

Buildings Criteria

The Buildings Criteria for the Climate Bonds Standard & Certification Scheme

September 2018



Definitions

Climate Bonds Initiative (CBI): An investor-focused not-for-profit organisation, promoting large-scale investments that will deliver a global low carbon and climate resilient economy. The Initiative seeks to develop mechanisms to better align the interests of investors, industry and government so as to catalyse investments at a speed and scale sufficient to avoid dangerous climate change.

Certified Climate Bond: A bond that is certified by the Climate Bonds Standard Board as meeting the requirements of this Climate Bonds Standard (both the parent standard and the appropriate sector specific eligibility criteria (as determined in accordance with the use of proceeds of the bond)).

Climate Bonds Standard (CBS): A screening tool for investors and governments that allows them to identify green bonds where they can be confident that the funds are being used to deliver climate change solutions. This may be through climate mitigation impact and/ or climate adaptation or resilience. The CBS is made up of two parts: the parent standard (Climate Bonds Standard v2.0) and a suite of sector specific eligibility requirements. The parent standard covers the certification process and pre- and post-issuance requirements for all certified bonds, regardless of the nature of the investments. The Sector Criteria detail specific requirements for assets identified as falling under that specific sector. The latest version of the CBS is published on the Climate Bonds Initiative website

Climate Bonds Standard Board (CBSB): A board of independent members that collectively represents \$34 trillion of assets under management. The CBSB is responsible for approving i) Revisions to the Climate Bond Standard, including the adoption of additional sector Criteria, ii) Approved verifiers, and iii) Applications for Certification of a bond under the Climate Bonds Standard. The CBSB is constituted, appointed and supported in line with the governance arrangements and processes as published on the Climate Bonds Initiative website.

Climate Bond Certification: allows the issuer to use the Climate Bond Certification Mark in relation to that bond. Climate Bond Certification is provided once the independent Climate Bonds Standard Board is satisfied the bond conforms with the Climate Bonds Standard.

Commercial building: A building that is intended to generate a profit, either from capital gain or rental income. There are sub-categories of Commercial Buildings, including offices, shopping centres and hotels.

Residential building: A building that is used or suitable for use as a dwelling.

Technical Working Group (TWG): A group of key experts from academia, international agencies, industry and NGOs convened by the Climate Bonds Initiative. The TWG develops Sector-Specific Criteria - detailed technical criteria for the eligibility of projects and assets as well as guidance on the tracking of eligibility status during the term of the bond. Their draft recommendations are refined through engagement with finance industry experts in convened Industry Working Groups and through public consultation. Final approval of Sector Criteria is given by the CBSB.

Energy Efficiency: A term used to describe reduction in energy required to provide products and services

Emissions Intensity: A quantitative figure expressed as kgCO₂/msq

Emission Performance: A term used to describe emissions intensity and associated emissions reductions of a building. This is expressed in terms of kg of CO₂e per square meter determined from total emissions divided by net lettable floor area.

Emissions Performance Target: A quantitative emissions intensity figure falling on or below the emissions performance trajectory and is expressed as kgCO₂/msq

Table of Contents

Definitions	2
1. Introduction	4
1.1. Overview.....	4
1.2. The Climate Bond Standard.....	4
1.3. Scope of the Building Criteria.....	5
1.4. Key elements to the Criteria.....	5
1.5. This document.....	5
1.6. Revisions to these Criteria.....	5
2. Assets and Projects Scope.....	7
2.1. Assets in scope.....	7
2.2. Assets out of scope.....	8
2.3. Alignment with other Sector Criteria.....	8
3. Eligibility Criteria	9
3.1. Mitigation Component.....	9
3.2. Pathway 1: Absolute Performance Threshold	10
<i>Condition 1a: Meets performance target set by low carbon trajectory for asset in that location.....</i>	<i>10</i>
<i>Condition 1b: Will achieve equivalent performance over the bond term.....</i>	<i>13</i>
<i>Condition 2: Achieves a CBI-approved proxy.....</i>	<i>15</i>
3.3. Pathway 2: Relative Performance Improvement.....	16
<i>Condition 3: Achieves a retrofit improvement in emissions intensity against a pre-retrofit baseline.....</i>	<i>16</i>
Appendix I: TWG members	19

The Climate Bonds Initiative gratefully acknowledges the Technical and Industry Working Group members who supported the development of these Criteria. Members are listed in Appendix I. Special thanks are given to Ché Wall of Flux Consultants the lead specialist co-ordinating the development of the Criteria through the Technical Working Group.

I. Introduction

I.1. Overview

This Criteria Document provides all the requirements that must be complied with for building related assets and projects to be awarded Climate Bonds Certification. The purpose is to provide instruction to issuers and verifiers about the requirements that must be met. The Criteria Documents is supported by a Background document that captures the various dialogues and inputs and substantiates the reasoning behind the requirements set in the Building Criteria.

The Criteria are developed through a consultative process with Technical Working Groups (TWGs) and Industry Working Groups (IWGs), and through public consultation. The TWGs comprise academic and research institutions, civil society organizations, multilateral banks and specialist consultancies whereas IWGs are represented by industry experts including potential bond issuers and investors. A period of public consultation offers the opportunity to any member of the public to comment on the Criteria.

Supplementary information available in addition to this document include:

1. Buildings Criteria Brochure: a 2-page summary of the Building Criteria
2. Buildings Background Document: the rationale behind the Building Criteria
3. Climate Bonds Standard V2.1: the umbrella document laying out the common requirements that all Certified Climate Bonds need to meet, in addition to the sector-specific Criteria (V2.1 is the most recent update version)
4. Climate Bonds Standard & Certification Scheme Brochure: an overview of the purpose, context and requirements of the Climate Bonds Standard & Certification Scheme
5. Methodology for Establishing Low Carbon Trajectories: a guidance document for developing thresholds in new markets.
6. Methodology for Establishing Proxies: a guidance documents for developing proxies in new markets.
7. Methodology for Calculating Emissions Retrofits: a guidance documents for determining the emissions upgrade requirement.

For more information on the Climate Bonds Initiative and the Climate Bonds Standard & Certification Scheme, see <https://www.climatebonds.net/standard>. For the documents listed above, see <https://www.climatebonds.net/standard/building>

I.2. The Climate Bond Standard

Investor demand for Green Bonds and Climate Bonds is strong and will 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 is essential to improve confidence and transparency, which in turn will enable further strong growth in the market.

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 Criteria sets climate change benchmarks for that sector that are used to screen assets and capital projects so that only those that have climate integrity, through their contribution to climate mitigation, and adaptation and resilience to climate change, will be certified. Where a bond encompasses a mixed portfolio of assets across several sectors, each sub-category of assets will be subject to the relevant Sector Criteria for those assets.

The Sector Criteria are determined through a multi-stakeholder engagement process, including a Technical Working Group (TWG) and Industry Working Group (IWG), convened and managed by the Climate Bonds Initiative, and are subject to public consultation. Finally, they are reviewed and approved by the Climate Bonds Standard Board.

The second key part of the Climate Bonds Standard is the overarching Climate Bonds Standard available at https://www.climatebonds.net/standards/standard_download. This gives the common fund management and reporting requirements that all Certified Climate Bonds must meet, in addition to meeting the specific Sector Criteria.

1.3. Scope of the Building Criteria

These Criteria apply to assets and projects relating to:

- Commercial Buildings, i.e. buildings that are intended to generate a profit, either from capital gain or rental income. There are sub-categories of Commercial Buildings, including but not limited to, offices, shopping centres and hotels.
- Residential Buildings, i.e. buildings that are used or suitable for use as a dwelling.
- Built environment, i.e. projects that are not specifically buildings related, but are part of the wider built environment, such as street lighting upgrade projects refer to projects that achieve energy performance improvements through the application of energy efficiency measures and components that relate to the built environment.

Further details of the scope of the Building Criteria is in Chapter 2, Table 1.

1.4. Key elements to the Criteria

As a general principle, the Climate Bonds Initiative aims to establish Criteria that will identify and certify assets and use of proceeds that:

- Promote GHG mitigation through reduced emissions or increased sequestration;
- Promote adaptation to climate change and facilitate increased climate resilience in the social, economic, and environmental systems that underlie production of food, fodder, feed, fuel, fiber and/ or ecosystem services within the specified area; and
- Meet minimum disclosure requirements to raise the levels of transparency and disclosure around green assets and investments.

The Criteria at present focuses on climate change mitigation through energy efficiency. The Climate Bonds Initiative plans to expand the Criteria over time to incorporate other elements of climate change mitigation as appropriate and adaptation & resilience to climate change impacts.

Complete details of the requirements for the Building Criteria are in Chapter 3 of this document.

1.5. This document

This document details:

- The current scope of building assets and projects eligible for certification under the Climate Bonds Standard – Chapter 2;
- The specific eligibility Criteria under which these assets and projects can be certified – Chapter 3;
- List of Technical Working Group and Industry Working Group members – Appendix I

Supporting information is available at <https://www.climatebonds.net/standard>,
<https://www.climatebonds.net/standard/building>

1.6. Revisions to these Criteria

These Criteria will be reviewed two years after launch, or potentially earlier if the need arises, at which point the TWG will take stock of issuances that arise in the early stages and any developments in improved methodologies and data that can increase the climate integrity of future bond issuances. As a result, the Criteria are likely to be refined over time, as more information becomes available. However, certification will not be withdrawn retroactively from bonds certified under earlier versions of the Criteria.

2. Assets and Projects Scope

2.1. Assets in scope

Table I presents indicative building assets and associated use of proceeds that might be included in a Certified Climate Bond, subject to meeting the specific Criteria described in the remainder of this document. Table I is provided for illustrative purposes and is not an exhaustive list of every possible asset or use of proceeds that would be eligible. Although Table I categorises these assets and use of proceeds across a number of sub-sectors, it is stressed that bond issuances are not restricted from addressing multiple food, fibre and fuel commodities, and mixed or mosaic systems.

These assets and use of proceeds are eligible for inclusion in a Certified Climate Bond if they meet:















- The mandatory Disclosure requirements (see Chapter 3),











Bonds financing multiple projects may also have to prove compliance with other Sector Criteria to be eligible for Climate Bonds Certification. For example, if a bond includes both building projects and solar projects it would be necessary for the issuer to prove compliance with both the Building Criteria and the Solar Criteria.

Table I provides signposting as follows:

- A green circle indicates these use of proceeds, when fully described and documented, automatically meet the Criteria requirements, with no further disclosure or documentation required
- An orange circle indicates that the eligibility of these use of proceeds is conditional on meeting specific requirements
- A red circle indicates these use of proceeds are not eligible for certification under any circumstances

Table I: Eligibility of assets and projects

Eligible asset types	Eligible use of proceeds	Mitigation	Adaptation & resilience
Residential Buildings – a building or portfolio of building where more than half of the floor area is used for dwelling purposes, including but not limited to the follow sub-categories of residential buildings; Single family Multi-family Rentals	Origination or refinancing of loans or mortgages, including portfolios		
	Capital costs of performance upgrades such as building envelope retrofits, lighting upgrades, appliance & equipment upgrades, smart metering, etc		
	Operating expense of ongoing maintenance, where increased energy efficiency and decreased carbon emissions are materially significant		
Commercial Buildings - a building or portfolio of buildings where more than half of the floor area is used for commercial purposes, including but not limited to the following sub-categories of commercial buildings: Offices Schools & Campuses Shopping centres & retail	Origination or refinancing of loans or mortgages, including portfolios		
	Capital costs of performance upgrades such as building envelope retrofits, lighting upgrades, appliance & equipment upgrades, smart metering, etc		
	Operating expense of ongoing maintenance, where increased energy efficiency and decreased carbon emissions are materially significant.		
Industrial Buildings – a building or facility dedicated to the	Origination or refinancing of loans, including portfolios		

manufacturing, altering, repairing, cleaning, washing, breaking-up, adapting or processing any article Manufacturing facility Agriculture/livestock facilities Energy generation facilities			
	Capital costs of performance upgrades material to the building's performance such as envelope retrofits, lighting upgrades, smart metering, etc		
	Capital costs of performance upgrades to non-building related industrial equipment		
Industrial Buildings – a building or facility dedicated to the manufacturing, altering, repairing, cleaning, washing, breaking-up, adapting or processing any article Manufacturing facility Agriculture/livestock facilities Energy generation facilities	Origination or refinancing of loans, including portfolios		
	Capital costs of performance upgrades material to the building's performance such as envelope retrofits, lighting upgrades, smart metering, etc		
	Capital costs of performance upgrades to non-building related industrial equipment		

2.2. Assets out of scope

The red items in Table 1 are excluded either because they are incompatible with a low carbon or climate-resilient economy or because determining their eligibility is outside the mandate of the Building Criteria. The justifications for exclusions are presented the Background Document.

2.3. Alignment with other Sector Criteria

Table 2: Alignment with other Climate Bonds Standard Sector Criteria

Asset types	Explanation for exclusion
Energy investment support buildings	Building supporting the generation, distribution, and/or transmission of electricity and heat are subject to the corresponding Energy Criteria.
Transport investment support buildings	Buildings supporting the manufacturing of low carbon transport modalities or infrastructure (ie bus stations, rail stations) are subject to the corresponding Low Carbon Transport Criteria.
Water investment support buildings	Buildings supporting the processing and distribution of water or otherwise support water based infrastructure are subject to the corresponding Water Criteria.
ICT investment support buildings	Buildings supporting the ICT are subject to the corresponding ICT Criteria.
Waste Management investment support buildings	Buildings supporting the collection, handling, or processing of municipal solid waste are subject to the corresponding Waste Management Criteria.
Land Use investment support buildings	Buildings supporting the management of agriculture, forestry, ecosystem conservation & restoration, fisheries, or associated supply chains are subject to the corresponding Agriculture, Forestry, Fisheries, and Land Use Criteria.
Industry investment support buildings	Building supporting the manufacturing, production, or processing of products/goods are subject to Industrial Criteria (under development)

3. Eligibility Criteria

3.1. Mitigation Component

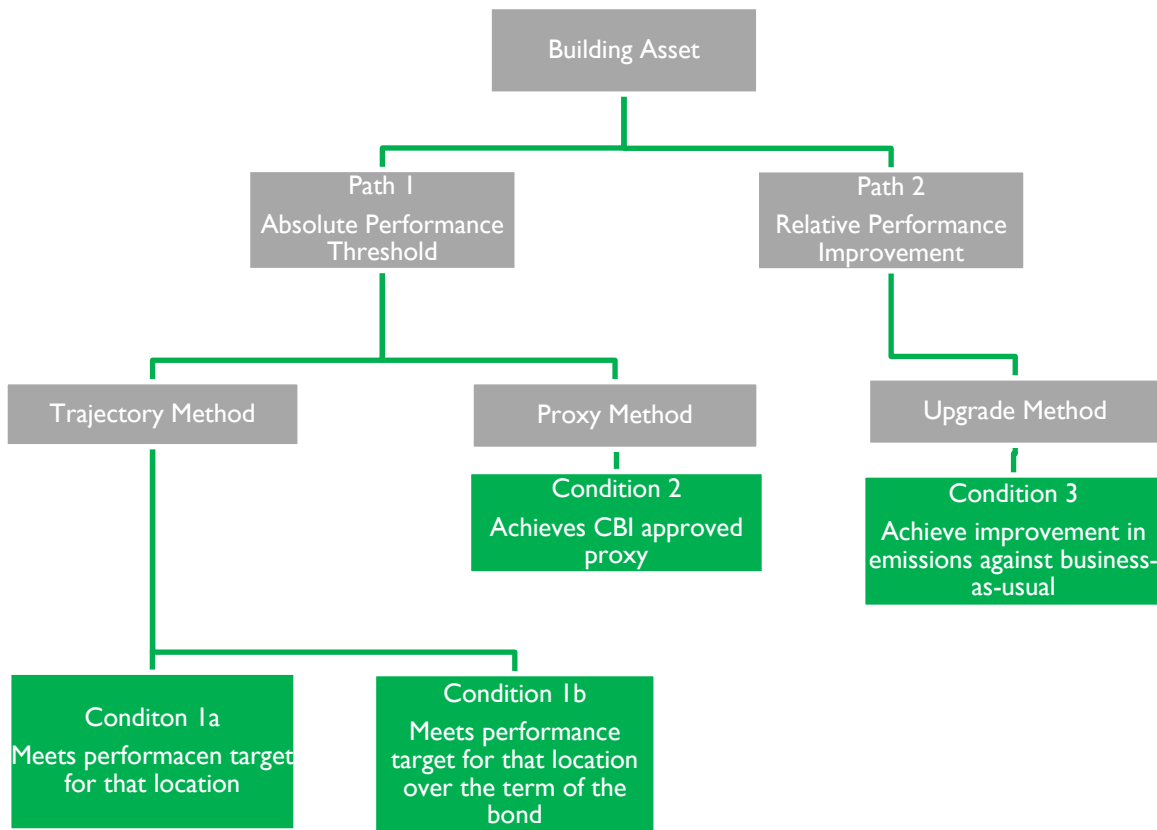
The simplicity of the Criteria enables rapid screening and meaningful monitoring and verification for assurance without transaction costs undermining any price benefit green bonds may offer. The Criteria has been designed with an ambition of a zero-carbon future in 2050 and offers a pathway to reach that outcome in a manner bespoke to each city’s present circumstance. It aims to leverage the best data available to establish appropriate emissions performance thresholds and offers an alternative pathway where lack of data prevents reliable market insight.

There are two routes to eligibility for inclusion of buildings in a Certified Climate Bond, under which sit three conditions

1. Absolute Performance Improvement Pathway (Section 3.2), OR
2. Relative Performance Improvement Pathway (Section 3.3)

The diagram below illustrates these eligibility pathways. More information on each pathway is provided in the following sections.

Diagram 1: Certification pathways for bond issuers



3.2. Pathway 1: Absolute Performance Threshold

Bond issuers have two options to establish compliance with the absolute performance threshold:

- **Condition 1** – Qualitative Threshold: Emissions intensity of the building achieves the appropriate performance target for buildings in that location
- **Condition 2** – Qualitative Proxy: Rating of the building achieves the CBI-approved proxy

The key strength of the Criteria is how emission intensity performance requirements are calibrated to local market conditions, taking into account differences in climate zones, prevailing market practices and inherent greenhouse intensities of the fuel supply. To prevent the Criteria from being undermined by layers of approximations and adjustments, each city is explicitly benchmarked and the emission intensity threshold set against a common percentile.

To ensure that Climate Bonds Certification achieves significant scale and environmental impact, the emissions intensity is set against the top 15 per cent of buildings in a city. This serves as an initial baseline that is used to create a linear trajectory to zero carbon emissions by 2050, producing performance targets that become more stringent year-on-year. Emissions performance thresholds and trajectories will be set for specific building types (e.g. offices, hotels, shopping centres) in a city due to the meaningful variations in energy consumption and therefore emissions of different building types. This approach is referred to as Condition 1.

Condition 1, while inherently simplistic, still remains out of reach for some cities and for some building types where the data simply does not exist in any reliable form. In such markets, existing instruments such as building standards, codes, and rating schemes can be leveraged as proxies for buildings in that market. This alternative approach is referred to as Condition 2.

In markets where both options are available, Condition 1 is the preferred approach. As Condition 2 is meant to serve as an interim solution until data becomes available.

Condition 1a: Meets performance target set by low carbon trajectory for asset in that location

Requirement: Mitigation Component			
Component	Requirement	Demonstration of compliance	
Mitigation	The asset or portfolio of assets must meet the emissions performance target calibrated to the specific city or region.	For portfolios The issuer certifying a portfolio of assets shall: <ul style="list-style-type: none"> • report the bond term; • report the emissions intensity target for the bond established by the low carbon trajectory and bond term; • report the emissions intensity of the portfolio of assets. 	For individual buildings The issuer certifying an individual asset shall: <ul style="list-style-type: none"> • report the bond term; • report the emissions intensity target for the bond established by the low carbon trajectory and bond term; • report the emissions intensity of the portfolio of assets.

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Explanation

The “emissions performance target” an issuer has to satisfy is determined based on an “emissions performance trajectory” that starts with an “initial baseline emissions performance” of the top 15% of buildings in a city and declines to zero carbon emissions in 2050.

The emissions performance target is the emissions intensity figure at which the mid-point of the bond intersects the emissions performance trajectory and given as kgCO/msq and. The emissions performance trajectory is location and building sector specific

The “emissions performance target” is expressed on an annual basis in kgCO² terms and represents a level of carbon intensity (with net lettable square meters as the denominator for most building types). For instance, the emissions performance target for Sydney offices may be 78.2 kgCO²/sqm per annum for a 10-year bond issued in 2015.

The “initial baseline emissions performance” is established using available emissions performance data (see notes in Box 1 below) on a representative sample of buildings in a city or region. Once set, it is not expected to be updated unless in exceptional circumstances. The two key circumstances that warrant a recalibration of initial baseline emissions performance are (1) when the size and quality of the underlying data set improves significantly and (2) when there is significant decarbonisation of the grid. CBI will undertake a review every 3 years, to check for these two circumstances and whether they warrant a recalibration of initial baseline performance. The Trajectory Methodology document on the buildings website provides details on the statistical methodology applied to establish the “initial baseline emissions performance”.

Box 1. Notes on emissions intensity data and calculation methodology

1. Emissions performance of individual buildings should be specified using an appropriate denominator (kgCO²/sqm). While CBI has established that net lettable floor area is appropriate for most building types including offices, alternative denominators more appropriate for specific building types (e.g. rooms for hotel buildings) may be applied. CBI will provide guidance on alternative denominators as research is developed for specific building types.
2. Emissions performance data must relate to the operational performance of buildings rather than modeled performance.
3. Emissions performance data must relate to the landlord component of energy consumption to align with the boundaries of ownership and control that exist in the building sector. Box 2 provides guidance on the energy end uses that should be incorporated in the calculation of landlord energy consumption. If data is only available for whole building performance, a reasonable assumption may be made to strip out the landlord component of energy consumption.

Box 2. Guidance on landlord energy consumption and emissions

Landlord energy loads (also known as base building energy loads) typically comprise the energy consumed by landlord-owned plant and equipment that are required to service the building and are not controlled by the building’s tenants. Such energy end uses include:

- Heating, ventilation and air conditioning
- Lifts and escalators
- Car park lights and ventilation
- Common area light and power
- Exterior lighting and signage

Landlord loads excludes energy end uses that are controlled by the building’s tenants, such as:

- Lighting within tenant areas
- Tenant power
- Tenant supplementary cooling
- Tenant data facilities

To avoid the risk and uncertainty associated with year-on-year moving performance targets (implied by a declining emissions performance trajectory), fixed targets are established at the midpoint of the bond's term along the trajectory (see Box 3 for example using Sydney offices). Adopting this approach means that performance targets become more stringent the later the bond is issued and the longer the bond term.

Box 3. Establishing fixed targets at the midpoint of bond terms – Sydney offices example

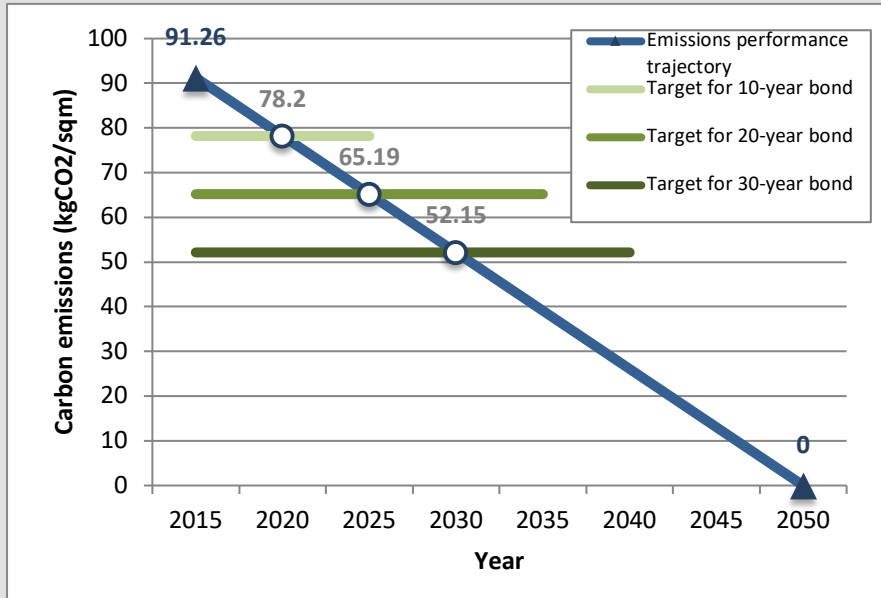


Chart 1: Targets for different bond terms for Sydney offices

The emissions performance trajectory for Sydney offices starts with an initial baseline emissions performance of 91.2kgCO₂/sqm and declines to zero carbon emissions in 2050 (blue line in Chart 1).

Fixed targets are derived from this emissions performance trajectory using the midpoint of the bond term (white circular markers along the blue line). For instance, the midpoint for a 10-year bond issued in 2015 is 2020. The target for such a bond is 78.2kgCO₂/sqm, where the midpoint of the bond's term (2020) meets the emissions performance trajectory. The targets for longer bond terms such as 20 years and 30 years are established in a similar manner using the midpoints, leading to targets of 65.2kgCO₂/sqm and 52.2 kgCO₂/sqm respectively.

It can be observed from the chart that the longer the bond term, the stricter the target to achieve certification. This is also the case the later bonds are issued (e.g. year 2020 or 2030 instead of 2015).

CBI has developed and made available on its website an easy-to-use [CO₂ Target Calculator](#) that enables issuers to ascertain the performance targets that must be satisfied in order to gain certification in their cities. The Calculator automatically calculates the performance target an issuer has to satisfy based on the year the bond issued, the length of the bond term, the building type and city the building is located.

The Calculator currently covers major cities in Australia and the US as a result of publicly accessible emissions performance data made available through mandatory disclosure schemes. CBI will continue to expand its coverage of cities through such schemes and partnerships or collaborations with property-related organisations holding performance data.

Application for a portfolio of buildings

An issuer seeking certification will most likely have a portfolio of buildings covering different building types in different cities. The performance target that the issuer on a portfolio basis will have to satisfy is a weighted average of the different targets of building types and cities in the pool.

This weighted average will be calculated based on net lettable area, which CBI has established as the most appropriate denominator for most building types including offices. Where a different denominator is applied, the weighted average will be calculated based on that alternate denomination. This approach of aggregating buildings in a bond portfolio is known as the Full Aggregation Method.

Condition 1b: Will achieve equivalent performance over the bond term

Requirement: Mitigation Component			
Component	Requirement	Demonstration of compliance	
Mitigation	Condition 1b requires that buildings achieve a certain level of emission intensity reductions over the life of the bond to be eligible for certification. It allows for bond financing of building retrofits where planned reductions in emissions intensity may take place over time.	For portfolios The issuer certifying a portfolio of assets shall; <ul style="list-style-type: none"> • have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the performance requirements under Condition 1a. 	For individual buildings The issuer certifying an individual asset shall; <ul style="list-style-type: none"> • have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the performance requirements under Condition 1a.

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Explanation

The Climate Bonds Initiative is aware not all issuers start from the same set of building assets under management. In order to account for this and remain applicable to all potential issuers as well as incentivise the decarbonisation of building stock through deep retrofits, the criteria have been designed to allow for compliance with the performance threshold over the term of the bond.

An asset or portfolio of assets that do not currently meet the relevant Climate Bond's low carbon trajectory, may be certified as a Term Conformance Bond as long as its carbon performance over the bond's term is equivalent to that of an asset or portfolio or assets performing at or below the low carbon trajectory. There are two options for which an asset or portfolio or assets may be classified as a Term Conformance Bond:

1. Gradual improvement over the bond's term – measured against Climate Bond's city trajectory ("Gradual Improvement – City") (Box 4)
2. Front-loaded improvement in initial years and then maintained performance ("Front- loaded improvement") (Box 4)

These two options are described in detail with the use of examples in the subsequent sections. Both options require annual monitoring and verification. These are best illustrated using the examples described in Box 4.

Box 4. Performance improvement required by Condition 1b

Under Condition 1, an office building for a 10-year bond in Sydney is eligible for certification only if it meets the performance target of 78.2kgCO₂/m² at the start of the bond term (year 2015) and maintains this performance over the remaining term (black horizontal line in Chart 2).

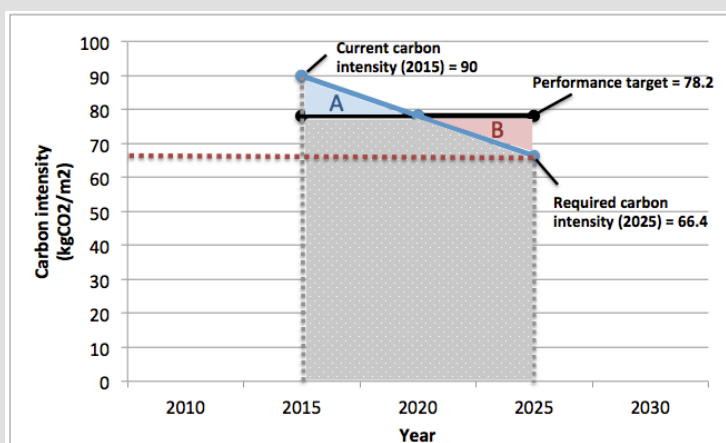


Chart 2: Performance improvement for 10-year Sydney bond example

An office building that currently exceeds this performance target of 78.2kgCO₂/m² can however achieve certification against Condition 1b as long as its performance is improved such that the average performance over the life of the bond is equivalent to 78.2kgCO₂/m² (blue declining line in Chart 2).

It can be observed in Chart 2 that the improving building achieves an aggregate performance (area under the blue line) that is equivalent to that achieved by a building hitting the target of 78.2kgCO₂/m² every year (area under the black line) such that area of triangle A is equivalent to that of triangle B in the chart.

While Chart 2 provides an example of an office building that achieves a constant rate of performance improvement over the bond term, the issuer does not have to follow this trajectory and has the flexibility to decide the timing of the performance improvement. As long as the average performance of the improving building is equivalent to the performance target under Option A of Condition 1, it does not matter when the performance improvement is undertaken.

Another option to demonstrate term conformance is what is known as front loaded emissions performance improvement. Instead of gradual improvement (the previous option), our asset portfolio can front-load its carbon improvement in the initial five years and maintain that carbon intensity over the remaining 15 years.

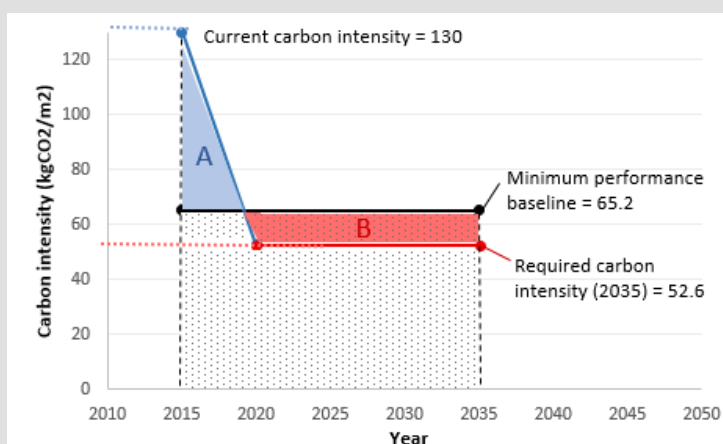


Chart 3: Performance improvement for 20-year Sydney bond example

To achieve the same carbon performance (over the bond's term) as the minimum performance portfolio, our asset portfolio has to achieve a carbon intensity of 52.6kg CO₂/mw in five years (Year 2020 assuming the bond is issued in Year 2015) and maintain that over the remaining term of the bond.

The carbon intensity target of 52.6 kgCO₂/m² calculated such that the area in area A is equivalent to the area in area B in Chart 3 (so that the carbon performance of our asset portfolio is equivalent to that of the minimum performance portfolio over the bond's term).

Application for a portfolio of buildings

An issuer seeking certification will most likely have a portfolio of buildings covering different building types in different cities. The performance target that the issuer on a portfolio basis will have to satisfy is a weighted average of the different targets of building types and cities in the pool.

This weighted average will be calculated based on area, which CBI has established as the most appropriate denominator for most building types including offices. Where a different denominator is applied, the weighted average will be calculated based on that alternate denomination. This approach of aggregating buildings in a bond portfolio is known as the Full Aggregation Method. It is applied when emissions performance data for buildings in a city are available to establish emissions performance trajectories.

Condition 2: Achieves a CBI-approved proxy

Requirement: Mitigation Component			
Component	Requirement	Demonstration of compliance	
Mitigation	<p>The asset must achieve a pre-approved CBI-approved proxy, relevant to the location of the asset.</p> <p>See list of approved proxies</p> <ul style="list-style-type: none"> • Commercial • Residential 	<p>For portfolios</p> <p>The issuer certifying a portfolio of assets shall;</p> <ul style="list-style-type: none"> • List of all assets in the portfolio and the corresponding Climate Bonds approved proxy(s) leveraged 	<p>For individual buildings</p> <p>The issuer certifying an individual asset shall;</p> <ul style="list-style-type: none"> • The name of the Climate Bonds approved proxy used

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Explanation

In the absence of emissions performance data, CBI will establish “proxies” for buildings by leveraging existing instruments such as building standards, codes, and rating schemes. Examples include Europe’s Energy Performance Certificates, Minimum Energy Performance Standards, or third-party schemes.

Issuers seeking to apply other instruments will need to perform similar statistical analysis on their proposed proxies to demonstrate to CBI the ability of proxies to position buildings in the top 15 per cent and for how long this proxy remains representative of this threshold. CBI encourages issuers to propose alternative proxies and have established guidance for issuers wishing to undertake the statistical work. CBI will also undertake its own efforts to establish proxies for priority investment markets. The most up-to-date list of CBI-approved proxies is available on the [website](#).

Limitation on bond term

As Condition 2 is meant to serve as an interim solution until emissions performance data becomes available, a limit is placed on the term of bonds certified against this option. The bond term is capped at 6 years.

Application for a portfolio of buildings

An issuer seeking bond certification will most likely have a portfolio of different buildings. To be certified against Condition 2, each building in the issuer's portfolio must satisfy the CBI-approved proxy. This is known as the Simple Aggregation Method whereby each building included in the pool must be compliant in its own right.

3.3. Pathway 2: Relative Performance Improvement

Bond issuers have two options to establish compliance with the relative performance improvement:

- **Condition 3** – Quantitative Improvement: Achieves a retrofit improvement in emissions intensity against pre-retrofit baseline

Condition 3: Achieves a retrofit improvement in emissions intensity against a pre-retrofit baseline

Requirement: Mitigation Component			
Component	Requirement	Demonstration of compliance	
Mitigation	<p>The asset must achieve a post retrofit upgrade of 30-50% dependent on the term of the bond.</p> <p>It allows for bond financing of building retrofits where planned reductions in emissions intensity may take place over time.</p>	<p>For portfolios</p> <p>The issuer certifying a portfolio of assets shall;</p> <ul style="list-style-type: none"> • have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the upgrade performance requirements determined by the term of the bond • report pre-retrofit emissions intensity • report post-retrofit emissions intensity • report percent improvement achieved 	<p>For individual buildings</p> <p>The issuer certifying an individual asset shall;</p> <ul style="list-style-type: none"> • have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the upgrade performance requirements determined by the term of the bond • report pre-retrofit emissions intensity • report post-retrofit emissions intensity • report percent improvement achieved

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Certifiable

Explanation

Certifications requires that a contract or agreement already be in place with a contractor to undertake the emissions reduction works.

Condition 3 allows the certification of projects that seek improvement in emissions intensity through the application of energy efficiency measures and fuel switching technologies that relate to the built environment (e.g. LED lights, heat pumps, micro combined heat and power, renewable micro-generation, etc.).

The methodology is agnostic to types of measures and technologies. As long as the measures and technologies to be applied in the project lead to the required improvement in emissions intensity, the project is eligible for certification.

A minimum improvement in emissions intensity of 50% is required for bond terms of 30 years and 30% for bond terms of 5 years. Between 5 years and 30 years, the minimum improvement required is derived based on the linear trajectory between 30% for 5 years and 50% for 30 years. For bond terms below 5 years, the minimum improvement is equivalent to that required for 5-year bonds (30%). These requirements are depicted in Box 5 below.

Issuers must be able to quantify to CBI the performance improvement of upgrades or retrofits. [Confirm level of detail required in contract or agreement and whether there is a standardised framework that can be leveraged]

Box 5. Requirements on minimum improvement in emissions intensity

The 50% minimum improvement for 30 years has been derived from analysis of data in the Australian cities of Sydney and Melbourne, along with consideration of local rating tools in both Australia and the USA.

In Australia, a carbon emissions reduction of approximately 50% is required to move from a 2-star NABERS rating (below average performance) to a 4.5-star NABERS rating (very good performance). Similarly, Energy Star (based on whole building data) in the US requires a 51% carbon emissions reduction to move from the bottom 15th percentile to top quartile and a 53% carbon emissions reduction to move from median performance to top 5th percentile.

The 30% minimum improvement for 5 years has been established based on industry practice for Energy Service/Saving Companies (ESCO) contracts, where best practice tends towards a 30% performance improvement.

For bond terms between 5 years and 30 years, the minimum improvement required is derived based on the linear trajectory between 30% for 5 years and 50% for 30 years (depicted in Chart 2 below). Bond terms below 5 years are expected to deliver a 30% performance improvement and no less.

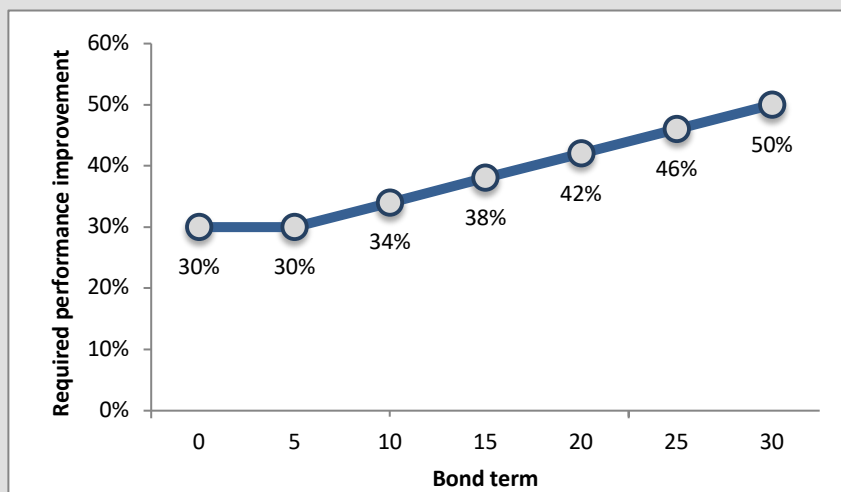


Chart 2: Required minimum improvement for different bond terms

Application for a portfolio of projects

An issuer seeking bond certification will most likely have a portfolio of different projects.

Such an issuer with multiple projects can aggregate them into one portfolio and it is the aggregated portfolio that must satisfy the required minimum improvement in emissions rather than each project included in the pool having to comply in its own right.

Appendix I: TWG members

The Technical Working Group (TWG) is a group of technical and industry experts in the buildings sector, who have been convened by CBI to develop the necessary and appropriate Criteria for the Low Carbon Buildings sector.

Having established and launched the Low Carbon Buildings Criteria in 2014, the TWG now focuses its efforts on refining and expanding the Criteria to increase its ease of use as well as its application by bond issuers globally.

List of TWG members for first draft of Criteria:

- Asari Efiog, Principal Product Development Manager, Climate Change, European Bank of Reconstruction and Development
- Bart Adams, Principal Consultant, DNV Environmental Services
- Ché Wall, Director, Flux Consultants
- Hilary Elliott, Operations Manager, Centre for Carbon Measurement, National Physical Laboratory UK
- Chris Pyke, Vice-President Research, U.S. Green Building Council
- Jonathan Pressman, Vice-President, Environmental Markets Markit
- Robert Tromop, Sustainable Buildings, International Energy Agency (IEA)
- Matthew Deegan, Consultant, Balmain Developments
- Niall McCarthy, Executive Director, Eureka Funds Management
- Oliver Rapf, Executive Director, Buildings Performance Institute Europe
- Peter Sweatman, Chief Executive, Climate Strategy & Partners
- Thomas Boermans, Unit Manager (Buildings), Ecofys
- Matters Kopp, Head of Low Carbon Business and Finance Sector, WWF
- Bettina Medway, Deputy Treasurer, California State Treasurer's Office
- Brian Rice, Investment Manager, CalSTRS
- Kirsten Spalding, California Director, Investor Network on Climate Risk, CERES
- Nigel Topping, Chief Innovation Officer, Carbon Disclosure Project
- Simon Brooker, Clean Energy Finance Corporation
- Jacob Holcomb, Ecofys
- Yamina Saheb, Senior Scientific and Policy Officer, European Commission
- Peter Margruber, Siemens
- Tooraj Arvajeh, Senior Consultant, Arup

List of TWG members as of 7 Dec 2016:

- Panama Bartholomy, Director, [Investor Confidence Project](#) (Environmental Defence Fund)
- Tatiana Bosteels, Head of Responsible Property Investment, [Hermes](#) Real Estate
- Chris Botten, Programme Manager, [Better Buildings Partnership](#)
- Simon Brooker, Executive Director, [Clean Energy Finance Corporation](#) (CEFC)
- Jorge Chapa, Head of Market Transformation, [Green Building Council of Australia \(GBCA\)](#)
- Robert Cohen, Technical Director, [Verco](#)
- Annie Degen, Special Adviser Long Term Finance, [UNEP Finance Initiative](#)
- John Dulac, Buildings Sector Lead – Energy Technology and Policy, [International Energy Agency \(IEA\)](#)
- Prashant Kapoor, Principal Industry Specialist, [International Finance Corporation](#)
- Johannes Kreissig, Vice President Building & Construction, [thinkstep](#)
- Loïs Moulas, CEO, [Observatoire de l'Immobilier Durable](#)
- Oliver Rapf, Executive Director, [Buildings Performance Institute Europe](#)
- Alex Rathmell, Director, [EEVS Insight](#)
- Victor Rojas, Project Lead, [Investor Confidence Project](#) (Environmental Defense Fund)
- Peter Sweatman, Chief Executive, [Climate Strategy & Partners](#)
- Teun Van Den Dries, Founder & CEO, [GeoPhy](#)

- Ché Wall, Director, Flux Consultants
- Alan Yates, Technical Director – Sustainability, BRE Group
- Paolo Zancanella, Officer, European Commission (Joint Research Centre)