE Global		Building and Construction Authority	CERTIVEA
Quality Assurance	UKAS Accredited Certification Body		ISO 9001	COFRAC Accredited Certification Body (ISO/IEC 17065:2012 standard)
Website	breeam.com		www1.bca.gov.sg/buildsg/sustainability/green-mark-certification-scheme/green-mark-2021	www.certivea.fr

Additional notes

Green Mark 2021

- The energy section is not a scored section, but sets the minimum thresholds for ratings to be met. It is based on 'whole building' approach (including tenant energy). The minimum performance thresholds are:
 - Gold (GM 2021 In Operations only) >40% savings
 - GoldPLUS >50% savings
 - Platinum >55% savings
 - SLE >60% savings
- Net Zero (Zero Energy) ratings are based on SLE energy efficiency, plus the inclusion on or offsite renewables to meet the whole building energy demand (net, over a 12-month period).
- Positive Energy – 115% of energy supplied onsite – a net energy exporter to the grid.

- 5 scored holistic sustainability sections determine the level of award combined with the energy performance achieved. These sections are Carbon, Health and Wellbeing, Resilience, Intelligence and Maintainability.
- Exceptional performance in each of the 5 sustainability sections can yield the award of a badge alongside the Green Mark rating.
- Certification Process – For new developments, certification covers the design, construction, and verified operational performance. The operational performance is validated as a part of the certification process (As Built and with 12 months of operational data + system efficiency audits). Green Mark In-Operations manages buildings in operation, based on measured and audited data. For buildings under retrofit this follows the same approach as new buildings, requiring measured performance post retrofit.

		Green Star			LEED	
Building Stage	Planning; Construction; Operational			Planning; Construction; Operational		
Type of System	Holistic, voluntary			Holistic, voluntary		
Origin	Australia			USA		
Description	Green Star is an internationally recognised holistic rating system that aims to create healthy, resilient and positive places for people and nature, with a strong focus on decarbonising the built environment.			Released in 2000, LEED is a global rating tool that addresses the entire lifecycle of buildings, interior fitouts, and neighbourhoods, cities and communities.		
Assessment process	Documents are submitted to GBCA who appoint an independent assessment panel to review the evidence and assign a rating.			Documents are submitted to GBCI, an independent entity, who then reviews the documentation and assigns a rating.		
Governance	Green Star is developed in consultation with industry & reviewed by expert technical and industry Advisory Groups. Oversight rests with Green Star Advisory Committee & GBCA Board. It is subject to ACCC certification trademark rules. International versions of Green Star exist in New Zealand and Africa. They are managed by the NZGBC and GBCSA and assured by GBCA.			LEED is developed by USGBC staff, committees, and advisory groups. The independent LEED Steering Committee has process oversight. Public comment periods in which all comments are responded to. Changes are balloted to the membership for approval.		
Type	New construction	Green Star Buildings, Green Star Homes			LEED BD+C, LEED Homes	
	Building operations	Green Star Performance v2			LEED O+M	
	Fitouts	Green Star Fitouts v1 (2025)			LEED ID+C	
	Precincts	Green Star Communities v2 (2024)			LEED for Cities and Communities; LEED for Neighborhood Development	
Coverage	Version	Green Star (2020)	Green Star NZ (2024)	Green Star SA (2025)	V4.1 (2014)	v5 (2025)
	Energy use reductions	●	●	●	●	●
	Fossil fuel free	●	●	●		●
	Upfront carbon reductions (embodied)	●	●	●	●	●
	Rewards offsetting beyond reductions	●	●	●		
	Products and materials	●	●	●	●	●
	Climate change adaptation	●	●	●	●	●
	Health & Wellbeing	●	●	●	●	●
	Waste	●	●	●	●	●

		Green Star			LEED	
	Version	Green Star (2020)	Green Star NZ (2024)	Green Star SA (2025)		
	Water Use	●	●	●	●	●
	Transport & place	●	●	●	●	●
	Biodiversity & nature	●	●	●	●	●
	Social sustainability	●	●	●	●	●
	Notes:					
Rating Scale	High	6 stars			Platinum	
		4-5 stars			Silver, Gold	
	Low	1-3 stars (operations only)			Certified	
Certification Validity	New construction or refurbishment	Does not expire – reflects built outcomes, and includes commissioning and tuning			Pre-v5 does not expire – reflects built outcomes (Design and Construction)	
	Assets in use	1 year			3 years	
Managing Entity		GBCA	NZGBC	GBCSA	USGBC	
Quality Assurance		ISO 9001			<u>Foundations of LEED</u>	
Website		www.gbca.org.au	nzgbc.org.au	gbcса.org.sa	www.usgbc.org	

Additional notes

Green Star

- Previous versions of Green Star for new construction include Green Star Design & As Built and legacy rating tools. These are still valid ratings, but no new registrations are being accepted. Any ratings delivered after 2021 are for buildings registered prior to that date.
- Green Star Performance was updated in 2023. All buildings using that rating tool are required to upgrade by 2026 at the latest.
- Fitouts can still register under Green Star Interiors. This rating tool will be replaced with Green Star Fitouts in 2025.

While this guide aims to present how rating tools address sustainable finance requirements, it is important to note that these holistic rating tools go well beyond the indicators and topics highlighted below. For example, the rating systems listed also recognise practices and performance including:

- Electrification
- Water reuse
- Social equity and inclusion
- Ecological restoration
- Heat island, etc.

Future work will provide potential indicators that could be used for these items and included in sustainable finance frameworks.

Rating tools and sustainable finance frameworks

This guide focuses on fixed income financial instruments, such as green bonds and loans, which specify green building as a use of proceeds. This section provides guidance on benchmarks that can be used to describe use of proceeds criteria in sustainable finance frameworks. The section assesses multiple green building ratings and schemes and outlines whether a rating is aligned with Green Bond and Green Loan Principles, Climate Bonds Standard and the EU Taxonomy. It also provides model language that can be used to describe use of proceeds criteria in a sustainable finance framework.

6.1

How rating systems align with sustainable finance taxonomies and frameworks

Some investors are interested in alignment between green building activities and finance frameworks, such as the green bond principles or the European Union Sustainable Finance Taxonomy.

Comparisons against the criteria in the green bond and green loan principles are easier to address. These frameworks highlight generic definitions which are easily compared against the more detailed and robust criteria in most rating systems. In most cases, the information sought by the principles frameworks is captured by rating tools and reviewed as part of their assessment process. This means that rating tools provide a valuable third-party review that the outcomes sought by these frameworks are being achieved.

Comparisons against the taxonomies are more difficult. In principle, the rating tools capture the same issues that the taxonomies seek to also address (e.g. energy efficiency). In practice, the generalised definitions commonly used regulation rarely map directly to the detailed criteria used in green building rating systems. This creates a degree of uncertainty in interpretation. For example, under-specification of climate adaptation requirements, vague language around nature and biodiversity values, and mismatches around performance metrics for water conversation (e.g. discrepancies in plumbing codes and water pressure standards) means that some level of interpretation is necessary.

Some rating tools have designed or interpreted requirements as aligning with regulatory definitions in their areas of operation. For example, Green Star and Green Mark describe extensive alignment with these frameworks, but even in their case, they have to translate, in the case of the European taxonomy, legislation for which there may not be equivalent in their countries of application (e.g. regulatory definitions around nearly net zero are not present in Australia or South Africa). However, in their case, alignment is possible as efforts were taken in their current version (e.g. Green Star Buildings or Green Mark 2021) to align with these taxonomies where possible – in some cases, such as Green Star's, requiring alignment as a minimum expectation.

Right.
Daventry, Northamptonshire,
UK iCon Innovation Centre



Other rating tools with broader geographic applications have had to address the problem differently. In the case of both BREEAM and LEED, they have both created online reports or alignment tools to accommodate both the differences in legislation, and the potentially large variety of pathways that are available for demonstrating compliance. These tools and reports allow applicants to show the level of alignment that their buildings or precincts may have against the relevant taxonomy.

LEED has researched the issues in-depth and provided a detailed analysis for rating systems, prerequisites, and credits. This work illustrates gaps between these programs, such as under-specification of climate adaptation requirements in the EU Sustainable Finance Taxonomy and mismatches around performance metrics for water conversation (e.g. discrepancies in plumbing codes and water pressure standards).

HQE TAXONOMY ALIGNMENT

As a French rating tool, successive versions of the HQE certifications over the past decade had already defined sustainability requirements based on a set of EU directives referred to in the EU Taxonomy.

As of mid-2022, CERTIVEA released HQE Sustainable Buildings V4 with criteria that match those of the EU taxonomy, facilitating sustainability reporting in the real estate sector. This version allows projects that provide the complete set of documentation for the EU-taxonomy related credits to obtain an EU taxonomy attestation of conformity in addition to their HQE Certificate.

BREEAM TAXONOMY REPORT

All BREEAM assessments have access to the EU Taxonomy report page. It enables clients to easily see their asset performance and which areas of the EU Taxonomy have already been met, as well as highlighting opportunities to increase their EU Taxonomy alignment. It demonstrates how data within BREEAM can be used to show compliance with the requirements of EU Taxonomy. BREEAM's third party certification ensures rigour and credibility of such compliance. The asset level report provides the supporting documentation to customers reporting on EU Taxonomy, easing their compliance pathway.

Technical screening criteria Criteria not met

Transition to a circular economy

At least 70% (by weight) of the non-hazardous construction and demolition waste generated on the construction site is prepared for re-use, recycling and other material

BREEAM criteria

Wst 01: Construction waste management ✘

Diversion of resources from landfill (Exemplary Level criteria): One credit

Operators limit waste generation in processes related to construction and demolition

BREEAM criteria

Wst 01: Construction waste management ✔

Construction waste reduction: Two credits



Above.
Nottingham university GSK
carbon neutral laboratory

Below.
 NESTAR CAÑAVERAL | LEED
 Platinum | Madrid, Spain |
 © Nestar Residencial



LEED EU TAXONOMY ALIGNMENT TOOL

All LEED registered or certified projects have free access to an online tool to evaluate their alignment with specific EU Taxonomy requirements applicable to their age and lifecycle phase

(LEED EU Taxonomy Self-Assessment Tool). The tool ultimately provides a project-specific alignment report that could be used to help document the use of proceeds for a green bond or loan.

European Union Sustainable Finance Taxonomy

The European Union (EU) Sustainable Finance Taxonomy is a classification system that translates climate and environmental objectives into criteria for specific economic activities for investment purposes.

The Arc self-assessment tool assesses Taxonomy alignment through a five-step process:

- Select a project type and enter basic information.
- Document at least one environmental objective.
- Document all "do no significant harm" criteria.
- Document all "minimum safeguard".
- Generate an alignment report.

Learn about criteria on the [Taxonomy Compass website](#)

[Get Started](#)

Select a Survey Type

New Construction
 Select this option if your construction has only just begun. [Choose](#)

Existing Construction (Before Dec 31st 2020)
 Select this option if your building permit application was handover before the EU Taxonomy cutoff date. [Choose](#)

Existing Construction (After Dec 31st 2020)
 Select this option if your building permit application was handover after the EU Taxonomy cutoff date. [Choose](#)

Renovation
 Select this option if your construction has recently started a renovation project. [Choose](#)

(a) Describe the Asset

New Construction [Exit without Saving](#) [Save and Exit](#) [Complete Survey](#)

Step #1: Project Information [Previous Step](#) [Proceed to Next Step](#)

1.1 Asset Name for Assessment
 Arc Scoring Demonstration Project

1.2 Street Address
 2099 Pennsylvania Avenue

1.3 State/Province
 District of Columbia

1.4 Postal Code
 20008

1.5 Country
 United States

1.6 Asset Type
 Commercial (Non-Residential) Residential

1.7 Year Construction / Renovation began
 2020

1.8 Year Construction / Renovation Conclude
 2021

(b) Describe Primary Environmental Objectives

Step #2: Environmental Objectives [Previous Step](#) [Proceed to Next Step](#)

2.1 Is the primary energy demand at least 10% below nearly-zero energy building (NZEB) standard, which are defined in national legislation?
 Yes No

Primary energy: 228 kWh/m²/year + 30% of the national NZEB requirement.

Support by uploading your documentation:
[Sample Documentation.pdf](#)

2.2 Is the building's >+5,000m² is testing for thermal integrity and air-tightness planned upon completion and will any performance deviation from design parameters be reported to the investor/client?
 Yes No Not Applicable (>5,000m²)

(c) Describe "Do No Significant Harm"

Step #3: Do No Significant Harm [Previous Step](#) [Proceed to Next Step](#)

Climate change adaptation

3.1 The economic activity must reduce all material physical climate risks to the extent possible on a best effort basis (a climate risk assessment).
 Yes No

Documentation: Provide physical climate risk evaluation in line with Appendix A to Annex I of the EU Taxonomy.
[Sample Documentation.pdf](#)

3.2 Does the climate risk assessment show any high risks?
 Yes No

(d) Describe Minimum Safeguards

Step #4: Minimum Safeguards [Previous Step](#) [Proceed to Next Step](#)

4.1 Are OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights being adhered to in the context of the construction of the new building?
 Yes No

Support by uploading your documentation:
[Sample Documentation.pdf](#)

(e) Receive an Alignment Summary

ARC SKORU RECOGNIZES

Arc Scoring Demonstration Project
 2099 Pennsylvania Avenue

EU SUSTAINABLE FINANCE TAXONOMY SELF-ASSESSMENT RESULT:

ALIGNED

Asset Characteristics

Project Type	Commercial (Non-Residential)	Year Construction / Renovation began	2020
Gross Area	6,503.2 sq. meters	Year Construction / Renovation Conclude	2021

The EU Taxonomy Alignment Tool is available to all LEED registered and certified projects. Project teams use the tool to evaluate criteria relevant to specific project attributes.

6.2

Guidance for second party opinion providers

30. <https://new.gbca.org.au/news/gbca-media-releases/australias-green-buildings-performing-as-promised/>

6.2.1 Independent verification

Investors require confirmation and assurance that assets are performing as intended. Independent verification provides this.

All rating tools noted in this document all rely on mature quality control mechanisms which are repeatable and auditable. These processes are designed to verify practices and performance specified in rating system, typically relying on document review, on-site verification, or a combination of both. In any case, they provide robust, independent assurance that claims align with rating system requirements.

Critically, references to rating tools *without* certification are self-reported claims. These do not have third-party assurance, and their use in financial instruments significantly increases risk to investors and issuers. Moreover, the benefits of certification extend beyond credibility.³⁰ Recent studies show that independent verification yields results – with demonstrable performance that is equal or in excess of the intended targets.

The quality assurance processes these schemes undertake means that investors can trust the claims being made under these schemes.

Projects that make claims of sustainability standards that are not independently verifiable or transparent have faced accusations of greenwash and had to retract those claims. For example, claims that a project has 'Green Star equivalence' or has been 'designed/built to a high LEED or Green Mark Rating', or is 'aligned with the BREEAM or HQE Rating Scheme'. These claims are misleading. Claims that a project is targeting an equivalent rating may communicate a goal of the project but it is not a verified outcome or equivalent with certified status.

There is growing awareness about the misuse of so-called "equivalency". Projects that claim to meet the requirements of these rating systems but are not certified are potentially in breach of trademark rules and may be accused of 'greenwashing'.

Second Party Opinion Auditors have the responsibility to show they are aware of these issues and should encourage their clients to make sure the proceeds from sustainable finance instruments are directed to independently verified outcomes.

6.2.2 Target selection

For the development of this paper, the multiple real estate frameworks and target were compared against the international sustainable finance frameworks. Due to the nature of the requirements, some interpretation was needed.

For example, when comparing Green Star against the EU Taxonomy's nearly net zero target for new buildings, consideration was given against Australia's legislated targets in the National Construction Code. Other schemes did similar assessments.

Appendix A outlines more information on how each of the chosen frameworks and targets comply.

Below.

Guoco Tower | Green Mark Platinum | LEED Platinum | Singapore



The EU Green Claims Directive: Elevating credibility's standards enabling sustainable choices and ending greenwashing (europa.eu).

The EU's proposed Green Claims Directive aims to mitigate greenwashing and ensure substantiation and transparency of environmental claims. The directive's core requisites can be summarised as follows:

- Environmental claims must be based on reliable, relevant, and representative evidence
- The full life cycle of a product/building must be considered

- Claims cannot conceal or talk down negative environmental impacts
- Comparative environmental claims must be clear and fair

Along those lines, green building certifications will need to demonstrate that their criteria, assessment methodologies, and verification processes align with the directive's standards at the risk of losing credibility and market recognition in the EU.

6.3

Green Building & Use of Proceeds

31. NABERS Energy is included as its inclusion is important for both Green Star and Australia.

6.3.1 What is covered in this guide

The following is covered in this section:

- New Construction or major refurbishment– Buildings that are newly built, or where an existing building was significantly refurbished to alter a combination of structure, façade and system components. There is no performance benchmark for these buildings for the first three years of their operation, as they are still being tuned, or, being occupied. This section includes guidance for non-residential and residential criteria. Residential buildings have to be addressed differently they have specific measurement requirements related to the sector. These buildings include any building where people typically reside for long periods of time. It includes single family dwellings, apartment buildings, student housing, retirement living and similar.
- Building operations – Buildings that are currently in operation, where it is occupied, and performance data can be secured on an annual basis.
- Building upgrades – Buildings where one or multiple services (lighting, HVAC, hot water, lifts) have been improved from a former state. Performance data can be used and compared against the state prior to improving the systems.
- Building portfolio – A combination of all buildings owned by one or multiple entities managed under common policies.
- Precincts – Master planned land development that will be built or redeveloped, either on a greenfield site, brownfield, urban infill or a campus.

The following rating systems are included in this section:

- BREEAM
- Green Mark
- Green Star
- HQE
- NABERS Energy³¹
- LEED

The rating tools above are compared against the following frameworks:

- Green Bond Principles (ICMA)
- Green Loan Principles (LMA)
- EU Taxonomy on Sustainable Finance
- Climate Bonds Initiative Low Carbon Buildings Standard

Appendix A provides more detailed information on how each rating system aligns with the relevant frameworks.

6.3.2 How to read the tables below

Recommended ratings	Green Bond and Green Loan Principles				
	Energy efficiency	Sustainable water and wastewater management	Waste Management and Resource Recovery	Climate Change Adaptation	Green Buildings
5 Star Green Star Buildings Rating or higher	●	●	●	●	●
	3		4		1

tables below outline how each rating aligns with the distinct criteria in the above frameworks. The table outlines:

- 1 The relevant sustainable finance framework
- 2 The relevant principle or criteria from each framework
- 3 The relevant rating tool and in some cases, rating
- 4 Whether the rating tool, or rating, aligns in all cases, partially aligns, or does not comply with each item.

In addition to the table, section 6.4 includes impact indicators. These indicators outline, for each green bond and green loan principle where to find the relevant impact indicator in each rating tool.

6.3.3 Model language for describing use of proceeds criteria

In a sustainable finance framework, entities are required to provide language outlining how the use of proceeds will be used for a green bond or a green loan. The following model language has been developed to be used in sustainable finance frameworks, and uses the information on section 6.4.

Bond frameworks should take care to note that 'equivalent to' language may not yield the intended results.

The only way to confirm a project complies with a third-party verified sustainability standard or scheme is for it to be certified.

6.3.3.1 Model language template for describing use of proceeds criteria:

<p>Use of Proceeds</p> <p>Proceeds raised will be used to exclusively finance or refinance assets, projects or activities that meet the eligibility criteria set out below (eligible assets). These activities align with the <i><relevant framework></i> under the relevant category as noted below. The criteria have been selected based on assessment of the existing industry understanding of best practice and because they are in line with our organisation's own sustainability objectives and material issues to our business.</p>	<p><i>Relevant framework</i> will be:</p> <ul style="list-style-type: none"> • Green Bond Principles or • Green Loan Principles.
<p>Eligible assets</p> <p>The <i><type of asset></i> will achieve certification with the following sustainability credentials once completed:</p>	<p>Type of asset should be replaced with assets as described in section 6.1.1 (e.g. Building upgrades).</p>
<p>Under <i><relevant principle, e.g. Green Buildings></i></p> <p><i><insert relevant recommended rating(s) e.g. BREEAM></i></p>	<p><i>Under relevant principle</i> should be replaced with one of the principles outlined in the tables in 6.3.</p> <p>The <i>Relevant recommended ratings</i> are also outlined in section 6.3.</p>
<p><i>Insert the following language for new buildings, major refurbishments, or new precincts</i></p> <p>Projects can qualify if during the duration of the bond or loan:</p> <ul style="list-style-type: none"> • The buildings have been registered for certification under the accreditations noted and there is a plan in place to achieve the relevant rating; or • Are committed to achieving, or have achieved, key milestones for certification (such as Green Star Designed) during the term of the bond; or • Are committed to achieving, or have achieved, the relevant certification (such as Green Star Certified). <p>Annual updates will be provided on progress, including any relevant achievements or milestones. Projects under the bond or loan will report on core indicators.</p>	<p>Only insert this if the use of proceeds will be directed to the development or new buildings, or the purchase of new buildings.</p>
<p><i>Insert the following language for buildings in operation, building upgrades, or building portfolios</i></p> <p>Projects can qualify if, during the duration of the bond or loan, the buildings achieve and maintain the relevant certification.</p>	
<p>e.g. For <i><principle></i> annual reporting will include <i><one of multiple indicators as relevant to the principle></i>.</p>	<p>Information on the types of relevant impact indicators can be found in 6.4.</p>

6.3.3.2 Example of model language

<p>Use of Proceeds</p> <p>Proceeds raised will be used to exclusively finance or refinance assets, projects or activities that meet the eligibility criteria set out below (eligible assets). These activities align with the <i>Green Bond Principles</i> under the relevant category as noted below. The criteria have been selected based on assessment of the existing industry understanding of best practice and because they are in line with our organisations own sustainability objectives and material issues to our business.</p> <p>Eligible assets</p> <p>The <i>new building, or building projects, or significant major refurbishments,</i> will achieve certification with the following sustainability credentials once completed:</p> <p>Under <i>Green Building</i></p> <ul style="list-style-type: none"> • BREEAM New Construction (v6) • Green Mark 2021 GoldPLUS or Higher • 5 Star Green Star Buildings Rating or higher • HQE Sustainable Buildings v4 • LEED v4.1 BD&C or v5 <p>Projects can qualify if during the duration of the bond or loan the buildings:</p> <ul style="list-style-type: none"> • Have been registered for certification under the accreditations noted and there is a plan in place to achieve the relevant rating; or • Are committed to achieving, or have achieved, key milestones for certification (such as Green Star Designed) during the term of the bond; or • Are committed to achieving, or have achieved, the relevant certification (such as Green Star Certified) <p>Annual updates will be provided on progress, including any relevant achievements or milestones. Projects under the bond or loan will report on core indicators.</p> <p>For <i>Green Buildings</i> annual reporting will include <i>estimated energy and carbon performance (from estimated operations and upfront), modelled water efficiency savings, actual waste management from construction activities and amount of area certified.</i></p>

6.4

Alignment between rating tools and use of proceeds criteria

6.4.1 New buildings and major refurbishments

Real estate sustainability standards make a fundamental distinction between residential and non-residential typologies.

6.4.1.1 Non-residential buildings

Non-residential building types include a wide variety of structures, including office, retail, logistics, medical, education, public service, and much more. They are often professionally managed. They have types of heating, cool, and ventilation systems designed to serve commercial activities.

Legend

○ Conditional alignment

Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:

- For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5. The applicant can access the EU Taxonomy report page via BREEAM assessment (as referred to in section 6.1) to understand their project's alignment to the Taxonomy.
- For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5.
- For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy.

● Aligned

Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).

Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. [See here for more information.](#)

Non-residential buildings New buildings and major refurbishments

Recommended ratings	Green Bond and Green Loan Principles					Climate Bonds Aligned	EU Taxonomy Aligned					
	Energy efficiency	Sustainable water and wastewater management	Waste Management and Resource Recovery	Climate Change Adaptation	Green Buildings		Significant criteria			Do no significant harm criteria		
							Climate mitigation	Climate adaptation	Circular economy	Water	Pollution	Biodiversity
For office buildings												
BREEAM New Construction (v6)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment & Fit-out (2014/2015)	●	●	●	●	●		○	○	○	○	○	NA
BREEAM New Construction (v7)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment/Fit-out (v7)	●	●	●	●	●		○	○	○	○	○	NA
Green Mark 2021 GoldPLUS or Higher	●	●	●	●	●	○	●	○	○	●	○	●
5 Star Green Star Buildings Rating or higher	●	●	●	●	●	●	●	●	●	●	●	●
5.5 Star NABERS Base Building Energy Rating	●						●					
5.5 Star NABERS Whole Building Energy Rating	●						●					
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	●	●	●	●	●	●	●
LEED v5 BD&C	●	●	●	●	●	○	○	○	○	○	○	○
LEED v4.1 BD&C	●	●	●	○	●	○	○	○	○	○	○	○
For shopping centres and public hospitals												
BREEAM New Construction (v6)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment & Fit-out (2014/2015)	●	●	●	●	●		○	○	○	○	○	NA
BREEAM New Construction (v7)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment & Fit-out (v7)	●	●	●	●	●		○	○	○	○	○	NA
Green Mark 2021 GoldPLUS or Higher	●	●	●	●	●	○	●	○	○	●	○	●
4 Star Green Star Buildings Rating or higher	●	●	●	●	●	● - 5 Star	●	●	●	●	●	●
5.5 Star NABERS Energy Rating	●	●		●	●		●					
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	●	●	●	●	●	●	●
LEED v5 BD&C	●	●	●	●	●	○	○	○	○	○	○	○
LEED v4.1 BD&C	●	●	●	○	●	○	○	○	○	○	○	○
For all other non-residential buildings												
BREEAM New Construction (v6)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment & Fit-out (2014/2015)	●	●	●	●	●		○	○	○	○	○	NA
BREEAM New Construction (v7)	●	●	●	●	●		○	○	○	○	○	○
BREEAM Refurbishment & Fit-out (v7)	●	●	●	●	●		○	○	○	○	○	NA
Green Mark 2021 GoldPLUS or Higher	●	●	●	●	●	○	●	○	○	●	○	●
4 Star Green Star Buildings Rating or higher	●	●		●	●	● - 5 Star	●					
5 Star NABERS Energy Rating	●	●		●	●		●					
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	●	●	●	●	●	●	●
LEED v5 BD&C	●	●	●	●	●	○	○	○	○	○	○	○
LEED v4.1 BD&C	●	●	●	○	●	○	○	○	○	○	○	○

6.4.1.2 Residential buildings

Residential real estate is a diverse class, and encompasses everything from detached single family homes to high rises. This means that it is not possible to represent residential sustainability in a single set of practices and performance metrics. Rather, green building ratings typically segment the market into functionally-similar groups, including detached homes, row homes, garden apartments or flats, low-rise apartments or flats, mid-rise, and high-rise. These divisions reflect important differences in building systems and components (e.g. shared walls). Most residential construction is highly sensitive to local climatic conditions.

Legend

○ Conditional alignment

Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:

- For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5. The applicant can access the EU Taxonomy report page via BREEAM assessment (as referred to in section 6.1) to understand their project's alignment to the Taxonomy.
- For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5.
- For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy.

● Aligned

Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).

Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. [See here for more information.](#)

Residential buildings New buildings

Recommended ratings	Green Bond and Green Loan Principles				Climate Bonds Aligned	EU Taxonomy Aligned					
	Energy efficiency	Sustainable water and wastewater management	Climate Change Adaptation	Green Buildings		Significant criteria			Do no significant harm criteria		
						Climate mitigation	Climate adaptation	Circular economy	Water	Pollution	Biodiversity
For single family dwellings											
BREEAM International New Construction (v6)	●	●	●	●		○	○	○	○	○	○
BREEAM International New Construction (v7)	●	●	●	●		○	○	○	○	○	○
Home Quality Mark v6	●	●	●	●		○	○	○	○	○	○
Green Mark GoldPLUS or Higher	●	●	●	●		●	○	○	●	○	●
Green Star Homes rating	●	●	●	●	●	●		●	●	●	
HQE Residential (NF Habitat HQE)	●	●	●	●	○	●	●	●	●	●	●
LEED v4 Homes	●	●	●	●							
For apartment buildings											
BREEAM International New Construction (v6)	●	●	●	●		○	○	○	○	○	○
BREEAM International New Construction (v7)	●	●	●	●		○	○	○	○	○	○
Home Quality Mark v6	●	●	●	●		○	○	○	○	○	○
Green Mark GoldPLUS or Higher	●	●	●	●		●	○	○	●	○	●
4 Star Green Star Buildings Rating or higher	●	●	●	●	●	●	●	●	●	●	●
HQE Residential (NF Habitat HQE)	●	●	●	●	○	●	●	●	●	●	●
LEED v5 BD&C	●	●	●	●	○		○	○	○	○	○
LEED v4.1 BD&C	●	●	●	●	○		○	○	○	○	○

6.4.2 Building operations

Legend	
○	Conditional alignment
Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:	
<ul style="list-style-type: none"> For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5. The applicant can access the EU Taxonomy report page via BREEAM assessment (as referred to in section 6.1) to understand their project's alignment to the Taxonomy. For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5. For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy. 	
●	Aligned
Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).	
Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. See here for more information.	

GM:

* GM SLE, top 10 percentile, >40% savings from prevailing New Building Regulations, >60% from 2005 codes

* GM Platinum Global Leader holistic performance, with >35% Energy improvement from prevailing New Building regulations, >55% from 2005 codes

* GM GoldPLUS best practice for holistic performance, with >30% Energy improvement from prevailing New Building regulations, >50% from 2005 codes

* GM Gold (In Operations only) good holistic performance, >20% Energy Improvement from prevailing New Building regulations, >40% from 2005 codes

Non-residential buildings Building operations

Recommended ratings	Green Bond and Green Loan Principles					Climate Bonds Aligned	EU Taxonomy Aligned						
	Energy efficiency	Sustainable water and wastewater management	Waste Management and Resource Recovery	Climate Change Adaptation	Green Buildings		Significant criteria			Do no significant harm criteria			
							Climate mitigation	Climate adaptation	Circular economy	Water	Pollution	Biodiversity	
For office buildings													
BREEAM In-Use Commercial v6	●	●	●	●	●		○	○	NA	NA	NA	NA	
BREEAM In-Use Commercial v7	●	●	●	●	●		○	○	NA	NA	NA	NA	
Green Mark 2021 In-Operation Gold or Higher	●	●	●		●	○	○			●	●		
4 Star Green Star Performance Rating	●	●	●	●	●	(P)	●	●	●	●	●	●	
5.5 Star NABERS Base Building Energy Rating	●						●						
5.5 Star NABERS Whole Building Energy Rating	●						●						
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	○	●	●	●	●	●	●	
LEED v5 O+M	●	●	●	●	●	○	○	○	○	○	○	○	
LEED v4 O+M	●	●	●		●	○	○	○	○	○	○	○	
For shopping centres and public hospitals													
BREEAM In-Use Commercial v6	●	●	●	●	●		○	○	NA	NA	NA	NA	
BREEAM In-Use Commercial v7	●	●	●	●	●		○	○	NA	NA	NA	NA	
Green Mark 2021 In Operation Gold or Higher	●	●	●		●	○	○			●	●		
4 Star Green Star Performance Rating	●	●	●	●	●	(P)	●	●	●	●	●	●	
5.5 Star NABERS Energy Rating	●	●		●	●		●						
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	○	●	●	●	●	●	●	
LEED v5 O+M	●	●	●	●	●	○	○	○	○	○	○	○	
LEED v4 O+M	●	●	●		●	○	○	○	○	○	○	○	
For all other non-residential buildings													
BREEAM In-Use Commercial v6	●	●	●	●	●		○	○	NA	NA	NA	NA	
BREEAM In-Use Commercial v7	●	●	●	●	●		○	○	NA	NA	NA	NA	
Green Mark 2021 In Operation Gold or Higher	●	●	●		●	○	○			●	●		
4 Star Green Star Performance Rating	●	●	●	●	●	(P)	●	●	●	●	●	●	
5 Star NABERS Energy Rating	●	●		●	●		●						
HQE Sustainable Building (Bâtiment Durable) V4	●	●	●	●	●	○	●	●	●	●	●	●	
LEED v5 O+M	●	●	●	●	●	○	○	○	○	○	○	○	
LEED v4 O+M	●	●	●		●	○	○	○	○	○	○	○	

(P) pending

6.4.3 Building upgrades

Non-residential buildings
Building upgrades

Legend

○ Conditional alignment

Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:

- For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5. The applicant can access the EU Taxonomy report page via BREEAM assessment (as referred to in section 6.1) to understand their project's alignment to the Taxonomy.
- For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5.
- For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy.

● Aligned

Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).

Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. [See here for more information.](#)

Recommended ratings			Green Bond and Green Loan Principles					Climate Bonds Aligned	EU Taxonomy Aligned				
			Energy efficiency	Sustainable water and wastewater management	Waste Management and Resource Recovery	Climate Change Adaptation	Green Buildings		Significant criteria		Do no significant harm criteria		
									Climate mitigation	Climate adaptation	Circular economy	Water	Pollution
For all buildings	Initial Rating	Final											
BREEAM Refurbishment & Fit-out (2014/2015)			●	●	●	●	●	○	○	○	○	○	
BREEAM Refurbishment & Fit-out (v7)			●	●	●	●	●	○	○	○	○	○	
Green Mark 2021	No Rating	GoldPLUS	●	●	●	●	●	●	○	○	●	●	
	Legacy Green Mark Ratings (eg ENRB V3, 2017, or NRB v4,v4.1, 2015 Certified – Gold	GoldPLUS	●	●	●	●	●	●	○	○	●	●	
	Legacy Green Mark GoldPLUS-Platinum	Platinum	●	●	●	●	●	●	○	○	●	●	
	Green Mark 2021 Gold/GoldPLUS	Platinum	●	●	●	●	●	●	○	○	●	●	
Green Star Performance	Green Mark 2021 Platinum	Platinum SLE/ ZE	●	●	●	●	●	●	○	○	●	●	
	0 Star to 2 Star	4 Star	●	●	●	●	●	●	●	●	●	●	
	3 Star	5 Star	●	●	●	●	●	●	●	●	●	●	
	4 Star	5 Star	●	●	●	●	●	●	●	●	●	●	
LEED v5 BD&C	Major renovations scored against code	TBD	●	●	●	●	●						
	LEED v4.1 BD&C	Major renovations scored against code	2% --> 50%	●	●	●	●						
NABERS Energy	0 Star to 2.5 Star	4 Star	●			●	(P)	●					
	3.5 Star	5 Star	●			●	(P)	●					
	3 Star	4.5 Star	●			●	(P)	●					
	4 Star	5 Star	●			●	(P)	●					
	4.5 Star	5.5 Star	●			●	(P)	●					
	5 Star and above	6 Star	●			●	(P)	●					
HQE BD (SB) V4	Performant	Very performant	●	●	●	●	●	●	●	●	●	●	
	Very performant	Excellent	●	●	●	●	●	●	●	●	●	●	
	Excellent	Exceptional	●	●	●	●	●	●	●	●	●	●	
	Exceptional	Exceptional	●	●	●	●	●	●	●	●	●	●	
LEED v5 BD&C	Major renovations scored against code	TBD	●	●	●	●	○	○	○	○	○	○	
LEED v4.1 BD&C	Major renovations scored against code	2% --> 50%	●	●	●	●	○	○	○	○	○	○	

(P) pending

6.4.4 Building portfolio

Legend

○ Conditional alignment

Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:

- For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5. The applicant can access the EU Taxonomy report page via BREEAM assessment (as referred to in section 6.1) to understand their project's alignment to the Taxonomy. BREEAM has asset level certifications which can be used to assess portfolios.
- For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5.
- For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy.

● Aligned

Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).

Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. [See here for more information.](#)

Non-residential buildings
Building portfolio

Recommended ratings			Green Bond and Green Loan Principles					Climate Bonds Aligned	EU Taxonomy Aligned					
			Energy efficiency	Sustainable water and wastewater management	Waste Management and Resource Recovery	Climate Change Adaptation	Green Buildings		Significant criteria			Do no significant harm criteria		
									Climate mitigation	Climate adaptation	Circular economy	Water	Pollution	Biodiversity
For all buildings	Sector	Rating												
BREEAM In-Use Commercial v6	All		●	●	●	●	●	○	○	NA	NA	NA	NA	NA
BREEAM In-Use Commercial v7	All		●	●	●	●	●	○	○	NA	NA	NA	NA	NA
Green Mark 2021	All	GoldPLUS	●	●	●	●	●	○	○	○	●	○	●	●
Green Star Performance Portfolio Assessment	All		●	●	●	●	●	●	●	●	●	●	●	●
HQE Volume (Système de Management Général)	All		●	●	●	●	●	○	●	●	●	●	●	●
LEED Volume	All	All categories	●	●	●	○	●	○	○	○	○	○	○	○
NABERS SPI	Offices		●				●	(P)	●					
	Shopping Centres		●				●	(P)	●					

(P) pending

6.4.5 Precincts

For Urban Developments

Recommended ratings	Green Bond and Green Loan Principles				Climate Bonds Aligned	EU Taxonomy Aligned					
	Energy efficiency	Sustainable water and wastewater management	Climate Change Adaptation	Green Buildings		Significant criteria			Do no significant harm criteria		
						Climate mitigation	Climate adaptation	Circular economy	Water	Pollution	Biodiversity
BREEAM Communities 2012	●	●	●	●		○	○	○	○	○	○
Green Star Communities v2	●	●	●	●		●	●	●	●	●	●
Green Mark for Districts v2 (GoldPLUS or Higher)	●	●	○	●		●	○	○	●	○	●
HQE Sustainable Urban Planning (Aménagement Durable)	●	●	●	●		○	○	○	○	○	○
LEED for Cities & Communities (v4) – Plan	●	●	●	●							
LEED for Cities & Communities (v4) – Existing	●	●	●	●							
LEED for Neighborhood Development (v4) – Plan	●	●		●							
LEED for Neighborhood Development (v4) – Built	●	●		●							

Legend

○ Conditional alignment

Where noted, the criteria is met by the rating tool in certain circumstances. In the case of each rating tool:

- For BREEAM, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in Section 6.5.
- For Green Mark, the issue is captured in the rating tool but the applicant must actively target the credit as detailed in section 6.5.
- For LEED, the issue is captured in the rating tool, and the applicant can use the LEED EU Taxonomy Alignment Tool (as detailed in section 6.1) to understand their project's alignment to the Taxonomy.

● Aligned

Where noted, the criteria is required by the rating system or captured appropriately in line with the green bond or green loan principles. For the EU Taxonomy, it refers to the item being addressed in all cases (such as in the case of Green Star and Green Mark).

Note: For Green Star, there is additional guidance that applies to New Zealand that is relevant to their country. [See here for more information.](#)



6.5

Impact indicators

As noted in the model language for sustainable finance frameworks, there is a need to outline the impact indicators that will be measured to determine success. This table outlines the types of impact indicators, subcategories, and measures that you can use to demonstrate alignment with each.

6.5.1 Green bonds and loans impact indicators

GREEN BONDS AND LOANS IMPACT INDICATORS	Subcategory	Measure	Sector specific guidance											Framework indicators or credit areas						
			Green Buildings	Energy efficiency	Renewable Energy	Sustainable Water and Wastewater Management	Waste Management and Resource-Efficiency	Clean Transportation	Biodiversity	Climate Change Adaptation	Circular Economy and/or Eco-Efficient Projects	Living Natural Resources and Land Use Projects	BREEAM	Green Mark	Green Star	HQE	LEED			
Green building certifications	Type of scheme and number of buildings.	# of buildings or Area certified per scheme.	●	●												Any rating	Any Rating	Any Rating	Any Rating	
Energy Performance	Energy consumed per year (or expected for new assets) under control of building owner.	MW or kWh/m ² /yr.	●	●												Energy Performance	Energy Efficiency	Energy Use	Energy	Energy & Atmosphere
	% reduction of energy consumption against baseline (or expected for new assets).	% reduction.	●	●												Energy Performance	Energy Efficiency	Energy Use	Energy	Energy & Atmosphere
	Energy source breakdown (renewable vs non-renewable).	% renewable vs non-renewable.	●	●	●											Energy monitoring	Energy Efficiency	Energy Source	Energy	Energy & Atmosphere
	(if tenanted) % of tenants on renewable vs. non-renewable energy.	% of tenants on renewable and non-renewable energy.	●	●	●											Energy monitoring	Tenancy Offsets	Tenant energy source	Energy	Energy & Atmosphere
	Renewable energy generated or new renewable energy plant(s) capacity generated.	MW or kWh/m ² /yr.	●		●											Low and zero carbon technologies	Energy Efficiency, Transition Plan	Energy Source	Energy	Energy & Atmosphere
	Dispatchable or flexible power capacity.	Number of buildings with flexible power agreements or systems.	●	●	●							●				Flexible demand response		Grid resilience	Energy	Energy & Atmosphere

GREEN BONDS AND LOANS IMPACT INDICATORS	Subcategory	Measure	Sector specific guidance										Framework indicators or credit areas					
			Green Buildings	Energy efficiency	Renewable Energy	Sustainable Water and Wastewater Management	Waste Management and Resource-Efficiency	Clean Transportation	Biodiversity	Climate Change Adaptation	Circular Economy and/or Eco-Efficient Projects	Living Natural Resources and Land Use Projects	BREEAM	Green Mark	Green Star	HQE	LEED	
Carbon Performance	Operational carbon generated (or expected for new assets)	Tonnes or kgCO ₂ e/m ² /yr (location and market-based)	●	●										Operational energy & carbon	Mandatory indicator, Transition Plan	Energy use and Energy Source	Carbon	
	% operational carbon reduction against baseline (or expected for new assets)	% reduction	●	●										Operational energy & carbon	Energy Efficiency	Energy use and Energy Source	Carbon	
	Upfront carbon generated	Tonnes of kgCO ₂ e/m ² /yr for GFA	●				●							Building lifecycle assessment	Whole Life Carbon Calculation, Upfront Carbon	Upfront Carbon emissions	Carbon	
	% upfront carbon reduction against baseline	% reduction	●				●							Building lifecycle assessment	Upfront Carbon	Upfront Carbon emissions	Carbon	
Water efficiency and savings	Annual absolute (gross) water use before and after the project	L/m ² /year	●			●								Water consumption	Mandatory indicator, Resources	Water Use	Water	Water Efficiency
	% reduction against baseline (or expected for new assets)	% reduction	●			●								Water consumption	Resources	Water Use	Water	Water Efficiency
	Amount of rainwater harvested and reused	m ³ /a or % of annual consumption	●			●								Water consumption	Resources		Water	Water Efficiency
Waste management	Amount p.a. of waste sent to landfill	kg/m ² /year	●				●							Construction waste resource management	Circularity	Resource recovery	Waste	Materials & Resources
	Reduction against a baseline	% reduction	●				●							Construction waste resource management	Circularity	Resource recovery	Waste	Materials & Resources
	Waste recovery indicator (waste in operations)	% recovered	●				●							Optimising resource use, reuse and recycling	Circularity	Resource recovery	Waste	Materials & Resources
	Recycling, re-use or composting of non-hazardous waste	% recycled	●				●							Construction waste resource management	Circularity	Resource recovery	Waste	Materials & Resources

GREEN BONDS AND LOANS IMPACT INDICATORS	Subcategory	Measure	Sector specific guidance										Framework indicators or credit areas						
			Green Buildings	Energy efficiency	Renewable Energy	Sustainable Water and Wastewater Management	Waste Management and Resource-Efficiency	Clean Transportation	Biodiversity	Climate Change Adaptation	Circular Economy and/or Eco-Efficient Projects	Living Natural Resources and Land Use Projects	BREEAM	Green Mark	Green Star	HQE	LEED		
Wastewater and stormwater treatment	Wastewater treated, reused, or avoided	m ³	●			●	●							Water consumption Surface water run-off	Habitat and Ecology	Waterway protection	Water	Sustainable Sites	
Circular economy, materials, and products	Embodied energy (and carbon) over life-cycle (“cradle to grave”)	Tonnes CO ₂ e	●											Building lifecycle assessment	Whole Life Carbon	Lifecycle impacts	Life Cycle Analysis	Materials & Resources	
	% of embodied energy (and carbon) reduced over life-cycle (“cradle to grave”), vs local benchmark/baseline	% reduction	●											Building lifecycle assessment	Whole Life Carbon, Upfront Carbon	Lifecycle impacts	Life Cycle Analysis	Materials & Resources	
	The increase in number of products and/or the share of production awarded an internationally recognised eco-label, or energy, eco-efficiency or other relevant environmental certification	% of products by cost certified compared to the building's cost		●										Responsible sourcing	Sustainable Construction, Sustainable products and Finishes, Fit Out Products	Responsible products credit(s)	Life Cycle Analysis Cost Control	Materials & Resources	
	Amount of building reused	% area reused		●										Responsible sourcing	Conservation, resource recovery and waste management	Responsible products credit(s)	Local economy	Materials & Resources	
	Increase in the number of end-of-design life or redundant immovable assets that have been refurbished and/or repurposed and/or area in m ²	Area of refurbished or repurposed assets		●														Adaptability	
	Land Use and Biodiversity	Land remediated/ decontaminated/ regenerated	m ²	●											Site selection	Natural Climate solutions	Impacts to nature	Governance, Work site	Sustainable Sites
	% of unadulterated Green spaces before and after the project	% land use change	●											Ecological change and enhancement	Buildings in Nature	Impacts to nature	Biodiversity	Sustainable Sites	
	Hectares compensated	ha or m ² compensated	●											Ecological change and enhancement	Natural Climate solutions	Nature stewardship	Biodiversity	Sustainable Sites	
	Wildlife crossings created	Number of wildlife crossings	●											Ecological change and enhancement		Nature connectivity	Biodiversity	Sustainable Sites	

GREEN BONDS AND LOANS IMPACT INDICATORS	Subcategory	Measure	Sector specific guidance										Framework indicators or credit areas					
			Green Buildings	Energy efficiency	Renewable Energy	Sustainable Water and Wastewater Management	Waste Management and Resource-Efficiency	Clean Transportation	Biodiversity	Climate Change Adaptation	Circular Economy and/or Eco-Efficient Projects	Living Natural Resources and Land Use Projects	BREEAM	Green Mark	Green Star	HQE	LEED	
Land Use and Biodiversity (cont.)	Maintenance/safeguarding/increase of protected area/OECM/habitat in km ² and in % for increase		●											Long term ecological management and maintenance	Habitat and Ecology	Nature stewardship	Biodiversity	Sustainable Sites
	Absolute number of indigenous species, flora or fauna (trees, shrubs and grasses...) restored through the project	% recycled	●											Managing impacts on ecology	Buildings in Nature	Biodiversity enhancement	Biodiversity	
Indoor Quality	Volume of volatile organic compounds (VOC) reduced	% of indoor low or non-toxic products	●											Indoor air quality	Material Emissions, Air Quality and Comfort	Indoor pollutants	Indoor Air Quality	
	Increased number of urban residents with access to thermally safe conditions in buildings/transport systems	Number of occupants	●											Thermal comfort. Social risks and opportunities	Outdoor Thermal Comfort, Active Mobility		Thermal comfort	
Transport connectivity and clean transportation infrastructure	Number of Electric vehicle charging stations as a % of total parking	% of parking spaces with charging stations	●											Sustainable transport measures	Mandatory ³²	Movement and place	Transport	
	Number of bicycle parking spaces provides and end of trip facilities	# of spaces, lockers, showers as a proportion of current or expected occupancy	●											Sustainable transport measures	Mandatory ³³	Movement and place	Transport	
	Kilometers of cycling lanes in the precinct	Km	●											Cycling network	(District Criteria – Green Transport within the District)	Movement and place	Transport	
Climate Change Adaption	Number of risks minimised based on the climate assessment	Number of risks minimised	●											Emergency plans and climate-related physical risks	Resilience Strategy	Climate change resilience	Climate change adaptation	
	Expenditure on climate change adaption measures	\$ of expenditures	●											Thermal comfort, Flood risk assessment, Adaptation to climate change	Resilience Strategy	Climate change resilience	Climate change adaptation	

32. Minimum Electric Vehicle Charging Provisions in developments – Land Transport Authority – https://www.lta.gov.sg/content/dam/ltagov/industry_innovations/Technologies/Electric_Vehicles/PDF/Guidelines%20for%20the%20Minimum%20EV%20Charging%20Provisions%20in%20Developments.pdf

33. Code of Practice for Vehicular Parking and LTA Active Mobility Guide. https://www.lta.gov.sg/content/ltagov/en/industry_innovations/industry_matters/development_construction_resources/vehicle_parking/requirements_for_vehicle_parking_proposals.html, URA bicycle parking and end of trip facilities <https://www.ura.gov.sg/Corporate/Guidelines/Development-Control>

CTP

CTP is Europe's largest listed owner, developer, and manager of logistics and industrial real estate in terms of gross lettable area, with 12.0 million sqm GLA in 10 countries (as of 31 March 2024). The company certifies all buildings under BREEAM at 'very good' or above and has achieved a low-risk ESG rating from Sustainalytics, reaffirming its commitment to sustainability. For more information, please visit: www.ctp.eu.

CTP's Green Bond Framework, developed in alignment with the 2018 Green Bond Principles endorsed by the International Capital Market Association, underscores CTP's dedication to environmental sustainability and corporate social responsibility. This framework guides the financing of projects that enhance sustainability in operational practices and infrastructure development. The framework ensures rigorous project evaluation, the responsible management of proceeds, and comprehensive reporting to maintain transparency and integrity in its environmental commitments.

Notably, the framework has supported the certification of several green buildings within CTP's portfolio. For instance, CTPark Bucharest West boasts nine buildings certified as 'Very Good' and two as 'Excellent'. Its Clubhouse achieved BREEAM Outstanding rating and features a rooftop solar system covering 20% of its energy use, complemented by ISO 50001 and ISO 14001 certifications. Similarly, CTPark Budapest West highlights include a 0.5 MWp photovoltaic system installed during 2021-2022 and a cultural landmark with a 4,800 sqm mural painted by local artists, marking its commitment not only to environmental sustainability but also to community engagement.



GuocoLand

34. Based on Moody's Framework to Provide Second Party Opinions on Sustainable Debt, published in Oct 2022.

GuocoLand, one of Singapore's leading real estate groups, developed its Green Finance Framework ("Framework") in 2023. The Framework gives GuocoLand and its subsidiaries access to various fundraising options including bonds, loans and other forms of debt financing with structures tailored to contribute to sustainable development through the application of net proceeds to Eligible Green Projects in accordance with the Framework criteria and guidelines. It recognises the use of robust 3rd party Green Building ratings, such as the Green Mark Certification Scheme by the Building and Construction Authority ("BCA").

DBS, OCBC and UOB are the Green Loan Advisors of the Framework, which is aligned with the Green Loan Principles 2023 by the Loan Market Association, Asia Pacific Loan Market Association and the Loan Syndications and Trading Association ("LMA/APLMA/LSTA"), as well as the Green Bond Principles 2021 (including the June 2022 Appendix 1) by the International Capital Market Association ("ICMA") and the ASEAN Green Bond Standards 2018 by the ASEAN Capital Markets Forum.

Moody's Investors Service ("Moody's") was engaged to conduct an independent external review of the Framework and has issued a Second Party Opinion³⁴ ("SPO"), which assigns an SQS2 sustainability score (equivalent to 'Very Good') to the Framework. GuocoLand's Framework and Moody's SPO can be viewed on GuocoLand's website.

In-line with the Framework, GuocoLand has committed to transparent reporting of relevant, material information of its Green Finance Transactions ("GFTs"), including the relevant environmental impact resulting from the Eligible Green Projects financed by the GFTs.



To date, GuocoLand has secured more than S\$2.9 billion of green financing, backed by the rigour of robust 3rd party Green Building Certification



In June 2023, GuocoLand secured a S\$974 million green club facility from DBS, OCBC, UOB, and Sumitomo Mitsui Banking Corporation for the refinancing of the commercial component of its flagship asset located in Tanjong Pagar, Guoco Tower.

This green facility is GuocoLand's largest to date and is raised under its Green Finance Framework.

Guoco Tower is an integrated mixed-use development at Tanjong Pagar, comprising 890,000 sq ft of Premium Grade A office space, 100,000 sq ft of retail space, 181 exclusive apartments at Wallich Residence, a luxury hotel in Sofitel Singapore City Centre and a 150,000 sq ft Urban Park. It holds two of the highest green building certifications in the industry – the Green Mark Platinum award rating by BCA and the Leadership in Energy and Environment Design ("LEED") Platinum certification by the U.S. Green Building Council.

Proceeds of the loan will go towards refinancing Guoco Tower and initiatives to enhance its green-building performance include improvements to the efficiency of its air-conditioning and mechanical ventilation (or "ACMV") system and upgrades to the Building Management System to better monitor the tower's energy consumption.

In addition to Guoco Tower, green facilities have been obtained for the development of GuocoLand's residential projects Midtown Modern (Green Mark GoldPLUS), Lentor Modern (Green Mark GoldPLUS) and Lentor Mansion, GuocoLand's first residential project to achieve the highest green building rating of Green Mark Platinum (Super Low Energy) with outstanding performance recognised for high scores under the Whole Life Carbon, and Maintainability sections.

For achieving a substantial number of Green Mark buildings at Gold Level or higher, GuocoLand was awarded the Green Mark Champion award in 2020 by BCA. Besides Guoco Tower, GuocoLand's second integrated mixed-use development Guoco Midtown at Beach Road also received BCA's Green Mark Platinum award.

La Trobe University

La Trobe University (LTU) was established in 1967 and is Victoria's only state-wide university, boasting seven campuses across Melbourne, regional Victoria and Sydney. With over 36,000 students, LTU is in the top 1% of universities worldwide. Its 235-hectare Bundoora campus holds a 6 Star Green Star Communities rating and is set to transform into a world-class University City of the Future.

In 2023, LTU launched its first Green Bond offering, valued at AUS \$175 million. Under La Trobe University's Sustainable Finance Framework, Green Bonds and Green Loans are considered under Use of Proceeds transactions and are aligned with the Green Bond Principles (GBP) and Green Loan Principles (GLP), and are certified with the Climate Bonds Standard and Certification Scheme (if applicable).

Green Bonds and Green Loans entered into under this framework will be exclusively applied to finance or refinance new and/or existing eligible green projects including green buildings, renewable energy, energy efficiency, clean transportation, and pollution prevention and control.

La Trobe University engaged DNV to provide an external review in the form of a Second Party Opinion on the Sustainable Finance Framework to confirm alignment with the GBP, GLP and the Climate Bonds Standard.

Images.

La Trobe University Sports Park. 6 Star Green Star – Design & As Built v1.2

La Trobe Sports Stadium

The La Trobe Sports Stadium was Australia's first sports building to be awarded a 6 Star Green Star Design and As Built v1.2 rating. It includes sport science and analytics research laboratories, a six-court indoor stadium and office space.

Key environmental features include 1,104 rooftop solar panels generating 519 kW, water efficient fixtures and controls, natural ventilation, water-sensitive urban design, integrated waste management, green groundskeeping and a reflective white roof.



North and South Apartments

The 624-bed North and South Apartments provide high quality accommodation for students living at the Bundoora Campus. The project received a 5 Star Green Star Design & As Built v1.2 rating and resulted in a 76% reduction in greenhouse gas emissions from being constructed out of 4,100 cubic metres of mass engineered Cross-Laminated Timber compared to a concrete structure. Other eco-friendly elements include high performance glazing, LED lighting, water efficient fixtures and fittings, 100% outdoor air ventilation and a rooftop solar system.

Net Zero Program

In 2019, LTU made an ambitious commitment to become carbon neutral by 2029. Its four regional campuses achieved the landmark milestone of being certified carbon neutral in 2022. A range of projects have already been completed in energy efficiency, renewable energy generation, waste management and sustainable transport. Across its campuses, LTU has over 5MW of solar capacity, has upgraded 40,000 light fittings, installed electric vehicle chargers and is transitioning fleet vehicles to EVs. LTU is also building Victoria's largest urban solar farm with a 2.5 MW/4.5MWh battery and is completing building-wide projects under an extensive electrification program.



Prologis (PLD) is a San Francisco-based Real Estate Investment Trust (REIT). Prologis owns, develops, and operates logistics real estate. Prologis facilities support 1.1 million workers daily and contribute to the distribution of 2.8% of global GDP annually.

Prologis uses a green bond impact framework as the basis for debt capital raising, project selection, and impact reporting. Prologis states that its Green Bond Framework is aligned with the International Capital Markets Association Green Bond Principles (2017) with respect to the (a) use of proceeds, (b) process for project evaluation and selection, (c) management of proceeds, (d) reporting. The framework provides a detailed assessment of building certifications Prologis anticipates using around the world. Sustainalytics provided a second party opinion on these claims and concurred with Prologis.

Prologis periodically reports on the social and environmental impact of green bond-funded projects. They prioritise three outcomes:

1. Develop energy-efficient buildings that reduce operating costs.
2. Meet recognised sustainable development standards; and
3. Reduce the company's environmental footprint.



The impact of the program is reflected in the Prologis, LP and Prologis Euro Finance LLC 2022 Green Bond Report. Bond proceeds of approximately USD \$1.4 billion contributed to total electricity savings of 27,917 MWh/year, 19,893 metric tonnes CO₂e/year, 4.18 MW of installed solar, and an average indoor water saving of 32%.

Prologis has been particularly innovative in connecting its green bond initiative with the LEED Volume program. LEED Volume provides workflows to streamline certification, while ensuring rigorous third-party review. This improves efficiency relative to traditional efforts based on sequential, stand-alone certifications. Prologis credits its LEED Volume participation with saving more than USD \$24 million in costs compared to traditional approaches.

The table on the adjacent page provides a snapshot of work on 49 facilities reported by Prologis in their 2022 Green Bond Portfolio. More information about Prologis green bonds is on their website.

Prologis, L.P. – \$650,000,000¹ Green Bond issued September 20, 2022.

 CO2e savings per year: **7,171 MT²** equivalent to taking 1,545 passenger vehicles off the road³.

PROPERTY NAME	MARKET	LEED CERTIFICATION LEVEL
Hartsfield East 4	US-Atlanta	Silver
International Park of Commerce 10	US-Central Valley	Silver
International Park of Commerce 14	US-Central Valley	Silver
International Park of Commerce 19	US-Central Valley	Silver
International Park of Commerce 9	US-Central Valley	Silver
Shopton Ridge Park 3929	US-Charlotte	Silver





Framework Overview and Second-Party Opinion

Prologis Green Bond

Prologis refers to Prologis, Inc., Prologis, L.P., its related co-investment ventures and other affiliates (collectively, "Prologis" or the "company") ¹

Evaluation Summary

Sustainalytics is of the opinion that the Prologis Green Bond Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2017. Some key considerations of the assessment are:

-  **USE OF PROCEEDS** The eligible categories for the use of proceeds, green buildings, renewable energy, and energy efficiency are aligned with those recognized by the Green Bond Principles, and have clear positive environmental impact.
-  **PROJECT EVALUATION / SELECTION** Prologis has a Green Bond Committee in place that is comprised of members of the company's management as well as members of the company's ESG department, or persons related to the issuer or a Prologis affiliate supporting the company's ESG department, as applicable. This is in line with market practice.
-  **MANAGEMENT OF PROCEEDS** Prologis' disclosure and processes to manage and track proceeds are in line with market practice.
-  **REPORTING** Prologis intends to report allocation of net proceeds on an annual basis at a category level. This is in line with market practice. With respect to impact reporting, Prologis is committed to reporting the levels of certification of properties in the portfolio applicable to the outstanding Green Bonds on an annual basis.

Information on the rating systems can be found here:

- BREEAM – www.breeam.com
- Green Mark – www1.bca.gov.sg/buildsg/sustainability/green-mark-certification-scheme
- Green Star – www.new.gbca.org.au/green-star/exploring-green-star
- HQE – <https://www.hqegbc.org/>
- LEED – www.usgbc.org/leed
- NABERS – www.nabers.gov.au

Additional documents referred to in this document are listed below:

- [Unlocking the value: A Practical Guide on Sustainable Finance for the real estate sector](#), GBCA & ASFI, 2023
- [Sustainability in Building Construction – A Multilevel Approach – IOPscience](#), Accessed May 2024
- Guin, Benjamin and Korhonen, Perttu, Does Energy Efficiency Predict Mortgage Performance? (January 31, 2020). Bank of England Working Paper No. 852 (2020), Available at SSRN: <https://ssrn.com/abstract=3532373> or <http://dx.doi.org/10.2139/ssrn.3532373>, Accessed May 2024
- [Energy efficient Mortgages Action Plan \(EeMAP\), Energy Efficient Mortgages Initiative](#), Accessed May 2024
- [Health & Wellbeing Framework – World Green Building Council \(worldgbc.org\)](#), Accessed May 2024
- [What You Need to Know about Impact Investing | The GIIN](#), Accessed May 2024
- [The Role of Financial Services in Society | World Economic Forum \(weforum.org\)](#), Accessed May 2024
- [Circularity Accelerator – World Green Building Council \(worldgbc.org\)](#), Accessed May 2024
- [Financing the Circular Economy | Ellen Macarthur Foundation \(thirdlight.com\)](#), Accessed May 2024
- [Buildings – Energy System – IEA](#), Accessed May 2024
- [Local Law 97](#), City of New York, Accessed May 2024
- [The New Geography of Taxonomies](#), Natixis Green & Sustainable Hub, Accessed May 2024
- [LEED and the EU Taxonomy](#), USGBC, Accessed May 2024
- [European Taxonomy applied to commercial real estate – How can HQE certifications help meet these requirements? CERTIVEA – March 2023](#)
- [Home – A Guide to the EU Taxonomy and BREEAM](#)
- [Green building and finance](#), NZGBC, accessed May 2024

The following guidance documents were reviewed as part of this guide

- [Green Loan Principles, LMA](#), Accessed May 2024
- [Guidance on Green Loan Principles, LMA](#), Accessed May 2024
- [Green Bond Principles, ICMA](#), Accessed May 2024
- [Green Project Mapping, ICMA](#), Accessed May 2024
- [Pre-issuance checklist for Green Bonds / Green Bond Programmes, ICMA](#), Accessed May 2024

The following taxonomies were reviewed as part of the development of this document:

- [ASEAN Taxonomy](#)
- [Bangladesh Sustainable Finance Policy](#)
- [CBI Green Taxonomy](#)
- [China Green Bond Endorsed Projects Catalogue](#)
- [Colombia Green Taxonomy](#)
- [EU Taxonomy on sustainable finance](#)
- [Georgia Sustainable Finance Taxonomy](#)
- [Hong Kong \(Green\)](#)
- [Malaysia Climate Change and Principle-Based Taxonomy](#)
- [Mexico Sustainable Taxonomy](#)
- [Singapore Asia Taxonomy \(Green & Transitioning\)](#)
- [South Africa Green Finance Taxonomy](#)
- [South Korea Taxonomy](#)
- [Sri Lanka Green Finance Taxonomy](#)

Appendix A – Analysis of targets against the EU Taxonomy

9.1

The European Taxonomy in detail

35. Future versions of this guide will include more detail on the 'Substantial contribution to the transition to a circular economy' technical screening criteria which will cover the built environment. The criteria for construction and real estate activities is outlined here: https://finance.ec.europa.eu/system/files/2023-06/taxonomy-regulation-delegated-act-2022-environmental-annex-2_en_0.pdf

The EU taxonomy is a complex system to classify which parts of the economy may be marketed as sustainable investments. The EU taxonomy provides companies, investors and policymakers with appropriate definitions for which economic activities can be considered environmentally sustainable. In this way, it should create security for investors, protect private investors from greenwashing, help companies to become more climate-friendly, mitigate market fragmentation and help shift investments where they are most needed.

The taxonomy uses EU directives, policies and tools such as the Energy Performance Certificate (EPC) to generate common language for comparing investment opportunities across countries in the EU. For example, it allows the level of ambition for a new development in Finland to be compared with the level of ambition for the acquisition of an existing building in Spain, even though the climate, building regulations etc. are quite different.

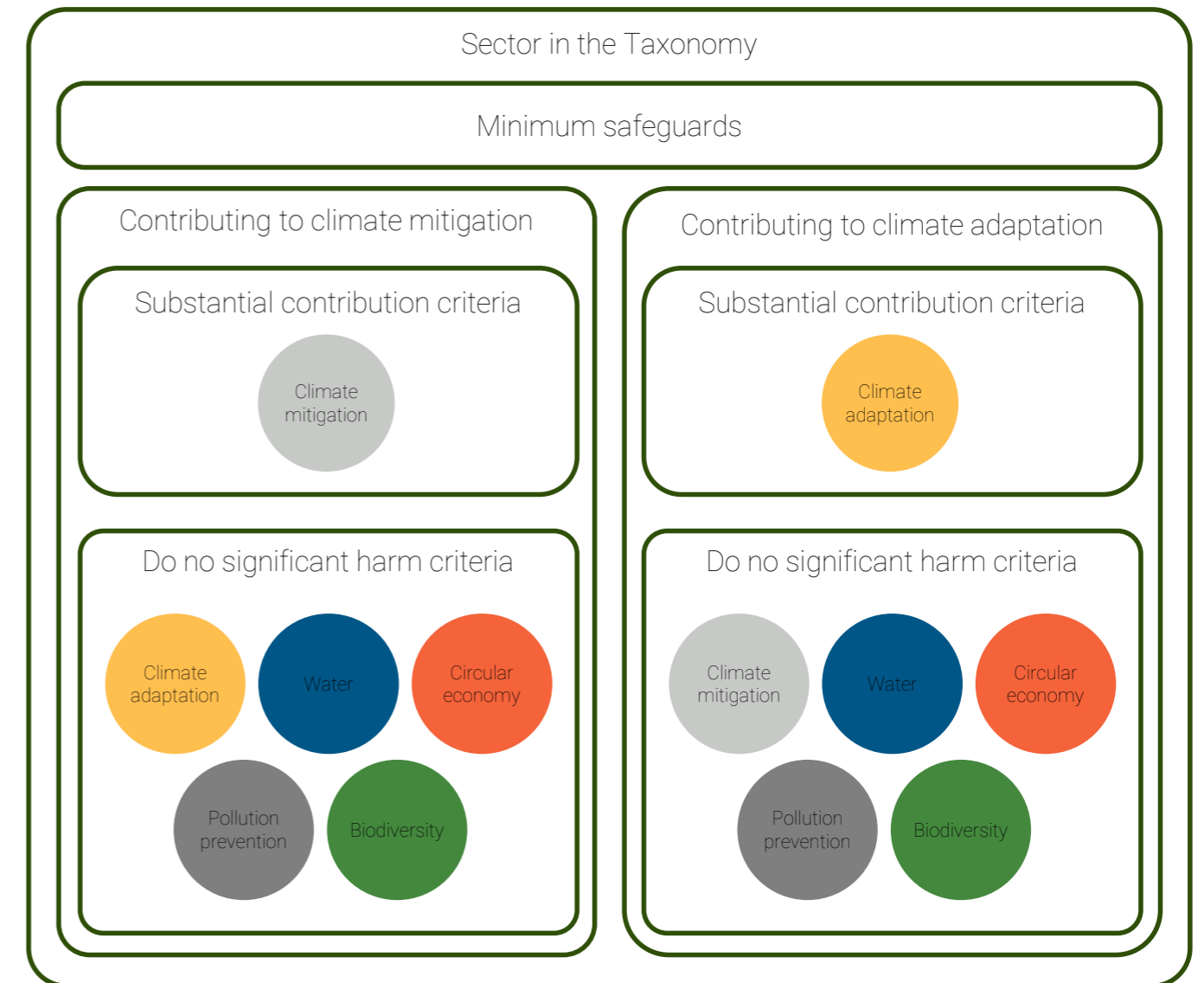
The Taxonomy Regulation also sets out 4 overarching conditions that an economic activity must meet to qualify as environmentally sustainable:

- Make a substantial contribution to at least one environmental objective (e.g. Climate Mitigation);
- Do no significant harm to the remaining five environmental objectives;
- Comply with minimum safeguards; and,
- Comply with the technical screening criteria set out in the Taxonomy delegated acts.

For the built environment, at the time of writing of this document technical screening criteria had been set for economic activities that can make a substantial contribution to climate change mitigation, climate change adaptation and transition to a circular economy.³⁵

FIGURE 11

Examples of how the taxonomy applies to projects that are targeting making a substantial contribution to climate mitigation, climate adaptation, and circular economy. In these diagrams, the projects must comply with minimum safeguards, then comply with 'substantial contribution' criteria, then ensure they comply with all 'do no significant harm' criteria.



9.1.1 How the rating systems comply with the requirement for existing building renovations

Existing building renovations criteria	BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
<p>Climate mitigation</p> <p>30% energy savings after refurbishment, or Building sits in the top 15% of each national stock.</p> <p>For either, the performance must be verified through an Energy Performance Certificate.</p>	<p>Reduction of energy use and carbon emissions is the largest issue within BREEAM Refurbishment. The requirement encourages a Fabric First approach. The scoring scale starts with compliance with building regulations and extends to Carbon Negative Buildings.</p> <p>Performance is determined by experts determined in the National Building Regulations, in Europe this would be those able to produce EPC's. The EPC data is the basis for the BREEAM performance calculations</p>	<p>Energy requirements for each rating level (mandatory component of Green Mark).</p> <p>Green Mark Gold 40% savings from 2005 Code [20% from current New building codes].</p> <p>Green Mark GoldPLUS 50% Savings from 2005 Code [30% from current New building codes].</p> <p>Green Mark Platinum 55% savings from 2005 code [35% from current New building codes].</p> <p>Green Mark SLE 60% savings from 2005 code [40% from current new building codes].</p> <p>Whole Life Carbon section: CN 1.3 Transition Plan – Carbon and Energy transition plan – delineates steps to deliver a net zero carbon building from 2030 for the asset under assessment, based on scope 1 and 2 emissions.</p> <p>SLE rating is pegged to top 10% vs National Building Stock (whole building energy).</p> <p>Certification, validity is 3 years, and requires measured data upon completion of renovations.</p>	<p>A 4 Star Green Star Performance v2 rating requires assets to be rated at 5 Stars NABERS energy or higher, or a 15% higher than . This requirement increases to 30% by 2030, which must be achieved to maintain the rating.</p> <p>Green Star Performance requires the use of NABERS Energy certificates where available. Where not available, it performs verification of on-site performance in a manner that it exceeds the process for a European Energy Certificate.</p>	<p>HQE requires an energy performance assessment upstream to assess the initial state of the building, or an energy audit to estimate the primary energy demand before renovation; then a second energy performance assessment downstream of the renovation, or energy audit to estimate the primary energy demand after renovation is reduced by at least 30% .</p> <p>Regulatory calculations before and after renovation are accepted in countries where relevant, and energy modelling with calibration is accepted as a proxy.</p>	<p>For information on how LEED complies with the EU Taxonomy please refer to the LEED EU Taxonomy self-assessment tool.</p>	<p>NABERS Sustainable Finance Criteria outlines what it means to achieve a 30% reduction in energy efficiency for Building upgrade. They show that for most low rated assets improving them to a 4 Star NABERS Energy rating (4.5 for offices) would result in a 30% improvement.</p> <p>The guide also outlines the criteria for being in the top 15% of each sector using NABERS data.</p>
<p>Climate adaptation</p> <p>The building must reduce all material physical climate risks.</p>	<p>BREEAM requires a climate change adaptation strategy to be conducted. This will identify the physical climate risks and set out management plans.</p> <p>Physical climate risks are also address in specific issues. Thermal comfort and flood risk calculations must both include an allowance for climate change.</p>	<p>Resilience Section: RE 1.1a – EIA shall identify design measures to mitigate negative impacts to the site environment with a focus on climate change and ecological systems.</p> <p>RE 2.3 – Resilience strategy – A comprehensive project specific climate change risk and adaptation assessment, aligned to principles outlined by the Taskforce for Climate Related Financial Disclosures (TCFD), that looks at:</p> <ul style="list-style-type: none"> • Various climate scenarios and impact on weather, including rainfall, temperature, sea level rise, flooding, drought and public health pandemics. • Develop an action plan that addresses how the building would be resilient to these events, through current or future design interventions. 	<p>Green Star Performance includes a minimum expectation for 4 star ratings to do a climate change resilience assessment. This assessment includes a requirement to identify and manage risks, and to then address them for a 4 star rating.</p>	<p>HQE requires a climate change adaptation strategy to be implemented , including :</p> <ul style="list-style-type: none"> - A thorough site assessment to identify potential natural hazards, based on state-of-the-art climate projections over the next 30 years (IPCC PCR profiles RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5). - A vulnerability assessment of the future building facing the identified risks - The design and the implementation of adaptation measures to adapt to identified physical climate risks. - Identification of KPIs to be measured periodically to ensure continuous building's resilience. 	<p>See above.</p>	<p>NA</p>

Existing building renovations criteria		BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
Circular economy	70% of all construction must be recycled or recovered.	The requirements for Diversion of resources from landfill set a target of 85% of non-hazardous construction waste to be re-used, recovered or recycled.	National Environment Agency National Data – 99% of construction and Demolition waste is recycled. https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling .	Green Star Performance includes the credit 'Resource Recovery' as well as 'Tenant Fitout Waste' which encourage the recycling of construction materials and works.	The waste management category in HQE requires reporting on the percentage of recovered waste, including hazardous waste and demolition waste (if any) from the project construction site.	For information on how LEED complies with the EU Taxonomy please refer to the LEED EU Taxonomy self-assessment tool .	NA (NABERS waste covers operational waste only).
Water	Water appliances and fixtures are efficient.	All domestic scale water consuming components must be efficient. Other water consuming equipment must also demonstrate that it is water efficient.	Part of the building regulations for new developments in addition: Resilience Section RE1.1b Resources: PUB Water efficient Building Certification (Existing Buildings) PUB WELS excellent for all relevant water fittings.	Green Star Performance includes the 'Water Use' minimum expectation for 4 star ratings. The Minimum Expectation requires low water consumption for water appliances and fixtures.	In addition to a calculation of the overall water consumption in m ³ /m ² .yr, HQE includes technical specifications for low water consumption fixtures.	See above.	NABERS Water of 4 stars delivers significant water reduction in appliances and fixtures.
Pollution	Building has no substances of high concern.	In BREEAM, the assessment criteria related to Environmental management in Man O3: Responsible construction practices & Hea O2: Indoor air quality addresses the EU Taxonomy requirement.	Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided.	Green Star Performance includes an 'Indoor Pollutants' minimum expectation for 4 star ratings where a policy must be in place to install products (paints, carpets, sealants and adhesives) with low levels of toxins and to review for banned or highly toxic materials when undertaking refurbishment, maintenance or upgrade works.	In the indoor air quality criterion, HQE requests emission thresholds on building materials and products for a list of chemical substances including but not limited to those listed in REACH Regulation (EC) No. 1907/2006. Emissions are to be measured based on tests performed as per CEN/EN 16516, ISO 16000- 3:2011 or equivalent.	See above.	<i>NABERS IE includes testing of indoor environment quality toxins.</i>
	Noise, dust, and pollutant emissions are minimised.	Once a project is complete there are also requirement to minimise noise, nighttime light pollution and surface water runoff during the operation of the asset.	Whole Life Carbon Section: CN2.1 Sustainable Construction – Adoption of Sustainable building systems and Design for Manufacture and Assembly (DfMA) that minimise resource use and waste. Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided. HW 1.3b Enhanced out door air provisions. HW1.3c Clean Air (ii) Air filtration with permanent provision of ePM1 ≥75% (ISO 16890).	NA	A category is dedicated for construction site management in HQE, including but not limited to noise, dust and light pollution. Effective measures are to be taken to limit air, water and soil pollution and to preserve the ecological value of the site and its biodiversity. Health and wellbeing of local residents, occupants and site staff are to be preserved.	See above.	
	Occupants are not exposed to toxic materials	An Indoor air quality plan must be in place with emissions limits set for specific products such as paints and wood panels.	Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided. HW 1.3b (iii) IAQ Surveillance Audit By an accredited laboratory once every 3 years or annually.	Green Star Performance includes an 'Indoor Pollutants' minimum expectation for 4 star ratings where a policy must be in place to install products (paints, carpets, sealants and adhesives) with low levels of toxins and to review for banned or highly toxic materials when undertaking refurbishment, maintenance or upgrade works.	In the indoor air quality criterion, HQE requests emission thresholds on building materials and products for a list of chemical substances including but not limited to those listed in REACH Regulation (EC) No. 1907/2006. Emissions are to be measured based on tests performed as per CEN/EN 16516, ISO 16000- 3:2011 or equivalent.	See above.	<i>NABERS IE includes testing of indoor environment quality toxins.</i>

9.1.2 How the rating systems comply with the requirement for building acquisition and ownership

Building acquisition and ownership	BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
<p>Climate mitigation</p> <p>The performance of the building must be within the top 15% of the local existing stock.</p> <p>The performance must be verified through an Energy Performance Certificate.</p>	<p>BREEAM In-Use demonstrates carbon reduction in two ways. Firstly, a calculation based on the fabric and services in the asset. Secondly, based on the measured Energy Consumption of the asset. Both of these use a standard asset as their benchmark with the performance scale extending all the way to 100% improvement over this benchmark.</p> <p>Separately information is also collected on the EPC performance of the asset. Within this issue credit is awarded where EPC performance exceeds any benchmark set by building regulations.</p>	<p>SLE rating is pegged to top 10%. Certification, validity is 3 years at all stages of the buildings life.</p>	<p>A 4 Star Green Star Performance v2 rating requires assets to be rated at 5 Stars NABERS energy or higher, or a 15% higher than . This requirement increases to 30% by 2030, which must be achieved to maintain the rating.</p> <p>Green Star Performance requires the use of NABERS Energy certificates where available. Where not available, it performs verification of on-site performance in a manner that it exceeds the process for a European Energy Certificate.</p> <p>For Buildings less than 5 years old, a 4 Star Green Star rating (5 Star for offices) will place the asset in the top 15% of all assets in the country. This is based on the large number of assets that exist in Australia compared to the smaller number of Green Star rated assets, and the requirements for high energy performance.</p>	<p>The EU Taxonomy for the construction, acquisition and ownership of buildings refers to energy performance certificates (EPCs) as per the Energy Performance of Buildings Directive (EPBD).</p> <p>For EU projects, HQE uses EPCs mapping in EU countries.</p> <p>For projects seeking alignment where EPCs schemes and / or thresholds are not specified, and/ or for building types not covered by EPC schemes, an asset should achieve class A or B in the HQE Energy Consumption criteria to be deemed top 15%.</p>	<p>For information on how LEED complies with the EU Taxonomy please refer to the LEED EU Taxonomy self-assessment tool.</p>	<p>NABERS Sustainable Finance Criteria outlines what it means to achieve a 30% reduction in energy efficiency for Building upgrade. They show that for most low rated assets improving them to a 4 Star NABERS Energy rating (4.5 for offices) would result in a 30% improvement.</p> <p>The guide also outlines the criteria for being in the top 15% of each sector using NABERS data.</p>
<p>Climate adaptation</p> <p>The building must reduce all material physical climate risks.</p>	<p>Several issues within BREEAM address the physical risks of climate change.</p> <p>There is a specific issue addressing climate-related physical risks and a separate issue assessing transition risks.</p>	<p>Resilience Section: RE 1.1a – EIA shall identify design measures to mitigate negative impacts to the site environment with a focus on climate change and ecological systems.</p> <p>RE 2.3 – Resilience strategy – A comprehensive project specific climate change risk and adaptation assessment, aligned to principles outlined by the Taskforce for Climate Related Financial Disclosures (TCFD), that looks at:</p> <ul style="list-style-type: none"> • Various climate scenarios and impact on weather, including rainfall, temperature, sea level rise, flooding, drought and public health pandemics. • Develop an action plan that addresses how the building would be resilient to these events, through current or future design interventions. 	<p>Green Star Performance includes a minimum expectation for 4 star ratings to do a climate change resilience assessment. This assessment includes a requirement to identify and manage risks, and to then address them for a 4 star rating.</p> <p>Green Star Buildings includes a Climate Change Resilience minimum expectation. Any Green Star rated building is required to meet this requirement. These requirements in both rating tools are found in the ‘Climate Change Resilience’ credit.</p>	<p>HQE requires a climate change adaptation strategy to be implemented , including :</p> <ul style="list-style-type: none"> - A thorough site assessment to identify potential natural hazards, based on state-of-the-art climate projections over the next 30 years (IPCC PCR profiles RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5). - A vulnerability assessment of the future building facing the identified risks. - The design and the implementation of adaptation measures to adapt to identified physical climate risks. - Identification of KPIs to be measured periodically to ensure continuous building’s resilience. 	<p>See above.</p>	<p>NA</p>

9.1.3 How the rating systems comply with the requirement for new buildings

New Buildings criteria	BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
<p>Climate mitigation</p> <p>The building's primary energy demand is at least 10% lower than the threshold set for the nearly zero-energy building requirements.</p>	<p>In BREEAM, Ene 01: Reduction of energy and carbon emissions assesses compliance with this EU Taxonomy requirement. An output is generated from Ene 01 input data which indicates whether the specified performance improvement has been met.</p>	<p>Green Mark GoldPLUS is the minimum level of award for GM 2021 for new developments in Singapore – this sets a minimum threshold of 30% better than a code compliant new building (aligned with IEA) and >50% from equivalent 2005 codes.</p>	<p>Green Star Buildings requires all rated assets to use 10% less energy than the national construction code in Australia. There are also requirements to ensure the building can only use renewable energy, that is, there are no fossil fuels for typical building use (emergency power excluded).</p> <p>In the case of the NABERS pathway, the ratings are awarded where they exceed the legislated requirement by 10%.</p>	<p>HQE assesses compliance with EU Taxonomy requirements in a dedicated criterion that evaluates performance in respect to relevant Thermal and Environmental Regulations.</p> <p>The EPBD mandates Member States to provide a national interpretation of an NZEB. For EU projects, HQE uses NZEB mapping in EU countries.</p> <p>For non-EU projects seeking alignment, and where NZEB is not identified by the country's regulations, thoroughly justified principles of equivalence are evaluated on a case-by-case basis.</p>	<p>For information on how LEED complies with the EU Taxonomy please refer to the LEED EU Taxonomy self-assessment tool.</p>	<p>NABERS Sustainable Finance Criteria outlines what it means to achieve a 30% reduction in energy efficiency for Building upgrade. They show that for most low rated assets improving them to a 4 Star NABERS Energy rating (4.5 for offices) would result in a 30% improvement.</p>
<p>For buildings larger than 5000m²,</p> <ul style="list-style-type: none"> they must be tested for air tightness or have a quality façade, and 	<p>In BREEAM, the assessment criteria related to testing and inspecting fabric in Man 04: Commissioning and handover addresses the EU Taxonomy requirement.</p>	<p>Air tightness is part of the Code for Environmental Sustainability – Building Regulations.</p> <p>Façade Performance is a key performance requirement in the Energy Efficiency Section of Green Mark (ETTV and RETV)</p>	<p>All Green Star rated buildings must be tested for air tightness to achieve a rating.</p>	<p>In HQE, the commissioning criteria, requires buildings with an area greater than 5,000 m² to carry out air tightness tests, thermal integrity test in compliance with 13829 and EN 13187 standards, and require robust and traceable quality control processes to be implemented during the construction process.</p>	<p>See above.</p>	
<ul style="list-style-type: none"> the carbon life cycle impacts are calculated and disclosed. 	<p>In BREEAM, Mat 01: Environmental impact from construction products – Building life cycle assessment (LCA) addresses the EU Taxonomy requirement.</p>	<p>Whole Life Carbon Section: CN 1.1 Whole Life carbon calculation consistent with EN 15978 and EN 15804.</p> <p>CN 1.2 – Upfront Carbon (iii) >30% Reduction from the reference embodied carbon by building type.</p>	<p>All Green Star rated buildings must show a 10% reduction in upfront carbon emissions, and are provided with a lifecycle report of their impacts.</p>	<p>HQE requires the completion of an LCA calculation for buildings according to the method of the European standard EN 15978 (used within the framework of the European Level(s) framework. The GWP is to be calculated in kgCO₂eq/m² (of usable floor area) and calculated as an average over one year of a 50-year reference study period.</p>	<p>See above.</p>	<p>The guide also outlines the criteria for being in the top 15% of each sector using NABERS data.</p>
<p>Climate adaptation</p> <p>The building must reduce all material physical climate risks.</p>	<p>In BREEAM, the assessment criteria related to structural and fabric resilience in Wst 05: Adaptation to climate change addresses the EU Taxonomy requirement.</p>	<p>Resilience Section: RE 1.1a – EIA shall identify design measures to mitigate negative impacts to the site environment with a focus on climate change and ecological systems.</p> <p>RE 2.3 – Resilience strategy – A comprehensive project specific climate change risk and adaptation assessment, aligned to principles outlined by the Taskforce for Climate Related Financial Disclosures (TCFD), that looks at:addresses how the building would be resilient to these events, through current or future design interventions.</p>	<p>Green Star Buildings also includes a Climate Change Resilience minimum expectation. Any Green Star rated building is required to meet this requirement. These requirements in both rating tools are found in the 'Climate Change Resilience' credit.</p>	<p>HQE requires a climate change adaptation strategy to be implemented, including:</p> <ul style="list-style-type: none"> - A thorough site assessment to identify potential natural hazards, based on state-of-the-art climate projections over the next 30 years (IPCC PCR profiles RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5). - A vulnerability assessment of the future building facing the identified risks. 	<p>See above.</p>	<p>NA</p>

New Buildings criteria	BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
Climate adaptation (cont).		<ul style="list-style-type: none"> Various climate scenarios and impact on weather, including rainfall, temperature, sea level rise, flooding, drought and public health pandemics. Develop an action plan that addresses how the building would be resilient to these events, through current or future design interventions. 		<ul style="list-style-type: none"> The design and the implementation of adaptation measures to adapt to identified physical climate risks. Identification of KPIs to be measured periodically to ensure continuous building's resilience. 		
70% of all construction must be recycled or recovered.	In BREEAM, the assessment criteria related to Diversion of resources from landfill in Wst 01: Construction waste management addresses the EU Taxonomy requirement.	National Environment Agency National Data – 99% of construction and Demolition waste is recycled. https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling .	This is a minimum expectation under the 'Responsible Construction' minimum expectation.	The waste management category in HQE requires reporting on the percentage of recovered waste, including hazardous waste and demolition waste if any from the project construction site.	See above.	NA
Construction and demolition waste must be reduced, and;	In BREEAM, the assessment criteria related to Construction resource efficiency in Wst 01: Construction waste management addresses the EU Taxonomy requirement.	Whole Life Carbon Section: CN2.1 Sustainable Construction – Adoption of Sustainable building systems and Design for Manufacture and Assembly (DfMA) that minimise resource use and waste.	Green Star Buildings also includes a Climate Change Resilience minimum expectation. Any Green Star rated building is required to meet this requirement. These requirements in both rating tools are found in the 'Climate Change Resilience' credit.	The waste management category in HQE requires reporting on the percentage of recovered waste, including hazardous waste and demolition waste if any from the project construction site.	See above.	NA
Buildings must be built to be adaptable and efficient.	In BREEAM, Wst 06 Design for disassembly and Adaptability addresses the EU Taxonomy requirement.	Maintainability Section using The MiDAS assessment tool. This covers key sections including, Architectural, Mechanical, Electrical, Landscape and Smart FM.	This is a minimum expectation under the 'Responsible Construction' minimum expectation.	HQE requires provisions on the structure to allow for re-partitioning, piercing floors, facilitating horizontal routing of technical networks in order to adapt the premises to any potential changes in needs. It pushes stakeholders to demonstrate that the choices of second-fix systems (architectural lots, partitioning, ceilings, distribution) allow for adaptability of spaces over time, beyond their simple organisation or oversizing, in addition to reversibility and dismantlability requirements.	See above.	NA
Water	Water appliances and fixtures are efficient.	Part of the building regulations for new developments in addition: Resilience Section RE1.1b Resources: PUB Water efficient Building Certification (Existing Buildings). PUB WELS excellent for all relevant water fittings.	This is a minimum expectation under the 'Responsible Construction' minimum expectation.	In addition to a calculation of the overall water consumption in m ³ /m ² .yr, HQE includes technical specifications for low water consumption fixtures.	See above.	NA

New Buildings criteria		BREEAM	Green Mark	Green Star	HQE	LEED	NABERS
Pollution	<p>Building has no substances of high concern.</p> <p>Noise, dust, and pollutant emissions are minimised.</p> <p>Occupants are not exposed to toxic materials.</p>	<p>In BREEAM, the assessment criteria related to Environmental management in Man O3: Responsible construction practices & Hea O2: Indoor air quality addresses the EU Taxonomy requirement.</p>	<p>Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided.</p> <p>Whole Life Carbon Section: CN2.1 Sustainable Construction – Adoption of Sustainable building systems and Design for Manufacture and Assembly (DfMA) that minimise resource use and waste.</p> <p>Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided.</p> <p>HW 1.3b Enhanced out door air provisions.</p> <p>HW1.3c Clean Air (ii) Air filtration with permanent provision of ePM1 ≥75% (ISO 16890).</p> <p>Health and Wellbeing Section: HW1.2 Material Emissions – include paints, floor coverings, wall coverings, ceiling coverings such as carpets, paints, adhesives, engineered timber (including laminates), carpentry works and furniture where provided.</p> <p>HW 1.3b (iii) IAQ Surveillance Audit By an accredited laboratory once every 3 years or annually.</p>	<p>Green Star Buildings includes an ‘Indoor Pollutants’ minimum expectation for 4 star ratings where a policy must be in place to install products (paints, carpets, sealants and adhesives) with low levels of toxins and to review for banned or highly toxic materials when undertaking refurbishment, maintenance or upgrade works.</p>	<p>In the indoor air quality criterion, HQE requests emission thresholds on building materials and products for a list of chemical substances including but not limited to those listed in REACH Regulation (EC) No. 1907/2006. Emissions are to be measured based on tests performed as per CEN/EN 16516, ISO 16000- 3:2011 or equivalent.</p>	<p>For information on how LEED complies with the EU Taxonomy please refer to the LEED EU Taxonomy self-assessment tool.</p>	NA
Biodiversity	<p>The building is not built on land of high ecological value, has endangered species, or prime agricultural land.</p>	<p>In BREEAM, LE 01: Site selection addresses the EU Taxonomy requirement.</p>	<p>Singapore has strict planning, zoning, and land allocation requirements. Land for development is centrally managed by the Singapore Land Authority, and various agencies including the planning authority (Urban Redevelopment Authority, URA) Resilience Section.</p> <p>RE 1.1a Habitat and Ecology –</p> <p>(i) A comprehensive EIA to identify the anticipated effects on the environment a proposed development or project may have.</p> <p>(ii) Management plan that outlines key actions that need to be undertaken in order to maintain the ecological integrity of biodiversity on the site, whether this is existing biodiversity or created as a part of the development works.</p>	<p>This is a minimum expectation for all Green Star Buildings ratings. It can be found under ‘Impacts to Nature’.</p>	<p>HQE buildings can’t be built on arable land, fertile cropland with underground biodiversity, undeveloped land of high biodiversity value, protected habitats, or forests.</p> <p>The requirements of HQE on biodiversity consist of an initial environmental site assessment carried out by a qualified ecologist (or equivalent).</p> <p>The ecologist’s recommendations and management plan to improve the site value are to be implemented in the project .</p>	<p>See above.</p>	<p>NA (NABERS Water does not have a commitment agreement).</p>

9.2

Climate Bonds Initiative

The Climate Bonds Initiative Low Carbon Buildings Criteria includes three options for compliance, with each having proxies as well. The three options are:

- Commercial buildings criteria
- Residential buildings criteria
- Upgrades criteria

The following shows how the benchmarks are aligned with each of the ratings recommended in the tables in chapter 6.

SCHEME	RATING	CLIMATE BONDS PATHWAY	NOTES
BREEAM			Currently under review by Climate Bonds Initiative. Check Climate Bonds Initiative website for more information.
Green Mark	GoldPLUS and above.	Commercial buildings criteria. Upgrades criteria.	SLE = Top 10 percentile (new and existing projects). Green Mark GoldPLUS demonstrates an Energy Savings equivalent to 30% compared to baseline developed in the Green Mark 2021 energy modelling guideline, which is broadly aligned to ASHRAE 90.1. Green Mark 2021 for building upgrading require the following energy savings: SLE >40% savings from prevailing New Building Regulations, >60% from 2005 codes. Platinum Global Leader holistic performance, with >35% Energy improvement from prevailing New Building regulations, >55% from 2005 codes. GoldPLUS best practice for holistic performance, with >30% Energy improvement from prevailing New Building regulations, >50% from 2005 codes
Green Star Buildings	5 Star or above.	Commercial buildings criteria. Residential buildings criteria.	Climate Bonds Initiative has designated Green Star Buildings as a proxy for both commercial buildings and apartment buildings, provided the buildings complies with the Climate Positive Pathway in the rating tool. As of 2023, all projects registered with Green Star Buildings seeking a 5 Star rating or above are required to comply with the Pathway.
Green Star Homes	Certified.	Residential buildings criteria.	Climate Bonds Initiative has designated Green Star Homes as a proxy for single family dwellings.
Green Star Performance	4 stars or above.	Commercial buildings criteria Upgrades criteria.	Green Star Performance may be aligned with Climate Bonds Commercial buildings criteria. Green Star Performance v2, which begins operations in 2024, uses the same boundaries as Climate Bonds, with it reflecting the energy consumption of the building, and with an additional requirement to remove fossil fuels from the building over time. Green Star Performance requires ongoing improvements to building performance over time to maintain their rating. A building seeking a 4 Star Green Star Performance rating will need to be 40% more energy efficient against an average building between now and 2030 to maintain its rating. Therefore any building with a rating of 4 stars will need to be a high performer to keep this rating, with electrification requirements being introduced by 2035. Thus, for the Commercial criteria, Green Star Performance v2 can be used to show progress against the Climate Bonds low carbon pathway, and can be used to verify progress against it, but, the issuer may still need to ensure the emissions are above the hurdle rate established for the midpoint of the term of the bond. For the upgrades criteria, Green Star Performance is aligned based on the ongoing requirements for upgrades but note that Climate Bonds is reviewing its applicability as a proxy.
HQE			Currently under review by Climate Bonds Initiative.
LEED	Gold or platinum	Commercial upgrades criteria Upgrades criteria	The building must be LEED gold or platinum, and, achieve a minimum 30% emissions improvement against ASHRAE 90.1 criteria.
NABERS Energy	Varies	Upgrades criteria	NABERS Energy upgrades should be aligned with Climate Bonds upgrade criteria, based on the emission reductions improvements from initial rating to the final rating. A calculation of NABERS Energy ratings shows that moving a buildings from a 2 Star NABERS Energy rating to a 4 Star NABERS Energy rating would result in an approximate reduction of 40%.



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