

Scope 3 Emissions

Measuring Impact:
why Scope 3 deserves our
attention more than ever

Discussion Paper

June 2024



Acknowledgment of Country

We at the Green Building Council of Australia recognise the Traditional Custodians of Country throughout Australia. We pay our respects to Elders past and present, and recognise their continuous connection to lands, skies and waters.

Australia's First People are the world's oldest continuous living culture, and Australia's first practitioners of sustainability. They have shaped the built environment for millennia with purpose-built architecture that responds to the unique character and challenges of the landscape. The Green Building Council of Australia recognises the power of the built environment to shape a future that cares for both people and planet. The choices we make today matter for the future of tomorrow.

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Established in 2002, Green Building Council of Australia (GBCA) is the nation's authority on sustainable buildings, communities and cities. Our vision is for healthy, resilient and positive places for people. Our purpose is to lead the sustainable transformation of the built environment. GBCA represents more than 550 individual companies with a combined annual turnover of more than \$46 billion.

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The Clean Energy Finance Corporation (CEFC) is an experienced specialist investor with a deep sense of purpose: we're Australia's 'green bank', investing in our transition to net zero emissions by 2050. With access to more than \$30 billion from the Australian Government, we're backing economy-wide decarbonisation, from renewable energy and natural capital to energy efficiency, alternative fuels and low carbon materials. In parallel, we're focused on transforming our energy grid, backing sustainable housing and supporting the growth of our climate tech innovators. We collaborate with co-investors, industry and government, recognising the urgency of the decarbonisation task. We also invest with commercial rigour, aiming to deliver a positive return across our portfolio.

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Change log

Versions	Date	Description
DRAFT 1	10/05/2024	<ul style="list-style-type: none"> Distribution for comment
DRAFT 2	18/06/2024	<ul style="list-style-type: none"> Distribution for final comment
FINAL DRAFT	21/06/24	<ul style="list-style-type: none"> Final CEFC comments addressed Distribution for final exec review
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Purpose of this discussion paper

This discussion paper has been created to:

- Help the real estate sector prepare for mandatory climate disclosure by gaining a better understanding of the Greenhouse Gas Protocol's (GHG Protocol) Corporate Value Chain Scope 3 Accounting and Reporting Standard
- Define a minimum reporting boundary for scope 3 emissions based on financial control and reporting
- Begin a discussion around whether organisations should also report on critical scope 3 emissions that they influence, but which are beyond their direct financial control, such as the embodied emissions from tenant fitouts and unregulated tenant energy consumption emissions

Until now, there has been limited sector-specific guidance on how real estate companies can interpret and apply the GHG Protocol Scope 3 Standard to report on scope 3 emissions. While there are many tools that apply at a project level, these don't necessarily improve sector wide understanding. In addition, the GHG Protocol Scope 3 Standard has a different emphasis – requiring companies to report their entire annual scope 3 emissions, rather than only scope 3 emissions per asset.

This discussion paper:

- Reviews the various scope 3 emissions frameworks and standards currently available, and assesses how they apply to financial reporting
- Demonstrates how project-level analysis can be translated and applied to financial reporting
- Provides a common interpretation and approach to scope 3 categories relevant to the real estate sector, as well as an interpretation of minimum boundaries, to help companies understand which activities should be accounted for in their scope 3 reporting

This discussion paper posits that the most critical scope 3 emissions categories relevant for real estate companies' financial reporting are:

- Category 1: Purchased Goods and Services – Purchased products and services for a building's construction and operations

- Category 11: Use of Sold Products – The emissions from regulated services in operation from sold buildings
- Category 13: Downstream Leased Assets – The emissions from regulated services in operation from leased buildings

This paper also outlines several scenarios to address buildings sold, leased, developed, or built across these categories. It also addresses distinct lease types, as these impact how emissions should be considered.

This paper also posits that a significant part of the real estate sector's scope 3 emissions come from embodied emissions from tenant fitouts and emissions from tenants' unregulated energy consumption. However, these emissions do not fit within the GHG Protocol Scope 3 Standard categories, as they are typically beyond the reporting company's financial control.

This paper argues that real estate companies can substantially influence tenant fitout emissions, and therefore should report on these emissions in non-financial reporting. This would enable greater transparency regarding emissions in the real estate sector, and recognise the contribution of fitouts to emissions in the real estate sector.

GBCA is seeking contribution to the discussion about reporting on scope 3 emissions for the real estate sector. Feedback on this discussion paper will result in a guidance document being developed in 2025 for reporting scope 3 emissions in the Australian real estate sector.

Discussion questions

Questions 1–3 relate to Section 2 of this Discussion Paper

Questions 4–7 relate to Section 6 of this Discussion Paper

Questions 8–10 relate to Section 7 of this Discussion Paper

1. Do you currently report on your scope 3 emissions?

2. Which scope 3 categories do you include in your reporting?

3. Do you report on any other emissions beyond those required by the GHG Protocol? Please specify.

4. Do you agree that Scope 3 Categories 1, 11 and 13 are the most commonly highly relevant Scope 3 emissions categories for real estate companies? Do you have any comments on this?

5. Do you agree with the interpretation of the minimum boundary of 'Category 1 - Purchased goods and services' for the real estate sector? Do you have any comments on this?

6. Do you agree with the interpretation of the minimum boundary of 'Category 11 – Use of sold products' for the real estate sector? Do you have any comments on this?

7. Do you agree with the interpretation of the minimum boundary of 'Category 13 – Downstream leased assets' for the real estate sector? Do you have any comments on this?

8. Do you agree that landlords should report on embodied emissions from tenant fitouts and unregulated tenant energy consumption emissions, in non-financial reporting? Do you have any comments on this?

9. Are there any other scope 3 emissions which you believe you have influence over beyond those covered in the categories in the GHG Protocol Scope 3 Standard? Please specify.

10. Do you currently, or do you plan to, report on scope 3 emissions beyond those covered in the categories in the GHG Protocol Scope 3 Standard? Please explain why/why not.

**Contribute to the discussion
about reporting on scope 3
emissions in the real estate
sector**

Answer our discussion questions about scope 3 emissions in the real estate sector [here](#).

The GBCA is seeking contribution to the discussion about reporting on scope 3 emissions for the real estate sector.

Feedback on this discussion paper will result in a guidance document being developed for reporting scope 3 emissions in the Australian real estate sector in 2025.



Contents of this discussion paper

[1. Introduction](#)

This section provides context around why scope 3 emissions matter and why we need better scope 3 emissions reporting. It also introduces financial materiality vs impact materiality and outlines what standards and policies are driving action to reduce scope 3 emissions.

[2. Understanding emissions scopes](#)

This section provides definitions of what the three scopes of emissions are and describes the 15 scope 3 categories per the GHG Protocol Scope 3 Standard. It also explains what the GHG Protocol is and what the GHG Protocol Scope 3 Standard is.

[3. Emissions reporting in real estate](#)

This section describes the real estate sector corporate value chain and introduces the meaning of production and non-production related emissions.

[4. Emissions in real estate](#)

This section explains that real estate/built environment emissions are generally considered through the lens of operational emissions vs embodied emissions, and explains how asset emissions may be mapped against scopes.

[5. Measuring & reporting scope 3 in real estate](#)

This section explains how to translate project emissions to entity emissions reporting. It also introduces the GHG Protocol relevance criteria, minimum boundaries, and how emissions profiles change based on real estate activity.

[6. Critical scope 3 categories for real estate sector financial reporting](#)

This section describes the key scope 3 categories per the GHG Scope 3 Standard that apply to real estate, why they are important, and how to measure these emissions.

[7. Addressing the gaps in reporting](#)

This section describes the key scope 3 categories per the GHG Scope 3 Standard that apply to real estate, why they are important, and how to measure these emissions.

[8. Next steps](#)

This section includes the link to the discussion questions, and outlines next steps.

1

Introduction



On the need for better scope 3 accounting and reporting

1. More details on upstream vs downstream scope 3 emissions can be found on p18-19.

In 1998, the NSW Government introduced a revolutionary program for the built environment: NABERS; the National Australian Built Environment Rating System. Its purpose was simple, to improve the efficiency of buildings by measuring and disclosing energy consumption in a building in a standardised manner.

A few short years later, the scheme was adopted nationally, and its success is unquestionable. NABERS has transformed the market. It has encouraged more energy efficient buildings and created a race to the top, where building owners are incentivised to improve their buildings as investors and tenants understand what they are getting.

NABERS' success can be attributed to many things, but none is more important than a key decision made at its inception. When being set up, a decision was made to separate tenant energy, which is not relevant to the running of the building, from the building's energy consumption from regulated services. In other words, NABERS was set up to measure what matters.

Over the past few years, the conversation on climate action has shifted to scope 3 emissions. Commonly referred to as most companies' largest source of emissions, they are those that arise because of emissions from purchases (upstream) or those where a monetary benefit was derived (downstream).¹ Scope 3 emissions are always the result of someone else's decision – the emissions from flying, buying materials made by someone else, or the emissions from someone that bought or leased a product or service you sell.

Managing scope 3 emissions can be overwhelming – theoretically speaking, scope 3 emissions are the emissions of the entire economy. Thankfully, a standard exists, The Corporate Value Chain (Scope 3) Accounting and Reporting Standard (GHG Protocol Scope 3 Standard), which is a supplement to the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol Corporate Standard). This protocol is used by companies or entities to assess the relevance and significance, and calculate, all potential emissions in the scope 3 boundary to encourage them to act and reduce them as far as practicable. It is not intended to highlight all potential emissions – just those that are significant (material), and within a reasonable sphere of influence (relevant).

The challenge arises when translating the emissions of an asset to a corporate account. Some guidance assists with this, such as that in the GHG Protocol Product Standard, along with guidance from several other entities, however the guidance is not consistent, and in some cases, may not be appropriate for the Australian conditions.

And the challenge of course is, if we aren't careful, is that we may not actually be addressing the critical emission sources in our built environment; we may not measure what matters.

Meaningful scope 3 emissions accounting and reporting

Reporting based on Financial Materiality vs Impact Materiality

2. Source: [gri-perspective-the-materiality-madness.pdf](#) (globalreporting.org)

Meaningful scope 3 emissions accounting and reporting should help companies understand their full value chain emissions impact to focus company efforts on the greatest emissions reduction opportunities, leading to more sustainable decisions about companies' activities and the products they buy, sell, and produce.

When it comes to the real estate companies, scope 3 emissions reports are focused on financial control, aligned with the GHG Protocol. However, when considering the real impact of emissions from the built environment, some material emissions may be missed.

This is the difference between a single materiality approach (financial) and a double materiality approach (financial + impact).

Financial materiality: Information on economic value creation at the level of the reporting company for the benefit of investors (shareholders).

Impact materiality: Information on the reporting company's impact on the economy, environment and people for the benefit of multiple stakeholders, such as investors, employees, customers, suppliers and local communities.²

This discussion paper argues that organisations should account for and report on not just the financially relevant scope 3 emissions which are within their direct financial control, but also other significant sources of scope 3 emissions that they could substantially influence, such as the embodied emissions from tenant fitouts, and emissions from tenants' unregulated energy consumption.

Financial reporting – financial materiality

The boundaries for assessing and reporting Financial Materiality should be aligned to financial consolidation methodologies. Relevant scope 3 emission categories should be reported per the GHG Protocol Scope 3 Standard.

VS

Non-financial reporting – impact materiality

The boundaries for assessing and reporting Impact Materiality should be aligned to stakeholder expectations/frameworks, and look to capture other impacts that are beyond the financial control of the reporting company.

Why do scope 3 emissions matter?

International agreements, such as the Paris Agreement, set ambitious targets to limit global warming. Accurate and consistent GHG emissions reporting is essential for tracking progress towards these goals. It allows nations and corporations to evaluate how well they are doing in reducing emissions and adhering to their climate commitments.

Investors are increasingly aware of the risks associated with climate change, including regulatory risks, physical risks, and the risk of stranded assets. They demand transparency in environmental reporting to assess the sustainability and future viability of their investments. Companies that provide clear and verifiable GHG emissions data can attract investment more easily and potentially at a lower cost of capital.

Many governments globally are tightening environmental regulations and introducing carbon pricing mechanisms, such as carbon taxes or cap-and-trade systems. Accurate GHG reporting is critical for organisations to comply with these regulations. Non-compliance can result in fines, sanctions, and a damaged reputation.

Companies are increasingly held accountable not only for their direct emissions but also for their supply chain emissions. Robust GHG reporting is necessary to manage and reduce emissions throughout the supply chain. This can lead to improved supply chain resilience and efficiency, as well as better relationships with suppliers and customers who are also committed to reducing their carbon footprints.

Demonstrating environmental responsibility can significantly enhance a company's reputation. This can lead to improved customer loyalty, better employee engagement, and increased attractiveness to potential hires who prefer to work for environmentally responsible employers.

Scope 3 emissions usually account for most of a real estate company's total emissions, and they often form a critical part of their value chain. Even though they're indirect emissions, they can often still be significantly influenced by the company's decision-making.

Key to understanding scopes is that they are an accounting framework – While they can be added together to a global number, they should not be mixed. That is, on a journey to eliminating emissions, each should be driven to zero.

What existing standards and policies are driving action to reduce scope 3 emissions?

3. See [Mandatory climate-related financial disclosures - Policy position statement \(treasury.gov.au\)](#) for more details.

Currently, the GHG Protocol Scope 3 Standard is referred to in a range of different standards and initiatives, outlined below. These reporting standards and guides all aim to help real estate companies reduce emissions and support their project and corporate reporting.

Australian Government mandatory climate-related financial disclosures

The Australian Government released draft climate disclosure bills that will require large entities (with varying definitions of applicability over four years) to report on their emissions. Within the policy position (at the time of writing of this report) there is a requirement that scope 3 emissions be included after the first reporting period.³

The policy position acknowledges the difficulty of reporting on scope 3 emissions and provides some time-limited liability to allow for companies to ensure appropriate reporting can be developed.

The Global Real Estate Sustainability Benchmark (GRESB)

GRESB is an international, industry-led organisation that provides actionable and transparent ESG benchmarking for the real estate sector. It assesses sustainability performance across assets and portfolios globally, and publishes annual aggregated benchmark data showing the ESG state of the industry. GRESB's benchmarking methodology is based on industry best practices and sustainability reporting standards, including the Global Reporting Initiative (GRI) and the Principles for Responsible Investment (PRI).

The Science Based Targets Initiative (SBTi)

The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). It provides a framework for companies to set greenhouse gas emissions reduction targets – aligning with the Paris Agreement's goals of limiting global warming to below 2 degrees above pre-industrial levels. SBTi has a range of sector specific emissions methodologies to support best available data and ambitious targets.

Partnership for Carbon Accounting Financials (PCAF)

The Partnership for Carbon Accounting Financials is an organization dedicated to developing and promoting carbon accounting standards for financial institutions.

PCAF's Accounting and Reporting of GHG Emissions from Real Estate Operations involves establishing methodologies for measuring and reporting greenhouse gas (GHG) emissions associated with real estate activities. Within the standard, scope 3 emissions need to be accounted for, including tenant operating emissions and the building's embodied emissions.

International Financial Reporting Standards (IFRS) S2 / The Sustainability Accounting Standards Board (SASB) Standards

SASB Standards provide industry-specific guidance around the disclosure of companies' environment, social and governance (ESG) performance. From August 2022, the SASB was consolidated under the IFRS Foundation, which established the first International Sustainability Standards Board (ISSB). The ISSB is developing standards that will result in a high-quality, comprehensive global baseline of sustainability disclosures focused on the needs of investors and the financial markets. The most recent draft is the IFRS S2 Climate-related Disclosure, which builds on the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).

2

Understanding emissions scopes



What is the GHG Protocol?

4. Source: [Corporate Standard | GHG Protocol](#)

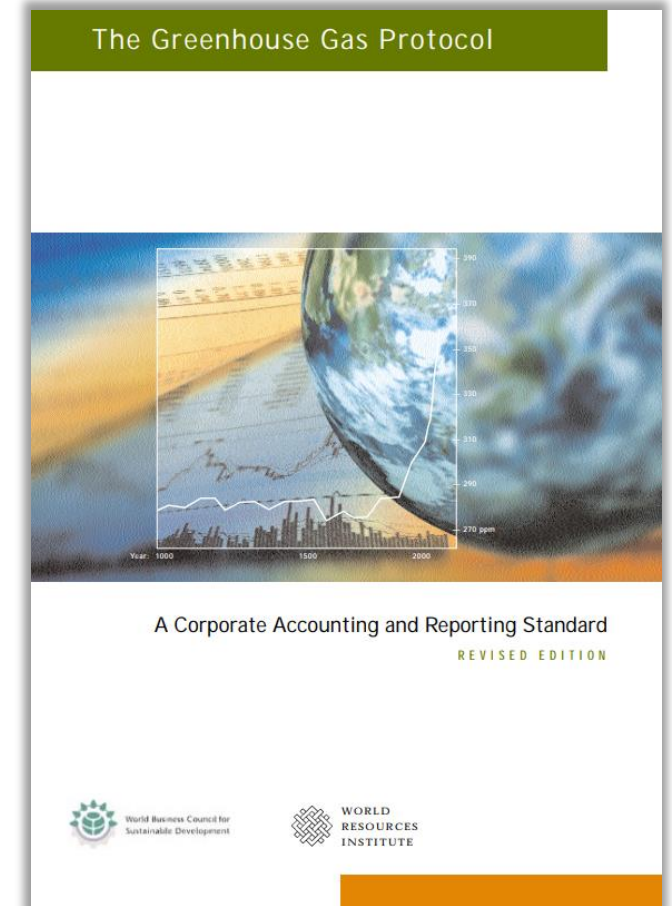
The Greenhouse Gas Protocol (GHG Protocol) is a multistakeholder partnership of businesses, non-governmental organisations (NGOs), governments, and others convened by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The mission of the GHG Protocol is to develop internationally accepted greenhouse gas accounting and reporting standards and tools, and to promote their adoption in order to achieve a low emissions economy worldwide.³

Launched in 1998, the GHG Protocol addresses the need for an international standard for corporate GHG accounting and reporting. It is framework agnostic, designed to ensure consistency and transparency in emissions reporting.⁴

It is the GHG Protocol which divides a company's emissions into three different scopes.

It consists of seven standards that provide a framework for businesses, governments, and other entities to measure and report their GHG emissions:

- Corporate Standard: provides requirements and guidance for entities that are preparing a corporate-level GHG emissions inventory (right)
- GHG Protocol for Cities: provides a robust framework for accounting and reporting city-wide greenhouse gas emissions
- Mitigation Goal Standard: provides guidance for designing national and subnational mitigation goals and for assessing and reporting progress toward goal achievement
- Corporate Value Chain (Scope 3) Standard: allows companies to assess their entire value chain emissions impact and identify where to focus reduction activities
- Policy and Action Standard: provides a standardized approach for estimating the greenhouse gas effect of policies and actions
- Product Standard: can be used to understand the full life cycle emissions of a product and focus efforts on the greatest GHG reduction opportunities
- Project Protocol: used for quantifying the greenhouse gas benefits of climate change mitigation projects



What are the three scopes of emissions?

Table 2.1. (right)
Overview of the scopes, adapted from Table 5.1 from [The GHG Protocol Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)

The GHG Protocol organises emissions into three scopes for accounting and reporting purposes. Direct emissions are included in scope 1, and indirect emissions are included in scope 2 and scope 3. While a company has control over its direct emissions, it has influence over its indirect emissions.

Emissions type	Scope	Definition	Example
Direct emissions Emissions from sources that are owned or controlled by the reporting company.	Scope 1	Emissions from operations that are owned or controlled by the reporting company.	Emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc; emissions from chemical production in owned or controlled process equipment.
	Scope 2	Emissions from the generation of purchased or acquired electricity, steam, heating or cooling consumed by the reporting company.	Use of purchased electricity, steam, heating, or cooling.
Indirect emissions Emissions that are a consequence of the activities of the reporting company, but occur at sources owned or controlled by another company.	Scope 3	Other indirect emissions (not included in scope 2), that occur in the value chain of the reporting company because of the company's activities but come from sources they do not own or control.	Production of purchased products, transportation of purchased products, or use of sold products.

A complete GHG inventory therefore includes scope 1, scope 2, and scope 3. Scope 1, scope 2, and scope 3 are mutually exclusive for the reporting company, such that there is no double counting of emissions between the scopes. In other words, a company's scope 3 inventory does not include any emissions already accounted for as scope 1 or scope 2 by the same company. Combined, a company's scope 1, scope 2, and scope 3 emissions represent the total GHG emissions related to company activities.

The GHG Protocol Scope 3 Standard divides scope 3 emissions into upstream or downstream emissions:

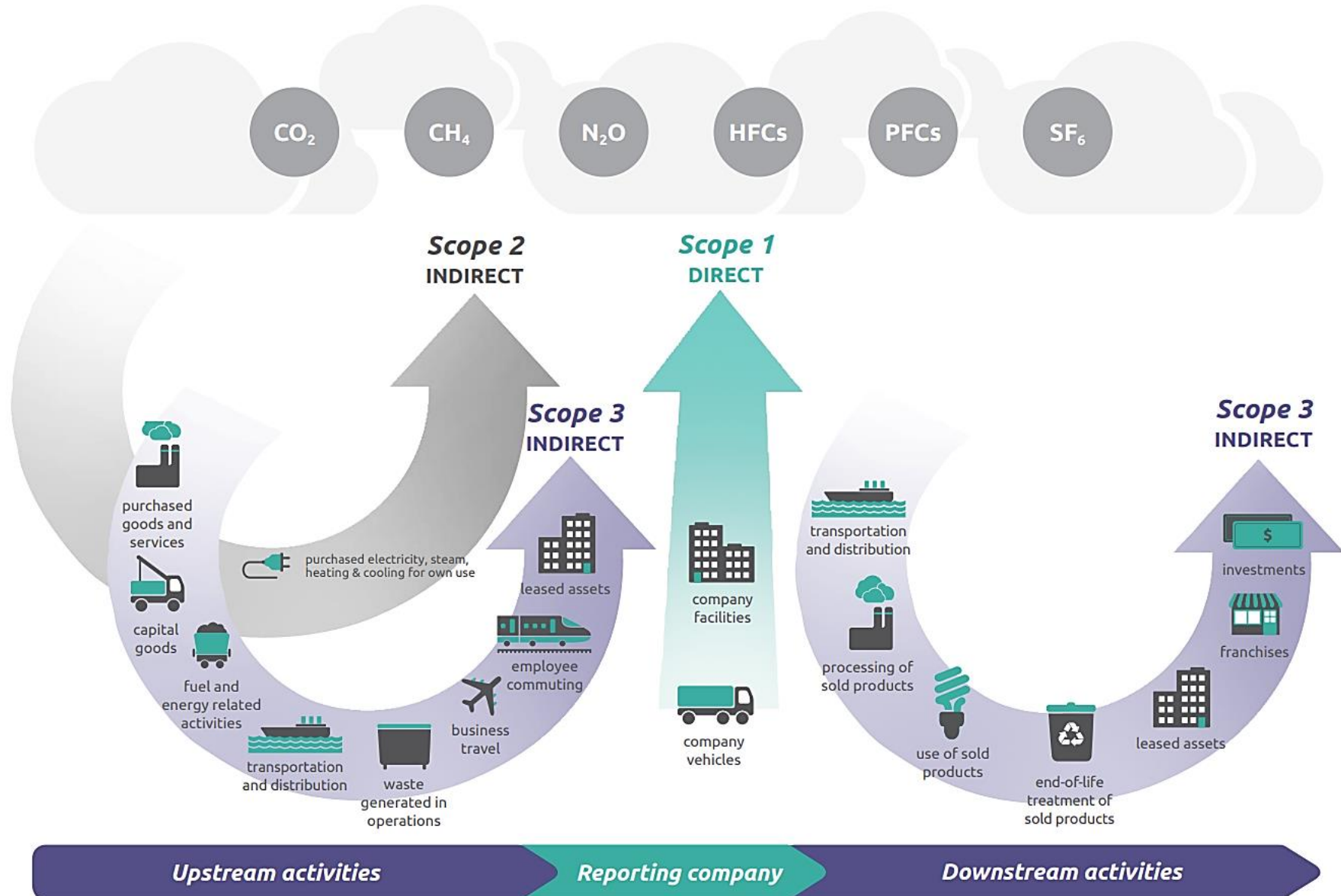
- **Upstream emissions** relate to purchased or acquired goods and services
- **Downstream emissions** relate to sold and leased goods and services

The GHG Protocol Scope 3 Standard also classified scope 3 emissions across 15 categories intended to provide companies with a systematic framework to organise, understand, and report on the diversity of scope 3 activities within a corporate value chain. Category descriptions per the GHG Protocol Scope 3 Standard are included on p18-19.

Companies are required to report scope 3 emissions by scope 3 category. Any scope 3 activities not captured by the list of scope 3 categories may be reported separately.

What are the three scopes of emissions?

Figure 2.1. (right)
 Overview of GHG Protocol
 Scopes and emissions
 across the value chain.
 Source: The GHG Protocol
 Corporate Value Chain
 (Scope 3) Accounting and
 Reporting Standard



What is the GHG Protocol Corporate Value Chain Scope 3 Standard?

5. Source: [The GHG Protocol Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)

The GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (GHG Protocol Scope 3 Standard) allows companies to assess their entire value chain emissions impact and identify where to focus reduction activities.

An effective corporate climate change strategy requires a detailed understanding of a company's GHG impact. A corporate GHG inventory is the tool to provide such an understanding. It allows companies to take into account their emissions-related risks and opportunities and focus company efforts on their greatest GHG impacts.

Until recently, companies have focused their attention on emissions from their own operations. But increasingly companies understand the need to also account for GHG emissions along their value chains and product portfolios to comprehensively manage GHG-related risks and opportunities.

Through the development of the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, the GHG Protocol has responded to the demand for an internationally accepted method to enable GHG management of companies' value chains.

This standard presents accounting and reporting requirements to help companies prepare a GHG inventory that represents a true and fair account of their scope 3 emissions. Standardised approaches and principles are designed to increase the consistency and transparency of scope 3 inventories.

This standard is designed to account for the emissions generated from corporate value chain activities during the reporting period (usually a period of one year), and covers the six main greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

Use of this standard is intended to enable comparisons of a company's GHG emissions over time. It is not designed to support comparisons between companies based on their scope 3 emissions. Differences in reported emissions may be a result of differences in inventory methodology or differences in company size or structure. Additional measures are necessary to enable valid comparisons across companies.⁵



Scope 3 Upstream emissions (categories 1-8)

Upstream emissions:
Indirect GHG
emissions from
purchased or
acquired goods and
services

Upstream

Cat 1. Purchased goods and services

Emissions from the extraction, production, and transportation of goods and services purchased or acquired by the reporting company (not included in Categories 2 - 8)

Cat 2. Capital goods

Emissions from the extraction, production, and transportation of capital goods purchased or acquired by the reporting company (not included in Category 1)

Cat 3. Fuel & energy-related emissions

Emissions from extraction, production, transportation and distribution and transmission losses of fuels and energy used and not within scope 1 and scope 2

Cat 4. Upstream transportation and distribution

Emissions from the transportation and distribution of products purchased by the reporting company between a company's tier 1 suppliers and its own operations (in vehicles and facilities not owned or controlled by the reporting company)

Cat 5. Waste generated in operations

Emissions from the disposal and treatment of waste generated in the reporting company's operations (in facilities not owned or controlled by the reporting company)

Cat 6. Business travel

Emissions from the transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company)

Cat 7. Employee commuting

Emissions from the transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company)

Cat 8. Upstream leased asset

Emissions from the operation of assets leased by the reporting company (lessee) and not included in scope 1 and scope 2 – reported by lessee

Scope 3 Downstream emissions (categories 9-15)

Downstream emissions: Indirect GHG emissions from sold goods and services

Downstream emissions also include emissions from products that are distributed but not sold (i.e., without receiving payment)

Downstream

Cat 9. Downstream transport and distribution

Emissions from the transportation and distribution of products sold by the reporting company between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company)

Cat 10. Processing of sold product

Emissions from the processing of intermediate products sold by downstream companies

Cat 11. Use of sold product

Emissions from end use of goods and services sold by the reporting company in the reporting year

Cat 12. End-of-life treatment of sold products

Emissions from waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life

Cat 13. Downstream leased assets

Emissions from Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor

Cat 14. Franchises

Emissions from operation of franchises in the reporting year, not included in scope 1 and scope 2 – reported by franchisors

Cat 15. Investments

Emissions from the operation of investments (including equity and debt investments and project finance) in the reporting year, not included in scope 1 or 2 emissions

3

Emissions reporting in real estate



Understanding the corporate value-chain

Figure 3.1. (right)
While every company's supply chain will be unique, this graphic reflects the main stages that are common across the real estate sector.

In the real estate sector, there are several key stakeholders that typically make up a value chain – for example, developers and construction companies. The way a stakeholder will report scope 3 emissions (and the degree to which they can influence those emissions) will depend on when and how they're involved in the value chain.

The key stakeholders in a real estate value chain are defined below.

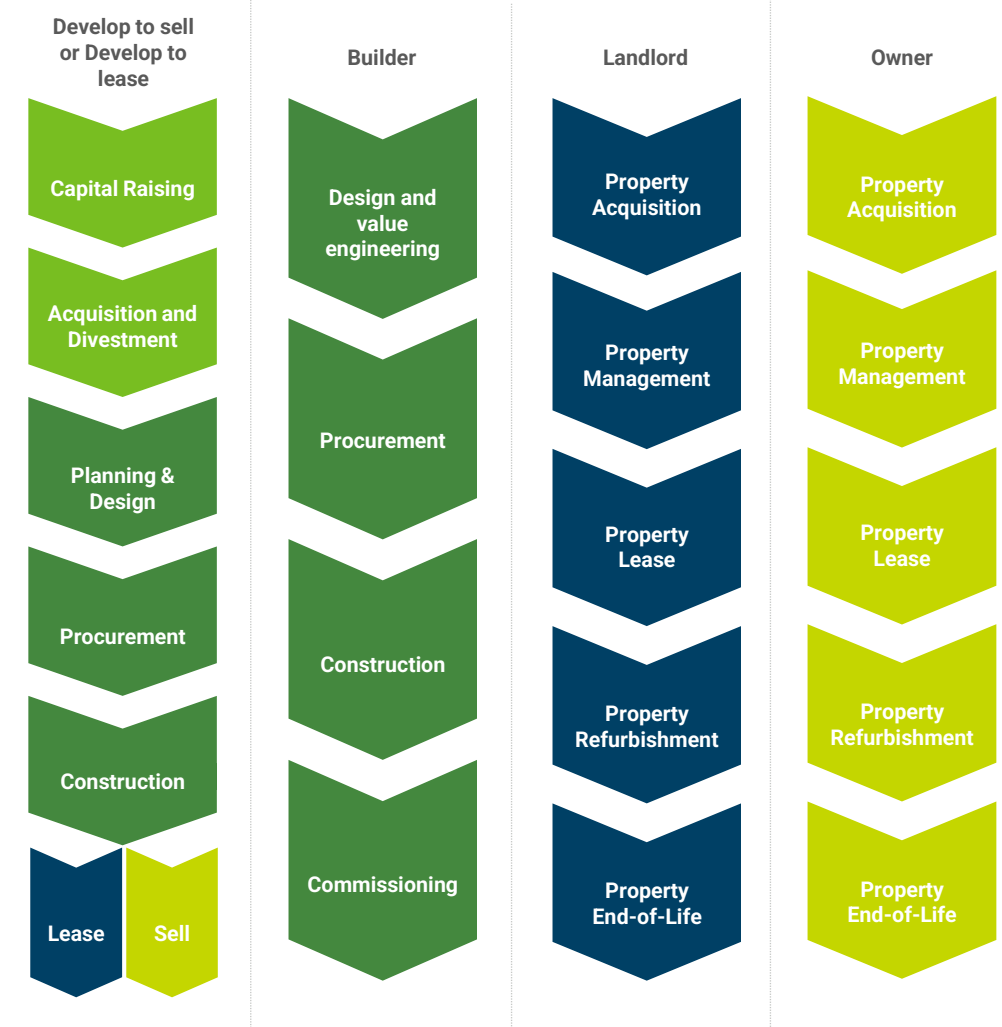
Developers: those involved in capital raising, land acquisition and divestment strategies to support the planning and design of buildings. They do not directly undertake construction. They develop to lease or develop to sell.

Builders: those who undertake construction directly (they may or may not be involved in a project's planning and design). Builders include sub-contractors and third parties, and those involved with the purchase of construction goods and services.

Owners / Landlord: those who own and operate a property, whether it's a single owner occupier (e.g. a residential homeowner) or a landlord who leases spaces within a building.

Tenants: those who lease buildings or spaces within a building. Dependent on the type of lease they hold, they may or may not operate and control parts of the building

Industry Professionals: those who offer professional services (such as design) to developers, builders or owners.



Production and non-production related emissions

Figure 3.2. (right)
This graphic illustrates production and non-production related emissions in more detail.

A company should report any scope 3 emissions caused by activities from which they make an economic profit.

For large companies, these emissions tend to fall into two categories:

Production related: emissions related to the actual products companies put out into the world (generally via their business units). In the case of real estate, this includes the construction, operation and disposal of buildings.

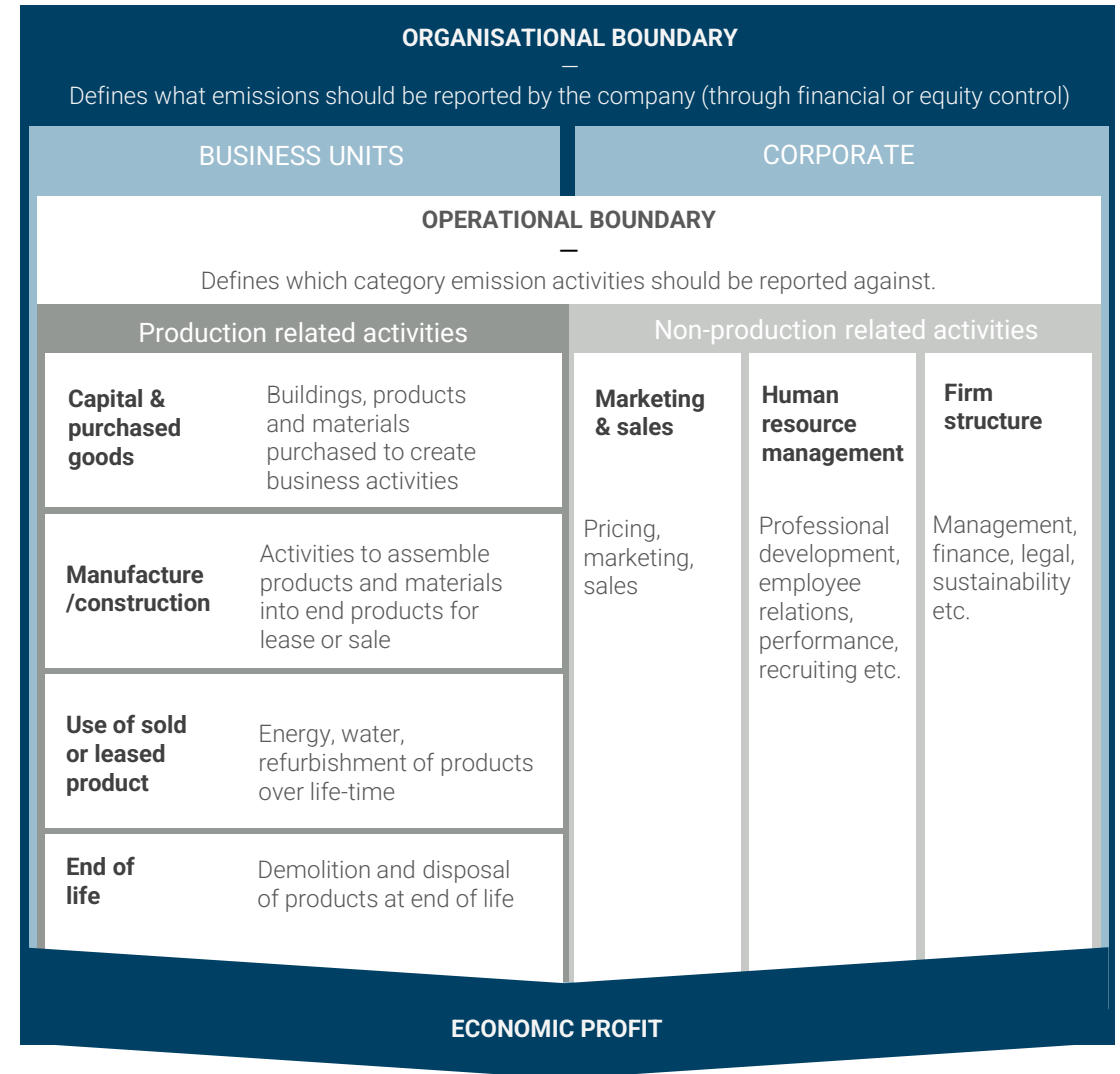
Non-production related: emissions that relate to corporate business activities that don't directly generate a profit. For real estate, this includes things like HR, marketing and management activities.

Whether scope 3 emissions are deemed production-related or non-production related comes down to the company's value-chain.

“

If a company derives economic profit from a certain activity, it should take ownership for any GHG emissions from that activity”

GHG Protocol, Corporate Accounting & Reporting Standard, Revised Edition



4

Emissions in real estate

Scope 3 Emissions – Measuring Impact: why Scope 3 deserves our attention more than ever – Discussion Paper



Curtin University - B431 Halls of
Residence, WA. Curtin University, 5 Star
Green Star Design & As Built v1.2

Understanding asset emissions

In the real estate sector, we are accustomed to assessing emissions at a project or asset level – usually through the lens of operating and embodied emissions. But what are these emissions, and how do they translate to the distinct emissions scopes 1, 2 & 3?

Buildings globally divide their emissions profile into two main categories: operating emissions and embodied emissions.

Operating emissions for a building are considered those related to:

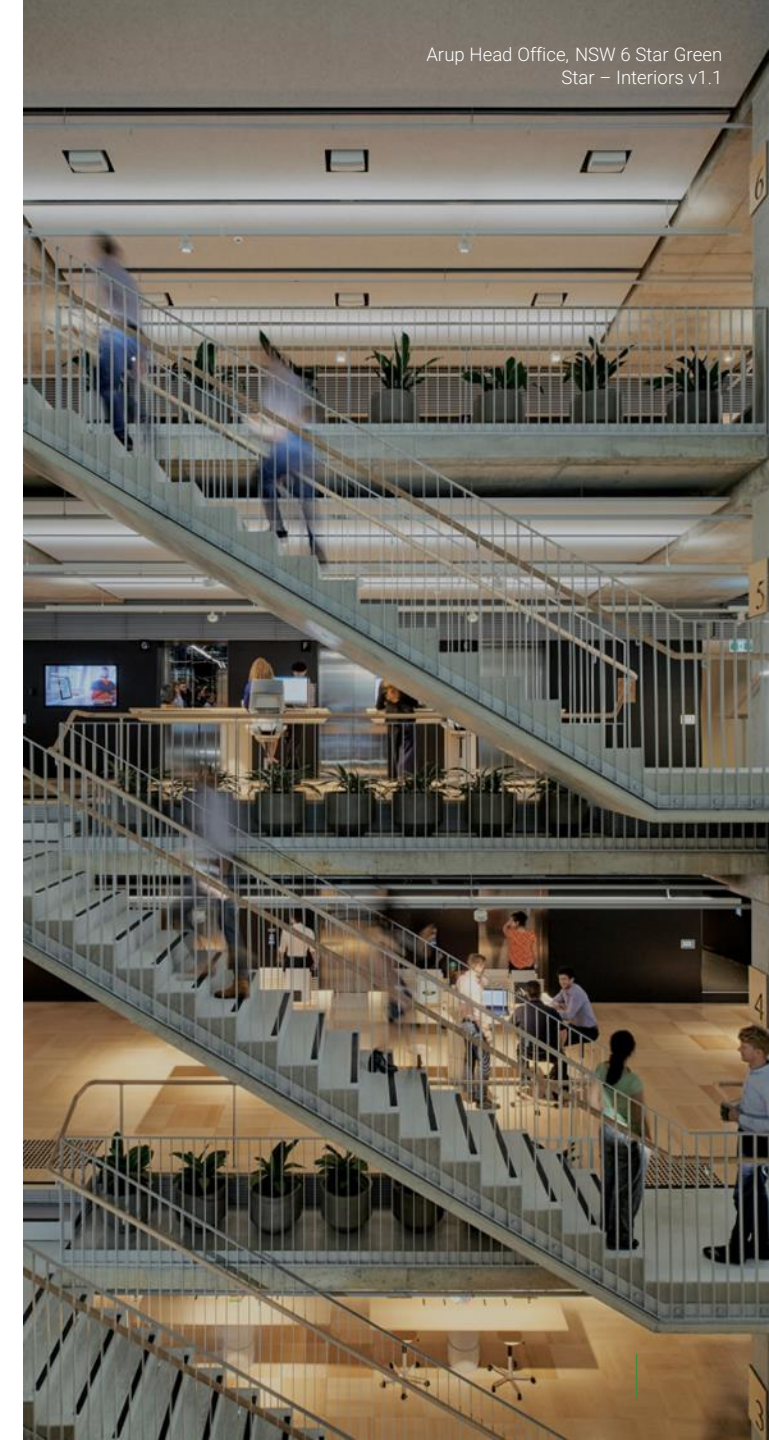
- direct emissions (refrigerants)
- direct fuel consumption for energy such as gas or diesel, and
- Indirect electricity consumption from the grid.

These emissions primarily occur during the operational phase but can be influenced by the building's design. They also depend heavily on the rate of grid decarbonisation.

Embodied emissions for a building are those which stem from:

- Materials
- Construction
- Maintenance
- the end-of-life stages of a building.

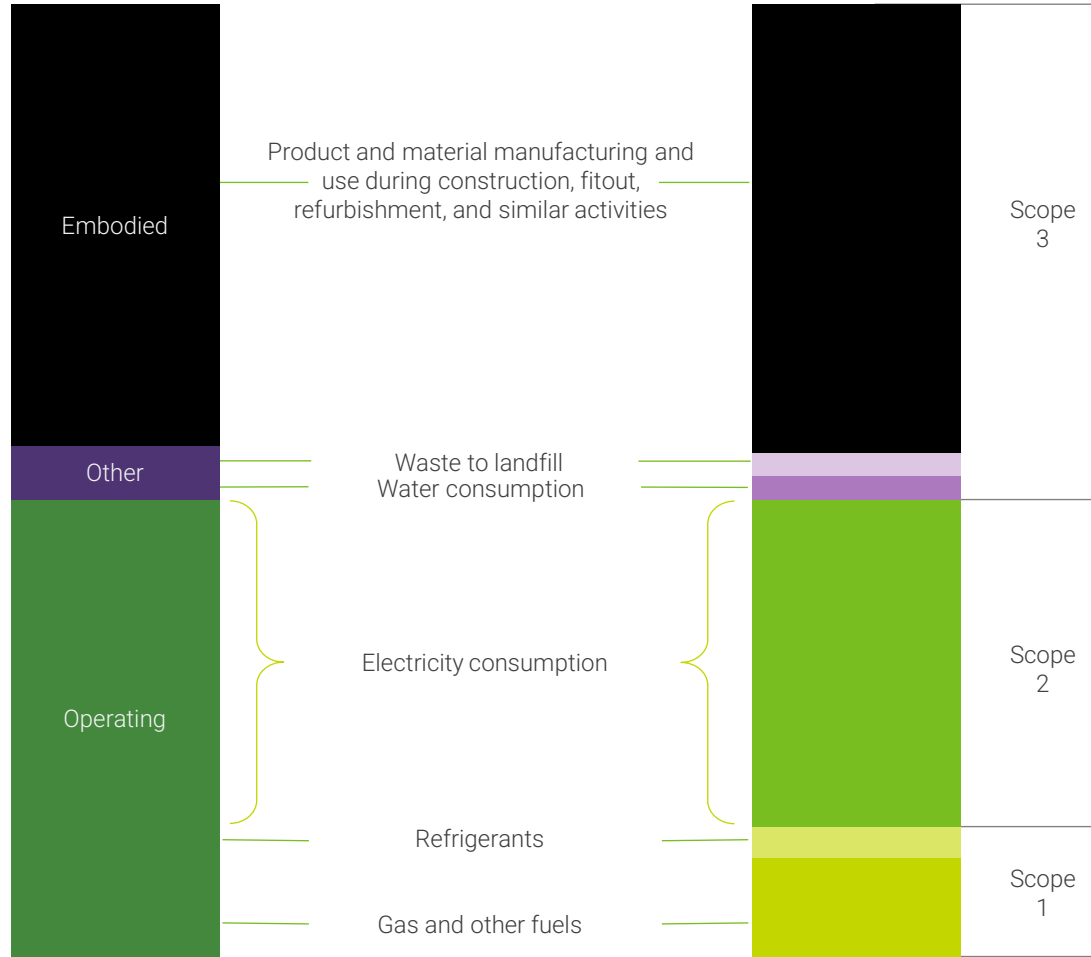
Most of these are upfront emissions, occurring before the building becomes operational. While embodied carbon is generally minimal annually, it increases during refurbishments, re-fits, or when a building is demolished or repurposed.



Mapping asset emissions against scopes

Figure 4.1. (right)
This graphic illustrates the emissions profile of a building for a new office building with gas in Sydney.

Emissions profile of a building for a new office building with gas in Sydney



For new buildings in Australia up to 2050, the emission profile will likely be dominated by upfront emissions initially, followed by operating emissions and fitout works. For existing buildings, operating emissions, primarily from electricity and then gas, then fitout works along with minor refurbishments, are expected to predominate over the next decade.

Determining how emissions are matched to scopes involves understanding who is responsible for the emissions and the building's usage patterns. More detailed explanations of these stages will follow.

Understanding operating emissions

Operating emissions in buildings mostly take the form of gas or diesel consumption and electricity emissions.

In Australia, the grid is rapidly decarbonising. The Australian Government is targeting 82% renewable energy in our electricity grids by 2030. This has an effect when considering how to account for and address tenant emissions.



Understanding operating emissions

Figure 4.2. (below) Emissions from the perspective of a building owner.

6 Progress in the clean energy transition – Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach – Analysis – IEA

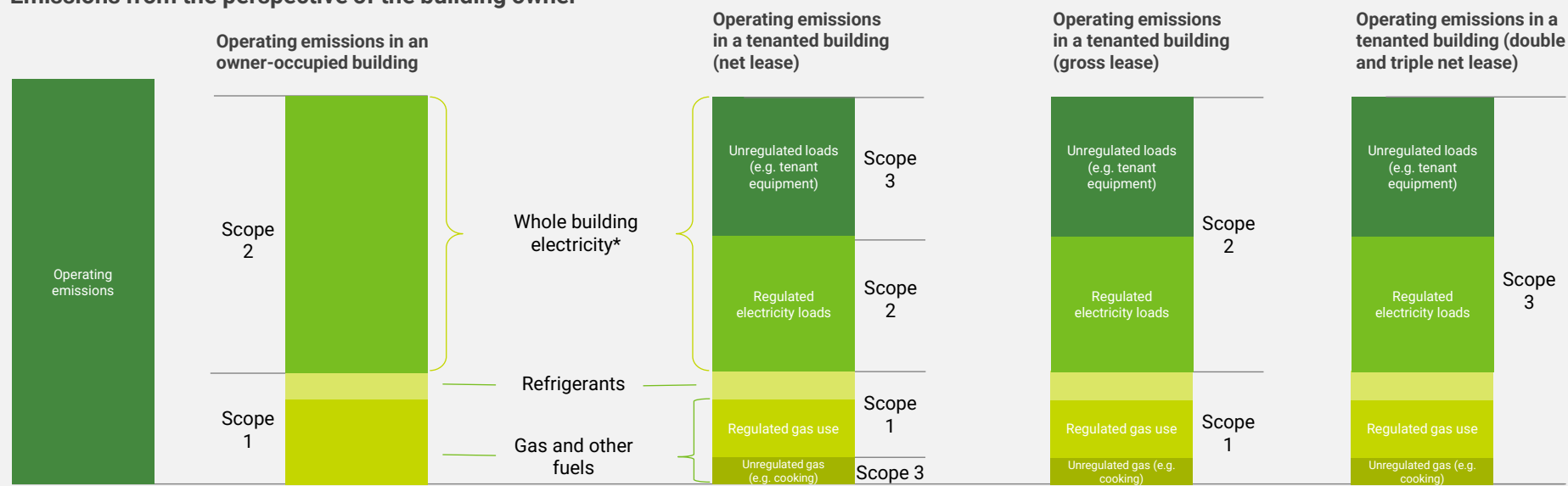
With the Australian government target of 82% renewable energy by 2030, this means that operating emissions are sharply reducing with one exception, gas consumption. As natural gas cannot be easily decarbonised without wholesale replacement to alternative fuel sources (something not likely as noted by the International Energy Agency), the sensible decision is to electrify all building and fitout activities.

It is also important to understand tenant emissions. In Australia, the National Construction Code defines energy consumption as regulated energy (HVAC, hot water, lighting) and unregulated energy (appliances, equipment, computers, manufacturing, etc.).

NABERS follows a similar division defining a base building and tenancies as separate elements. Tenant emissions are commonly unregulated energy consumption (computers, lights, and appliances) though in some cases, they have to bring in additional supplementary equipment (split system HVAC) to address deficiencies in the building (e.g. if the building is poorly insulated).

Tenants in Australia also mostly purchase their own energy (electricity and gas). This means that they have the choice of energy provider. Sometimes, the energy can come from an embedded network provided, owned, or chosen by, the building owner. The leasing arrangement also influence how tenant operating emissions need to be addressed. A tenant on a net lease will only pay for the electricity it consumes by its equipment, with regulated energy loads paid by the building owner. Tenants on a triple net lease are responsible for all energy in the building, with the base building owner having little say in the matter.

Emissions from the perspective of the building owner



Definitions

Net lease: a rental agreement where the tenant pays both the rent and some of the property expenses, such as their energy consumption in their tenancy.

Gross lease: an arrangement where the tenant pays a flat rental amount, and the landlord covers all property expenses.

Double or triple net lease: the tenant is responsible for rent and all the costs of the property, including energy for the whole of the property.

Understanding embodied carbon emissions

Figure 4.3. (right) Embodied Carbon over the life of an asset adapted from Embodied Carbon and Embodied Energy in Australia's Buildings (thinkstep-anz 2021).

Embodied carbon refers to the greenhouse gas emissions from non-operational emissions. It covers all stages of a building's life cycle, and is commonly defined and captured through Lifecycle Assessment modules.

The modules are useful as they can help explain where most of the emission sources are. The modules are defined in EN15804 and can be summarised as:

Module A – Upfront carbon, which includes A1-A3 (raw material extraction, processing, and manufacturing, A4 (Transportation to the construction site) and A5 (construction and installation processes).

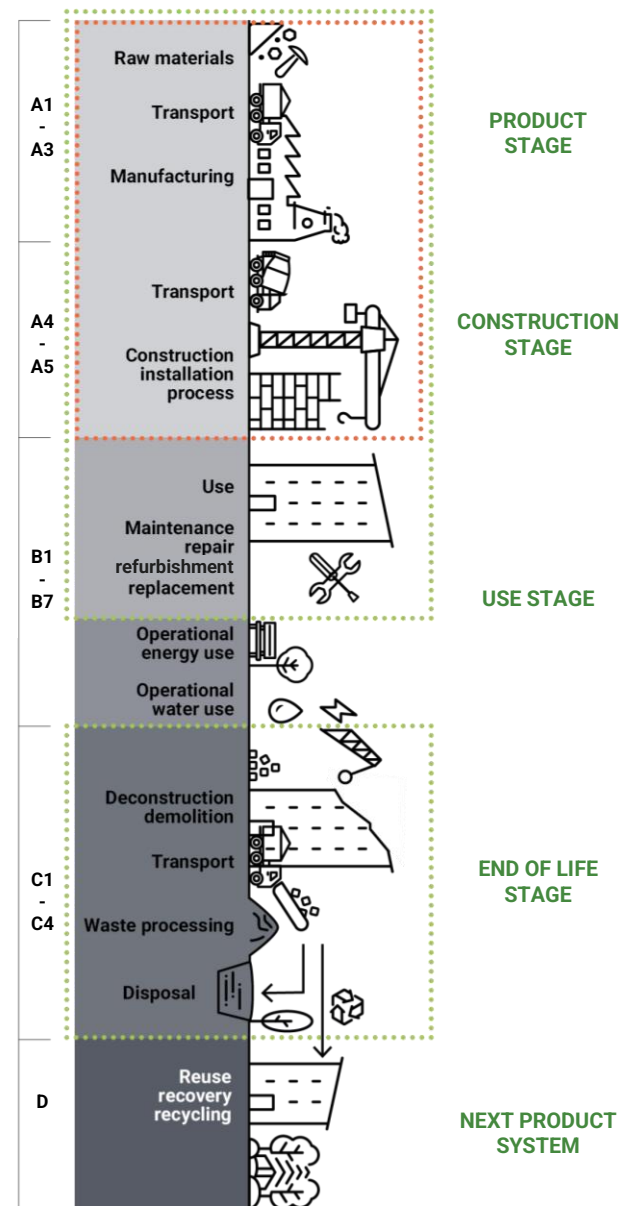
Module B – Use Stage, including emissions from materials and activities for use, maintenance, repair, replacement, and refurbishment. EN15804 also defines modules B6 (Operational energy use) and B7 (Operational water use), but those are considered operating emissions in this document.

Module C – End-of-Life Stage, which includes deconstruction, demolition, transport for disposal and waste processing.

An optional Module, Module D – Beyond Life Cycle, accounts for potential environmental benefits from material recycling and reuse after the building's life. Module D is useful in a design analysis (which is where LCA is commonly used), but should not be considered in carbon accounts.

..... Upfront Carbon (Modules A1-A5)

..... Embodied Carbon (Modules A1-A5, B1-B5, C1-C4)



The amount of embodied carbon in a building

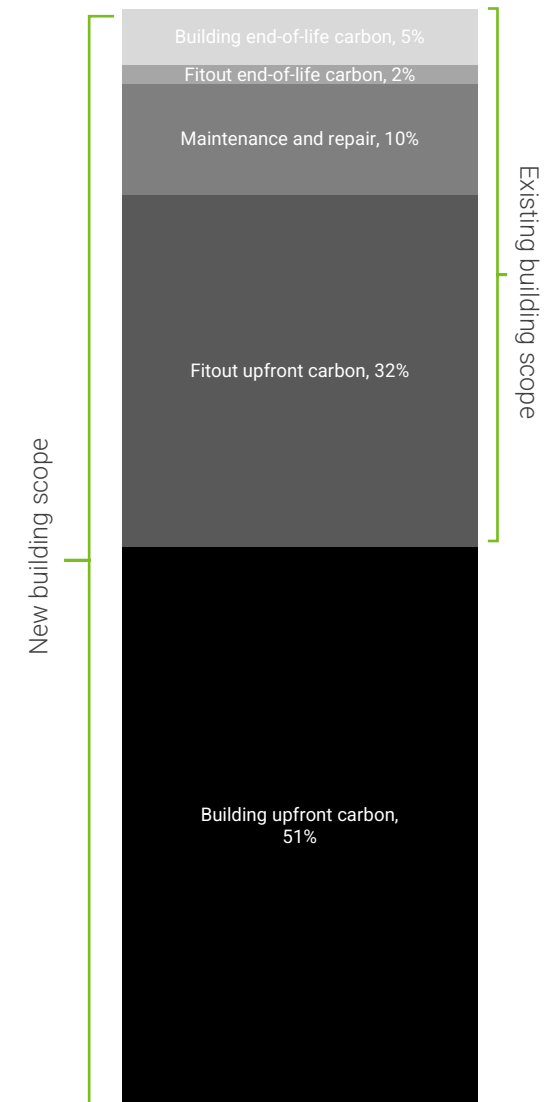
Figure 4.4. (right) This graph provides a breakdown of carbon emissions for a building over its lifecycle finished today.

Embodied carbon is a combination of several life stages. While these emissions are typically amalgamated into one single carbon figure, they should be considered separate activities and accounted for in that manner. Because of this, it is important to understand where most of this carbon is spent.

The graph to the right provides a breakdown of carbon emissions for a building over its lifecycle finished today. For a commercial office building in Sydney, this means:

- 'Building upfront carbon' (structure, envelope, systems, and standard finishes) constitutes the majority at 51%, reflecting emissions from the initial construction process.
- 'Fitout upfront carbon', that is the carbon from the initial fitout and every defit and refit going forward is the second largest with a significant 32% of all emissions.
- 'Maintenance and repair' has a smaller proportion at 10%, relating to maintenance and upgrade halfway through its lifetime.
- The 'Building end-of-life carbon' and 'Fitout end-of-life carbon' categories account for 5% and 2% respectively, which are emissions associated with the demolition and disposal of building materials and fit-out elements.

While the numbers in the graph may change depending on construction and sector, the broad strokes are the same for all buildings. In total, works during building operations (fitout upfront carbon and maintenance and repair building) are almost as high as the initial upfront carbon from the building's construction. What this also shows is that for buildings in operation, fitout upfront carbon will be a significant emissions source.



Decarbonisation of the grid

The electricity grid across Australia is decarbonising and the emissions associated with electricity from the grid is expected to reduce significantly.

For the real estate sector this means that electricity focused transition is likely to reduce without **significant** action from stakeholders in the long term, eventually reducing the total contribution and impacts of Category 11 Use of sold product and Category 13 Downstream leased asset emissions.

AEMO's Integrated System Plan 2022 (ISP) developed four scenarios that span a range of plausible futures and varying rates of electricity demand, and emissions reduction (below). Please note an update to these scenarios is coming in AEMO's Integrated System Plan 2024.

Slow Change: a response to slow economic recovery and load closures, with continued PV uptake

Step Change: a focus on energy efficiency, distributed energy resources, digital energy and step increase in global policy ambitions

Progressive Change: to meet a national emissions abatement end-goal

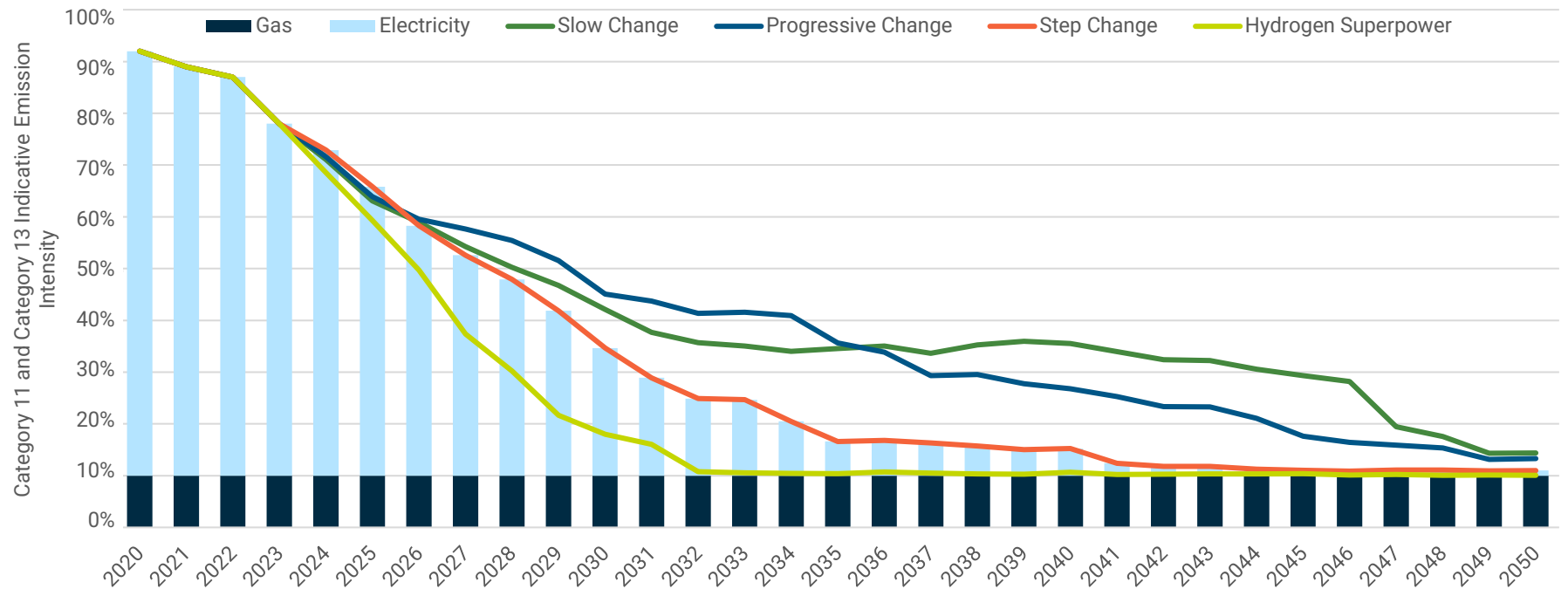
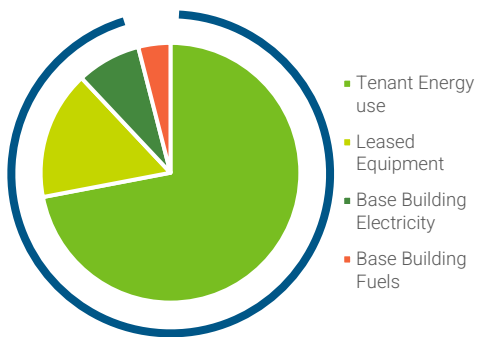
Hydrogen Superpower: Australia leveraging competitive advantage to export hydrogen

For purposes of operating emissions projections, the **Step Change** scenario should be used, as AEMO identifies this as the most likely scenario.

Figure 4.5. (right) Indicative emission intensity compared to today (%), accounting for the 'step change' decarbonisation scenario

TYPICAL BUILDING ENERGY USE BREAKDOWN

Portion of building energy emissions likely to be reduced by grid decarbonisation



The potential lifetime emissions of a building

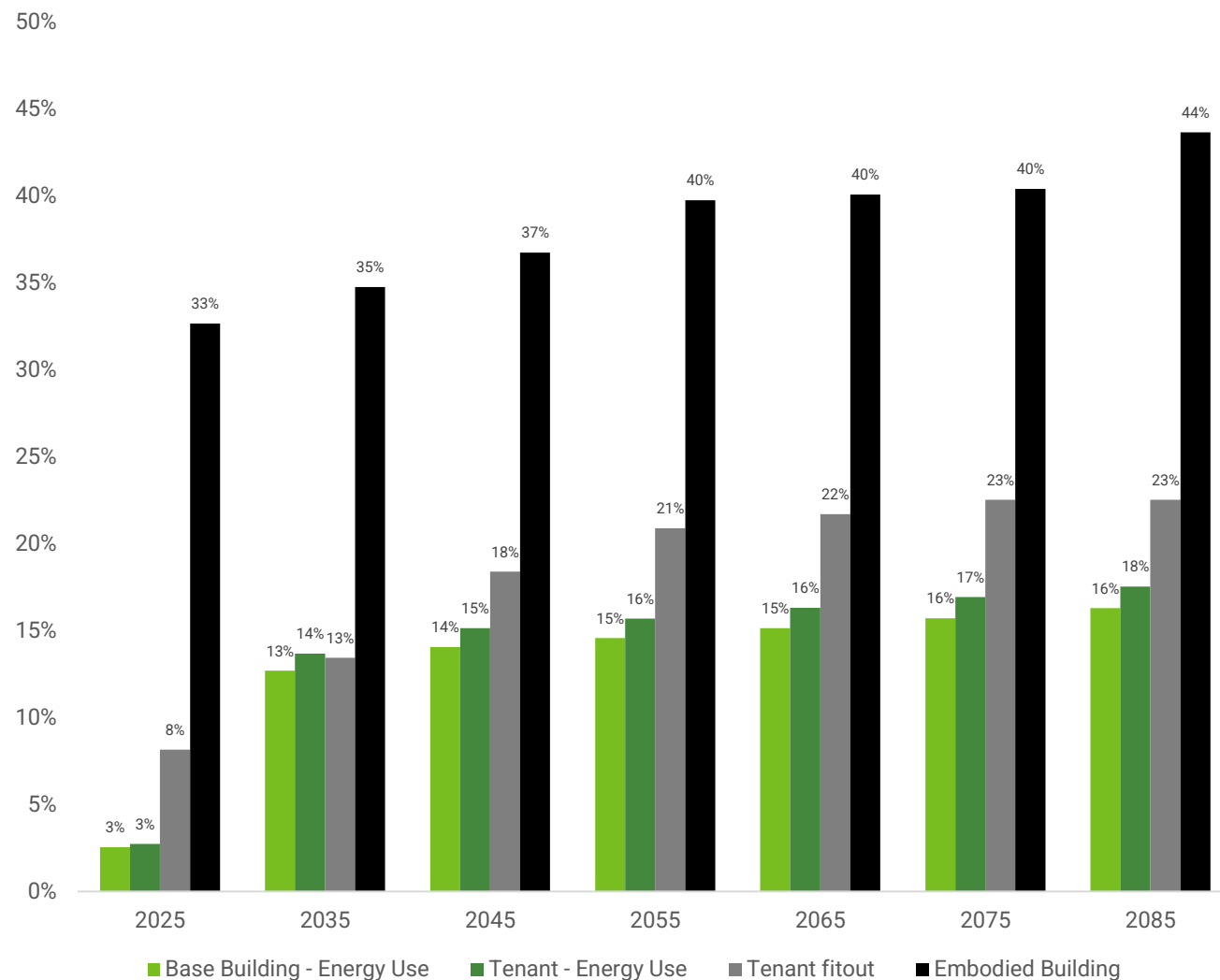
Figure 4.6. (right) This graph demonstrates that, for a fully electric building, the emissions from fitout and base building energy consumption begin plateauing at around 2030. This is because the grid is expected to be mostly renewable between now and 2035 (as noted in the prior page). The 2085 figures represent the total emissions of the building over its entire life span

Combining both operational carbon and embodied carbon, one can see the emissions that will continue to grow over time.

In this graph, for a fully electric building, the emissions from fitout and base building energy consumption begin plateauing at around 2030. This is because the grid is expected to be mostly renewable between now and 2035 (as noted in the prior page).

However, as time goes on, the emissions from building refurbishment, and the fitout and deficit activities from the building continue to increase, effectively becoming a critical source of emissions that tends to not be accounted for in scope 3 corporate accounts. Embodied carbon continues to increase, as its emissions are not always related to the decarbonization of the grid and may be moving more slowly.

Key assumptions in Figure 3.8		
5.5 Star NABERS Energy all-electric, 55 hours, Sydney, finished 2025.		
Step Change Grid decarbonisation scenario		
Base Building - Energy Use	65 kWh/m ²	
Tenant - Energy Use	70 kWh/m ³	
Embodied building	Upfront Building	500 kgCO ₂ /m ²
	Minor Refurb	50 kgCO ₂ /m ² (Occurs every 10 years)
	Major Refurb	150 kgCO ₂ /m ² (Occurs every 30 years)
	End-of-life Building	50 kgCO ₂ /m ² (60-year lifetime)
	Tenant Fitout	125 kgCO ₂ /m ² (Replaced every 10 years)
Embodied carbon reduction	40% of grid decarb reduction to 2040	
	3% Annual embodied carbon reduction after 2040	
	90% Max reduction in embodied carbon compared to 2020	



5

Guidance on measuring & reporting scope 3 emissions for the real estate sector



Translating from project emissions to entity emissions reporting

Figure 5.1. (right) Scope 1, 2 and 3 emissions for an individual stakeholder, is reflective of their value-chain, and the products and services they sell. This diagram is framed as a 'standard building' and excludes stakeholders own scope 1 and 2 emissions for their value-chain.

In the property industry, assessing emissions typically occurs at the level of individual buildings or assets, often using life cycle assessment (LCA) methods. The challenge arises when integrating this detailed emissions data into broader corporate reporting frameworks.

The chart on the right delineates the points in a building's life cycle pertinent to embodied carbon and indicates how different stakeholders—designers, manufacturers, contractors—should report these emissions in corporate accounts.

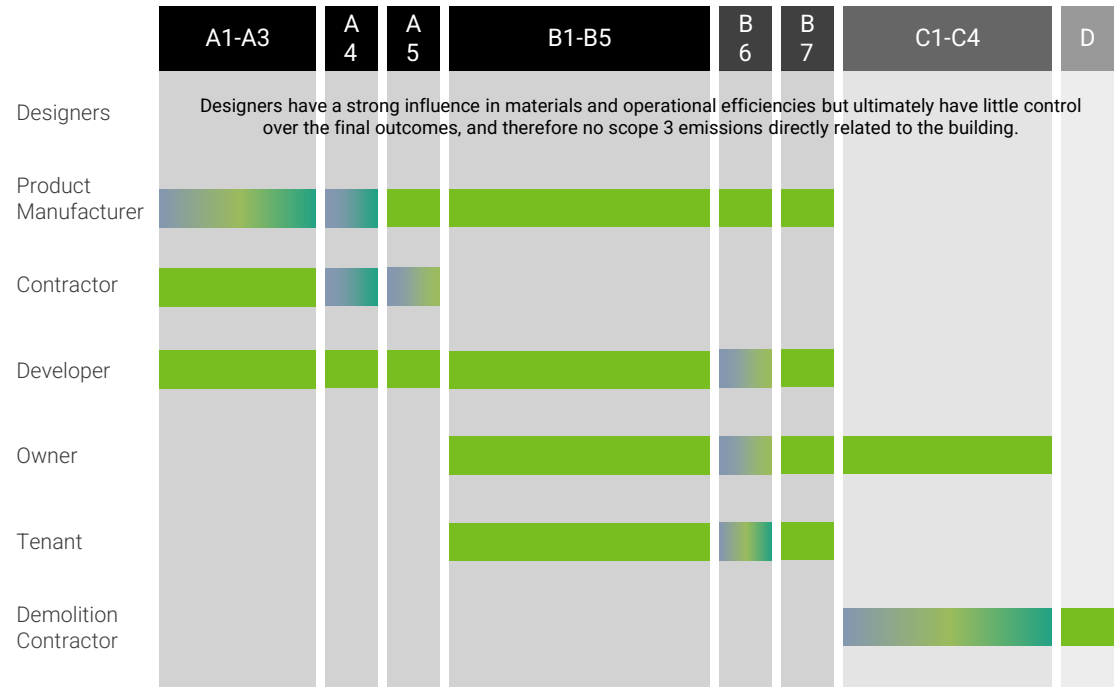
For example, construction phase emissions are recorded by both the commissioning developer and the executing builder, yet categorised under different scopes: developers log them as Category 1, scope 3 emissions (Purchased goods and services), whereas builders may allocate a portion to scope 1 & 2 emissions (direct emissions and indirect emissions from purchased energy).

The Greenhouse Gas (GHG) Protocol specifies 15 categories for scope 3 emissions, capturing a company's indirect emissions both upstream and downstream. Not all categories apply uniformly across sectors, and subsequent sections will expound on the relevance of each category to the real estate sector.

Scope 3 emissions are outside a company's immediate control, yet they often constitute a majority of its carbon footprint, offering significant opportunities for mitigation. Increasingly, companies are engaging with their supply chains to understand and influence their scope 3 emissions more effectively, collaborating with industry partners or the end-users of their real estate assets to drive improvements.

Stakeholder influence over building emissions across the life cycle stages

Modified from RICS professional standards and guidance, UK, Whole life carbon assessment for the built environment- 2nd edition draft for consultation



- Building Scope 1 Emissions (natural gases, refrigerants etc.)
- Building Scope 2 Emissions (electricity consumption from base building supplied equipment)
- Building Scope 3 Emissions (purchased goods, tenant energy use, waste etc.)

Relevant and material

To understand whether emissions should be considered in a scope 3 account, the GHG Protocol notes that emissions should be relevant.

The relevance criteria below has been developed to help companies identify what sources and activities need to be included in their scope 3 inventory for reporting, and what can be excluded as immaterial or insignificant.

Relevance criteria supports reduction opportunities, target setting, tracking progress and decisions making – and the way the criteria has been applied will also be reviewed by any independent auditors who are assuring your data.

The relevance test is composed of these six criteria:

- Size, as in the amount of emissions
- Influence, measuring the degree and capacity of the reporting entity to change the emissions through their actions
- Risk, understanding the exposure to policy, market, or supply chain changes that can impact the reporting entity's emission boundaries
- Outsourcing, recognising emissions that should be considered as they have been moved outside the reporting entity sphere of influence, but that are core to their activity.
- Stakeholders, measuring the importance of these emissions to investors, owners, occupants, etc.
- Sector guidance, where other entities believe that these emissions should be considered.

The element of influence is important to consider. The Protocol notes that influence relates to the capacity of the reporting entity to influence the reduction of emissions.

For example, a building owner may have significant influence to reduce the emissions from tenancy lighting, through tenant lease agreements. However, the amount that the lighting can be reduced may be small, as lighting systems may already be efficient, and there's not a lot of room to move. Consideration should be given to this when considering influence, as there may be other drivers that may have a larger impact well outside the building owner's control (in this case, the electricity grid will be the largest source of emissions).

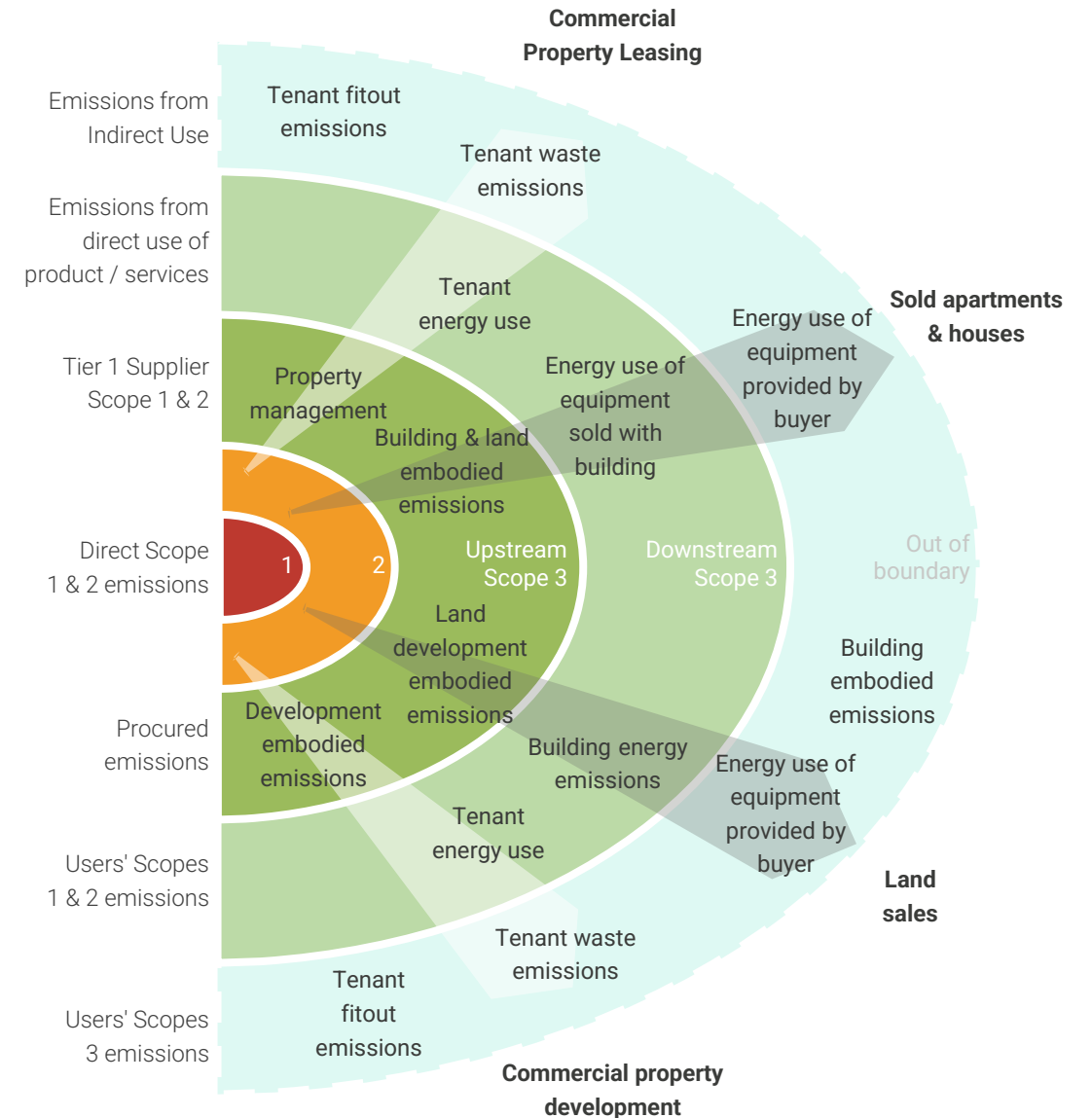
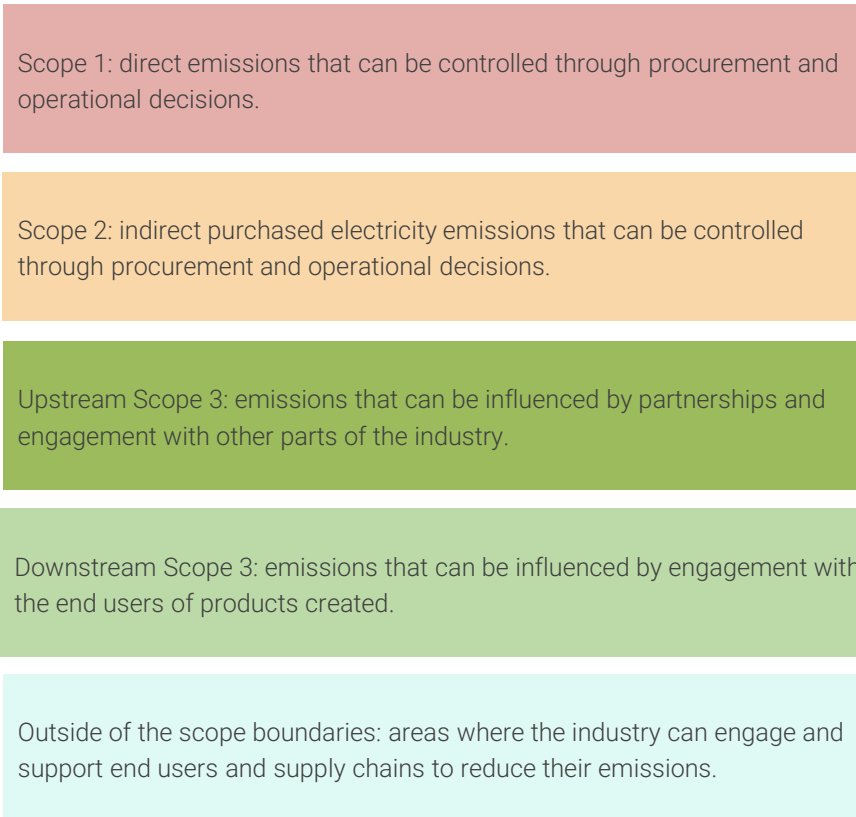
The opposite can also occur. A tenant's emissions from gas consumption may be small, and the building owner may feel their influence is small as appliances are already efficient. However, the building owner is the provider of gas infrastructure – if there was none, there would be no emissions from gas. In this case, the influence is significant and should be considered.

How emissions profiles change based on real estate activity

Figure 5.2. (right) Shows how Scope 1, 2 and 3 boundaries apply across the spectrum of real estate activities.

When it comes to reporting, 'minimum boundaries' refer to the emissions that companies are required to report on to meet GHG Protocol standards, as a minimum.

The graphic to the right shows how scope 1, 2 and 3 boundaries apply across the spectrum of real estate activities. The scopes have been defined below.



Upstream scope 3 emissions minimum boundaries

Table 5.1. (right) This table shows relevance of different real estate activities in relation to the GHG Protocol Scope 3 Standard scope 3 emissions categories.

GHG Protocol Scope 3 Standard Category	Relevant Activities				Commentary on minimum boundaries	Likely emission sources at a project level
	Develop to Sell	Develop to Lease	Landlord	Builder		
Cat 1 Purchased goods and services	High	High	Low	High	Landlord Cat 1 emissions are associated with maintenance / refurbishment	Embodied emissions from purchased and used products, materials, services (such as builder emissions). Emissions from land development activities and development activities, as well as property refurbishment and maintenance.
Cat 2 Capital goods	NA	NA	Low	Low	Cat 1 emissions for products that sit on balance sheet are included in Cat 2 e.g. For a Builder, Cranes / Large equipment	
Cat 3 Fuel & energy-related emissions	Low	Low	Medium	Low	Cat 3 is directly linked to materiality of scope 1 and 2 emissions	Emissions from the use of electricity and fuels resulting from scope 1 and 2 gas, diesel, and other fuels, as well as electricity consumption.
Cat 4 Upstream transportation and distribution	Unlikely to be applicable				Cat 4 emissions are generally included within Cat 1 emissions reporting. (e.g. transportation of materials to site would be considered Cat 1 under embodied emissions). A Builder may report A4 as Cat 4 where they have visibility to collect accurate data about upstream product transportation.	
Cat 5 Waste generated in operations	Low	Low	Medium	Medium	Waste emissions can be high for Landlords particularly in retail.	
Cat 6 Business travel	Low	Low	Low	Low		
Cat 7 Employee commuting	Low	Low	Low	Low		
Cat 8 Upstream leased asset	Low	Low	Low	Low		

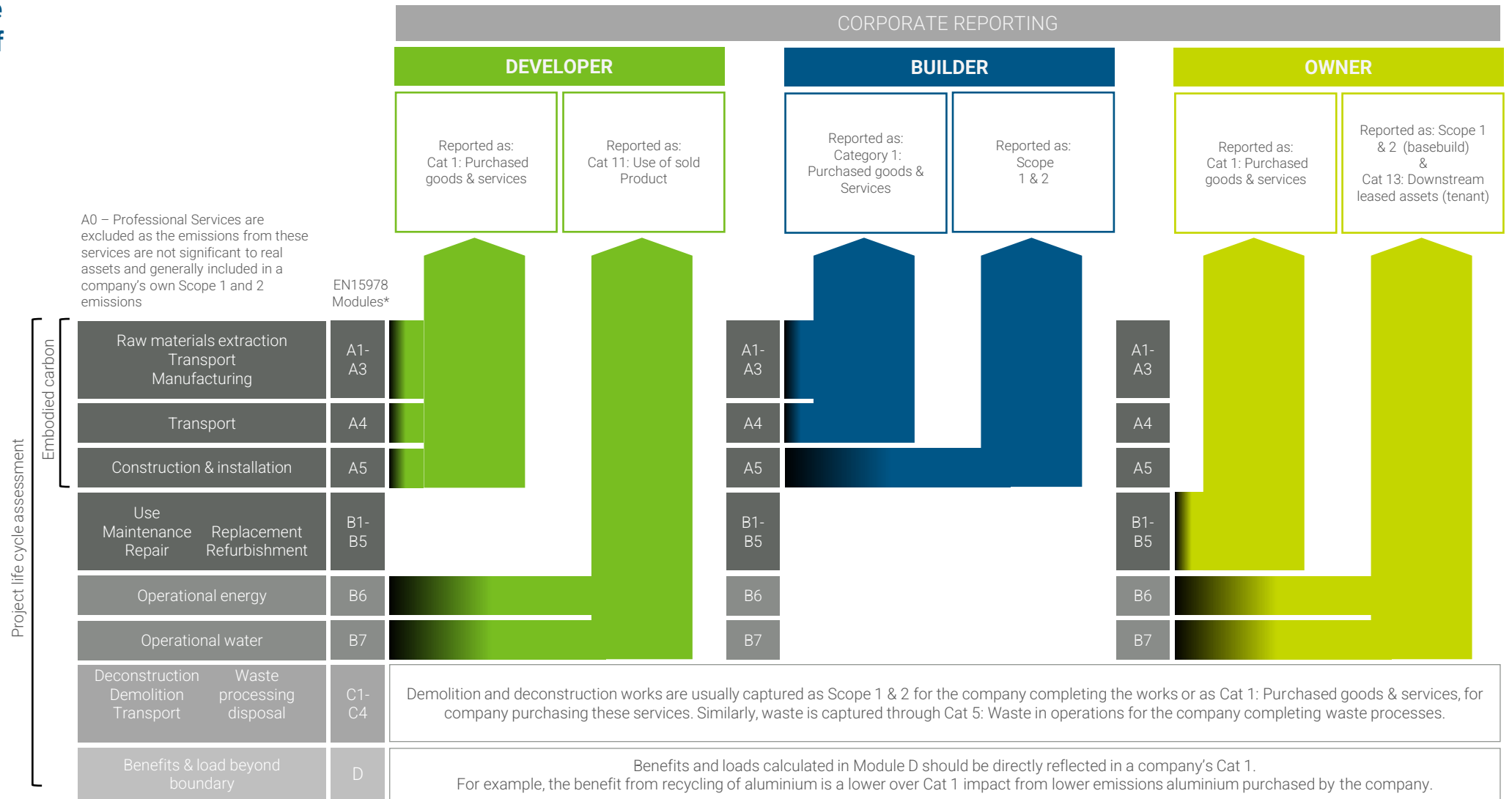
Downstream scope 3 emissions minimum boundaries

Table 5.2. (right) This table shows relevance of different real estate activities in relation to the GHG Protocol Scope 3 Standard scope 3 emissions categories.

GHG Protocol Scope 3 Standard Category	Relevant Activities				Commentary on minimum boundaries	Likely emission sources at a project level
	Develop to Sell	Develop to Lease	Landlord	Builder		
Cat 9 Downstream transport and distribution	Unlikely to be applicable				Any sold product that requires transport would be included here. e.g. builder made prefabricated modules sold to a third party.	
Cat 10 Processing of sold product	Unlikely to be applicable				Any sold product that requires further processing would be included in this category. E.g. builder prefabricated modules sold to a third party constructor.	
Cat 11 Use of sold product	High	NA	NA	NA	Use of sold product emissions should only be taken into account when there is a sold product. It should include elements needed for the use of the building (regulated energy loads) and elements provided by the developer up to the end of their estimated life	Estimated emissions via module B of a life cycle assessment. Regulated energy consumption (HVAC, hot water, heating) should be estimated for the lifetime of the building (60 years). Unregulated equipment and appliances (e.g. dishwashers) provided can be assumed to be only relevant for the life of the asset. Calculation can assume future grid decarbonisation forecasts as per AEMO.
Cat 12 End-of-life treatment of sold products	Low	NA	NA	NA	Although end-of-life treatment is important for circular economy and life cycle reductions at a project level, the reportable end-of-life product emissions are not significant to corporate emissions.	If relevant, then estimate emissions via module C of a life cycle assessment. Should be estimated for the lifetime of the building (50 years). Everything included in Cat 11 should be considered in Cat 12.
Cat 13 Downstream leased assets	NA	High	High	NA	For the Landlord this includes any energy-consuming equipment included in the lease, any emissions from tenant gas consumption from gas connections to the grid and fitout embodied emissions.	Emissions include tenant emissions from equipment provided as part of the lease, or where energy cannot be independently measured, estimated tenant emissions. Gas, when provided through the building's infrastructure (e.g. gas pipes). Note: Emissions from unregulated tenant equipment and fitout embodied emissions are material to a project, but not financially-material as per the GHG protocol. See section 6 for more information.
Cat 14 Franchises	Unlikely to be applicable					
Cat 15 Investments	Company dependent				Should be assessed on a company by company basis	

Project lifecycle in the context of corporate reporting

Figure 5.3. (right) *Modules taken from EN 15978:2011 - Sustainability of construction works. Assessment of environmental performance of buildings.



6

Critical scope 3 categories for real estate sector financial reporting



Which are the key scope 3 categories per the GHG Protocol Scope 3 Standard that apply to real estate?

Out of the 15 categories of scope 3 emissions, the following categories are commonly the most highly relevant to the real estate sector.

The following pages outline each of these categories in the context of real estate in more detail.

Category 1: Purchased goods and services

Highly relevant to developers who are creating assets to sell or lease, and to the construction companies who build these assets. Construction simply cannot occur without the purchase of essential materials, and often the inputs of sub-contractors.

Category 11: Use of sold product

Highly relevant to developers creating assets to sell, as it applies to emissions that come from those assets for their entire life cycle.

Category 13: Downstream leased assets

Highly relevant to landlords, as it includes the emissions from any energy-consuming equipment included in the lease. While tenant-specific emissions are not counted in this category, there's still significant potential for emissions that come from base building provisions.



Upstream scope 3 emissions | Category 1: Purchased goods and services

Applicability for real estate sector: accounting for building materials

Category	Category description per GHG Scope 3 Protocol	Category detailed description per GHG Scope 3 Protocol	Minimum boundary per GHG Scope 3 Protocol	Interpretation of minimum boundary for real estate sector
Purchased goods and services	Extraction, production and transportation of goods and services purchased or acquired by the reporting company in the reporting year, not otherwise included in Categories 2-8	<p>This category includes all upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the reporting company in the reporting year. Products include both goods (tangible products) and services (intangible products). This category includes emissions from all purchased goods and services not otherwise included in the other categories of upstream scope 3 emissions (i.e., category 2 through category 8). Specific categories of upstream emissions are separately reported in category 2 through category 8 to enhance the transparency and consistency of scope 3 reports.</p> <p>Cradle-to-gate emissions include all emissions that occur in the life cycle of purchased products, up to the point of receipt by the reporting company (excluding emissions from sources that are owned or controlled by the reporting company).</p> <p>Cradle-to-gate emissions may include:</p> <ul style="list-style-type: none"> • Extraction of raw materials • Agricultural activities • Manufacturing, production, and processing • Generation of electricity consumed by upstream activities • Disposal/treatment of waste generated by upstream activities • Land use and land-use change • Transportation of materials and products between suppliers • Any other activities prior to acquisition by the reporting company <p>Emissions from the use of products purchased by the reporting company are accounted for in either scope 1 (e.g., for fuel use) or scope 2 (e.g., for electricity use), rather than scope 3.</p>	All upstream (cradle-to-gate) emissions of purchased goods and services	<p>For developers and builders, this category accounts for the product emissions associated with building materials in construction.</p> <p>The emissions from the extraction, production, and transportation of building materials is considered aligned with LCA modules A1 to A5* (as per the EN 15978 standard), also referred to as Upfront Carbon</p>

Table 6.1. (above) This table shows details of Category 1 per the GHG Protocol Scope 3 Standard, and an interpretation of the minimum boundary for real estate sector reporting.


Upstream scope 3 emissions | Category 1: Purchased goods and services

Why it's important: Both developers and builders have significant influence over upfront carbon of the buildings they develop, via the building materials and products they procure and install. Both the developer and builder will report these scope 3 emissions as part of their Category 1: Purchased goods and services.

How to measure these emissions: Category 1 emissions can be estimated using a number of methods – these are outlined below (with further detail on page 43). According to the GHG Protocol, companies should aim to improve the accuracy of their methodology over time.

Real estate companies often estimate Category 1 emissions via a Life Cycle Assessment (LCA) or embodied carbon assessment focusing on the Modules A1-A5 (upfront carbon). Reported embodied emissions should always be calculated at project level at end-of-life.

Table 6.2. (below) This table shows methods for calculating Category 1 emissions.

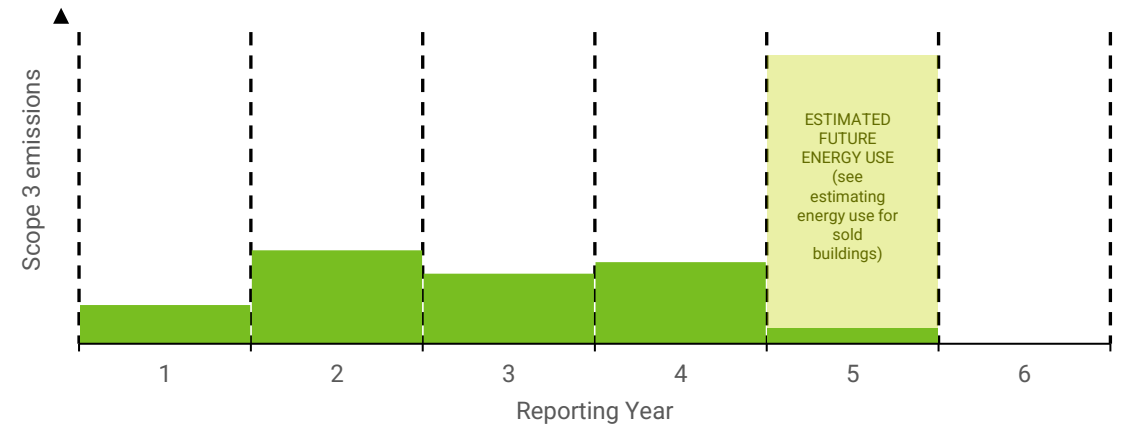
Accuracy	Calculation method
HIGH  LOW	Supplier-Specific method: Use of product-level cradle to gate emissions data provided by suppliers.
	Hybrid method: Specific emissions data from key suppliers, supported with extrapolated data or estimated data to support data gaps across product categories by volume.
	Average-data method: Utilisation of product or industry average data for a specific product type or sector from available databases.
	Spend-based method: Utilisation of procurement spend data using environmentally extended input output tables to allocate appropriate emissions to spend.
	Other: Other extrapolation, benchmark or estimation methods, based on appropriate spend or product emissions data, relevant and disclosed within company reporting.

*Modules A1-A3, A4 & A5 as references by EN15978- Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method

Example: Commercial building upfront embodied carbon emissions as reported by the developer and builder Figure 6.1. (below)

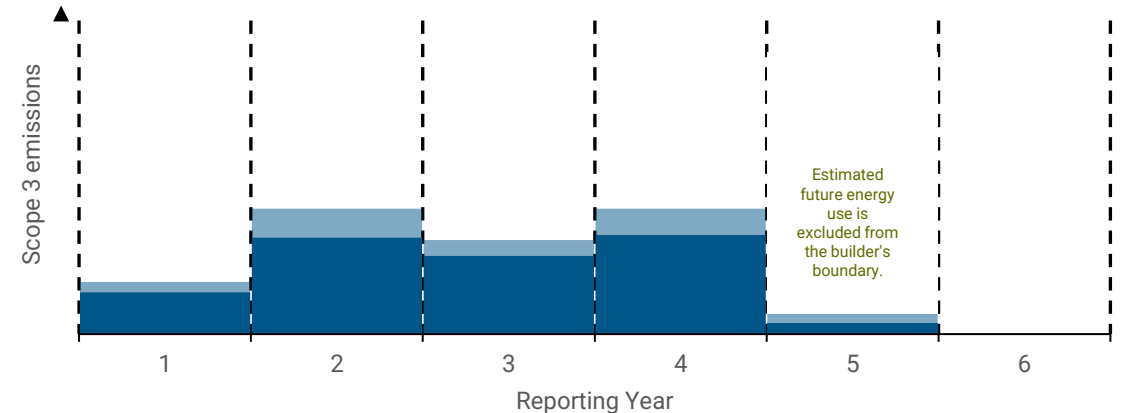
DEVELOPER SCOPE 3 EMISSIONS

- Purchased goods (Upfront Embodied Carbon Models A1-A3, A5)
- Estimated future energy use (Module B6) (Reported as Category 11)



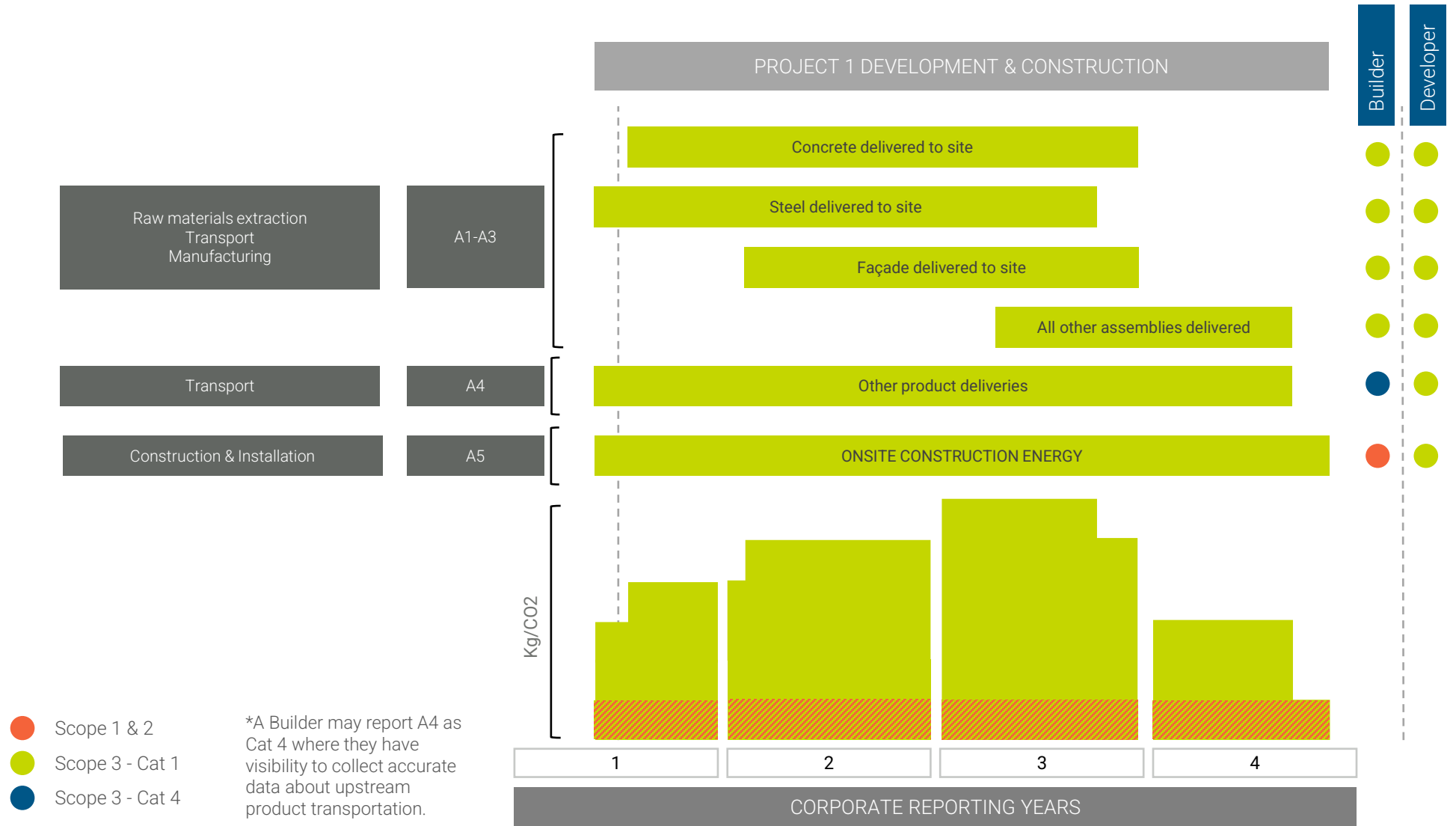
BUILDER SCOPE 3 EMISSIONS

- Purchased goods (Upfront Embodied Carbon Models A1-A3)
- Upfront Embodied Carbon A5 (Reported as Builders Scope 1 and 2 emissions)



Corporate reporting of upfront embodied emissions

Figure 6.2. (right) This graph shows reporting of upfront embodied emissions relevant to different real estate stakeholder.



Downstream scope 3 emissions | Category 11: Use of sold products

Applicability for real estate sector: estimating energy use for sold buildings

Category	Category description per GHG Scope 3 Protocol	Category detailed description per GHG Scope 3 Protocol	Minimum boundary per GHG Scope 3 Protocol	Interpretation of minimum boundary for real estate sector
Use of sold product	End use of goods and services sold by the reporting company in the reporting year	<p>This category includes emissions from the use of goods and services sold by the reporting company in the reporting year. A reporting company's scope 3 emissions from use of sold products include the scope 1 and scope 2 emissions of end users. End users include both consumers and business customers that use final products. This standard divides emissions from the use of sold products into two types:</p> <ul style="list-style-type: none"> • Direct use-phase emissions • Indirect use-phase emissions <p>The minimum boundary of category 11 includes direct use-phase emissions of sold products. Companies may also account for indirect use-phase emissions of sold products, and should do so when indirect use-phase emissions are expected to be significant.</p> <p>This category includes the total expected lifetime emissions from all relevant products sold in the reporting year across the company's product portfolio. By doing so, the scope 3 inventory accounts for a company's total GHG emissions associated with its activities in the reporting year. Refer to the GHG Protocol Product Standard for information on accounting for GHG emissions from individual products over their life cycle. Companies may optionally include emissions associated with maintenance of sold products during use. Companies may calculate emissions from category 11 without collecting data from customers or consumers. Calculating emissions from category 11 typically requires product design specifications and assumptions about how consumers use products (e.g., use profiles, assumed product lifetimes, etc.). For more information, see Guidance for Calculating Scope 3 Emissions, available online at www.ghgprotocol.org. Companies are required to report a description of the methodologies and assumptions used to calculate emissions. Refer to chapter 5 of GHG Protocol Scope 3 Standard for more information.</p>	<ul style="list-style-type: none"> • The direct use-phase emissions of sold products over their expected lifetime (i.e., the scope 1 and scope 2 emissions of end users that occur from the use of: products that directly consume energy (fuels or electricity) during use; fuels and feedstocks; and GHGs and products that contain or form GHGs that are emitted during use) • <i>Optional:</i> The indirect use-phase emissions of sold products over their expected lifetime (i.e., emissions from the use of products that indirectly consume energy (fuels or electricity) during use) 	<p>Developers who are building assets to sell should report emissions from all fuel and energy consuming products included in the asset, for the lifetime of the asset.</p> <p>This category is not applicable to existing buildings, or those sold with the intent of leasing the majority of the building.</p>

Table 6.3. (above) This table shows details of Category 11 per the GHG Protocol Scope 3 Standard, and an interpretation of the minimum boundary for real estate sector reporting.

Downstream scope 3 emissions | Category 11: Use of sold products

Why it's important: Buildings have long life cycles (typically 60 years), and emissions for their installed products (such as appliances) can add up significantly over time. Developers have the power to reduce emissions through the procurement and instalment of energy and water efficient products.

How to measure these emissions: This process treats the building as a 'product' and estimates the building's operational use (Module B6 within LCA). This should include information about the average use profiles, expected product lifetimes and other underlying assumptions. The lifetime of the building should align with typical design life and life cycle assessment.

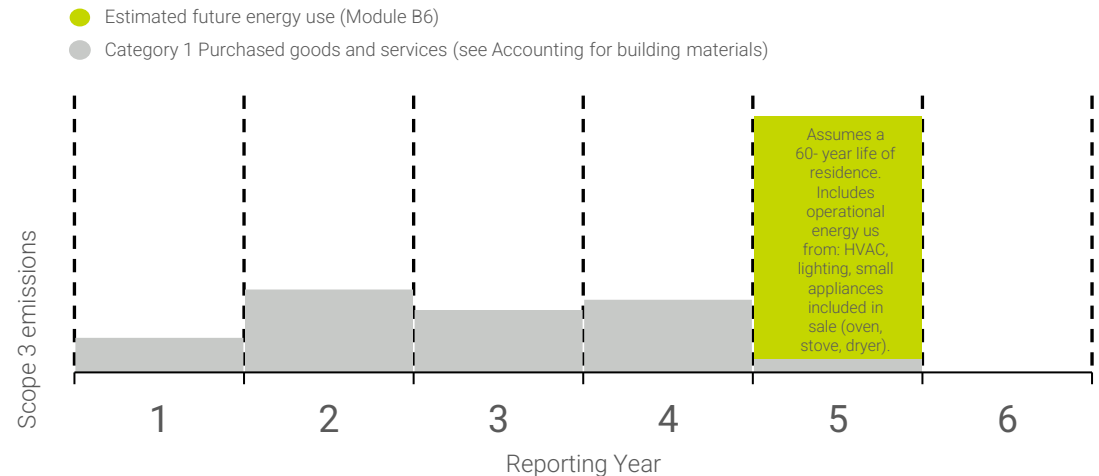
Developers only need to account for equipment and products included in the sale – a suggested list of inclusions and exclusions can be found below.

Table 6.4. (below) This table shows typical Category 11 inclusions and exclusions for the developer.

Sector	Typical inclusions in sold product	Typical exclusions in sold products
Commercial	Developed for owner-occupiers; the inclusions will reflect items contracted for development.	Tenant lighting & equipment, plug-in equipment
Retail		Tenant lighting & equipment, plug-in equipment
Industrial	For example, a commercial building developed for government owner-occupier, will include all energy consuming equipment installed by the developer.	Tenant lighting & equipment, cold storage
Social Infrastructure		Tenant lighting & equipment
Residential	HVAC, lighting, standard appliances (stove top, oven, hot water heating)	Small appliances, entertainment and the like

Example: Residential building, developer accounts for expected lifetime emissions at sale

Figure 6.3. (below)



A note on solar PV.
In instances where the developer includes solar PV with capacity to generate more electricity than the estimated electricity consumed, they can assume zero emissions for the use of the sold product.

A note on purchaser (or owner-occupier) emissions.
In instances when an client intends to own a building where it has engaged a developer, the purchaser may categorise the embodied emissions as Category 2: Capital goods. As with all scope 3 emissions, reported emissions should align with financial reporting.

Downstream scope 3 emissions | Category 13: Downstream leased assets

Applicability for real estate sector: estimating energy use for leased buildings

Category	Category description per GHG Scope 3 Protocol	Category detailed description per GHG Scope 3 Protocol	Minimum boundary per GHG Scope 3 Protocol	Interpretation of minimum boundary for real estate sector
Downstream leased assets	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor	<p>This category includes emissions from the operation of assets that are owned by the reporting company (acting as lessor) and leased to other entities in the reporting year that are not already included in scope 1 or scope 2. This category is applicable to lessors (i.e., companies that receive payments from lessees). Companies that operate leased assets (i.e., lessees) should refer to category 8 (Upstream leased assets).</p> <p>Leased assets may be included in a company’s scope 1 or scope 2 inventory depending on the type of lease and the consolidation approach the company uses to define its organizational boundaries. If the reporting company leases an asset for only part of the reporting year, the reporting company should account for emissions from the portion of the year that the asset was leased.</p> <p>In some cases, companies may not find value in distinguishing between products sold to customers (accounted for in category 11) and products leased to customers (accounted for in category 13). Companies may account for products leased to customers the same way the company accounts for products sold to customers (i.e., by accounting for the total expected lifetime emissions from all relevant products leased to other entities in the reporting year). In this case, companies should report emissions from leased products in category 11 (Use of sold products), rather than category 13 (Downstream leased assets) and avoid double counting between categories.</p> <p>A reporting company’s scope 3 emissions from downstream leased assets include the scope 1 and scope 2 emissions of lessees (depending on the lessee’s consolidation approach). Refer to chapter 5 of GHG Protocol Scope 3 Standard for more information.</p>	<ul style="list-style-type: none"> The scope 1 and scope 2 emissions of lessees that occur during operation of leased assets (e.g., from energy use). <i>Optional:</i> The life cycle emissions associated with manufacturing or constructing leased assets 	<p>For a building owner, operator or manager, reported emissions from downstream leased assets should include emissions from all fuel and energy consuming products included in the leased product which are not provided by the tenant.</p> <p>It is optional to include all tenant fuel and energy use.</p>

Table 6.4. (above) This table shows details of Category 13 per the GHG Protocol Scope 3 Standard, and an interpretation of the minimum boundary for real estate sector reporting.

Downstream scope 3 emissions | Category 13: Downstream leased assets

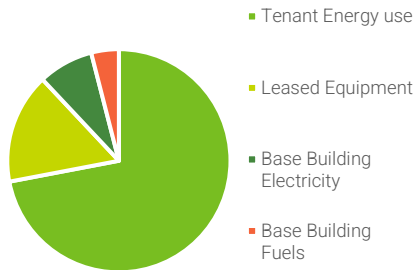
Why it's important: When it comes to emissions from leased assets, tenants are typically the largest source – as they often fit out their own spaces, adding to the base building provisions. However, building owners are still responsible for emissions generated by any equipment or products they have leased as part of their asset (such as lighting or HVAC systems).

How to measure these emissions: For leased residential assets, building owners are required to report on measured (or in some cases, estimated) tenant energy consumption and account for the entire building's energy use.

For leased commercial assets, base building provisions (lifts, central chillers, common area lighting etc.) are attributed to the building owner, while all other use is considered tenant energy consumption – and excluded from Category 13 calculations.

Table 6.5. (below) This table shows typical Category 13 inclusions for building owners

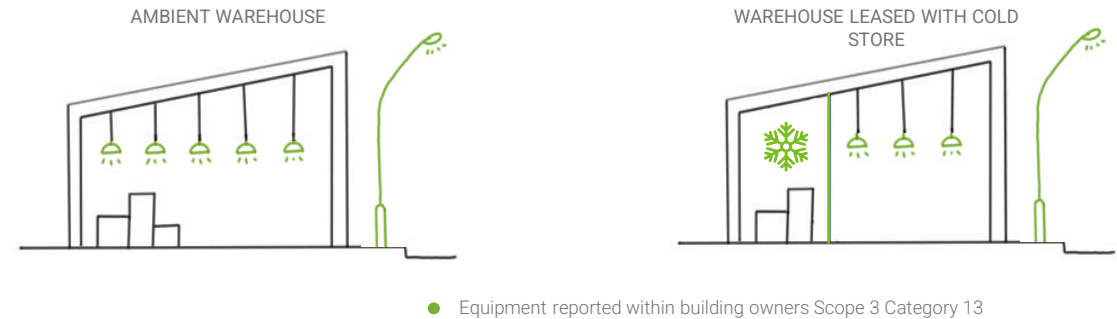
Sector	Typical building owner standard inclusions leased to tenants
Commercial	Tenant space lighting
Retail	None
Industrial	Lighting and / or specified equipment
Residential	Lighting, specified appliances (cooking, washing etc.)
Social Infrastructure	Lighting and / or specified equipment



TYPICAL BUILDING ENERGY USE BREAKDOWN

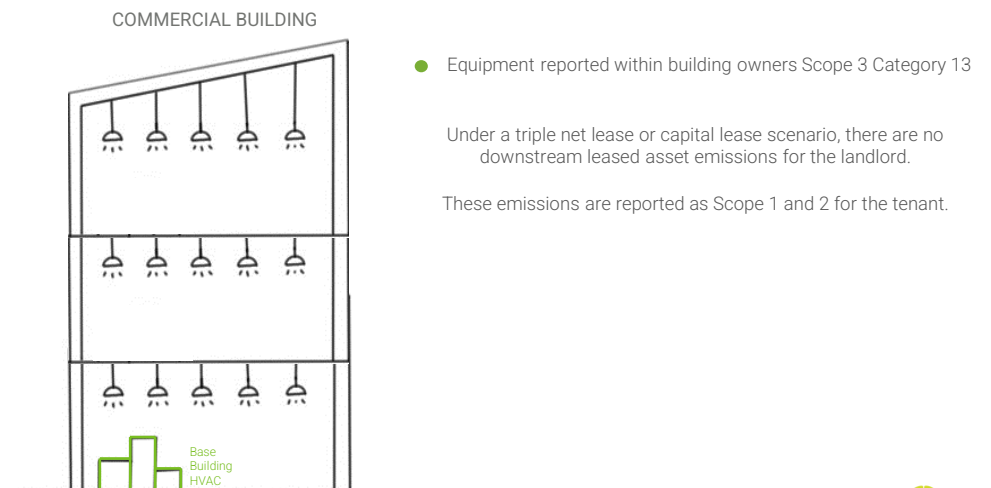
Example: Industrial Warehouse Figure 6.4. (below)

Lease type: Single net – landlord is responsible for operating and maintaining lighting and equipment provided in the lease (operating lease).



Example: Commercial office Figure 6.5. (below)

Lease type: Triple net lease – tenant is responsible for operating and maintaining lighting and equipment provided in the lease (capital / finance lease)



7

Addressing the gaps in reporting



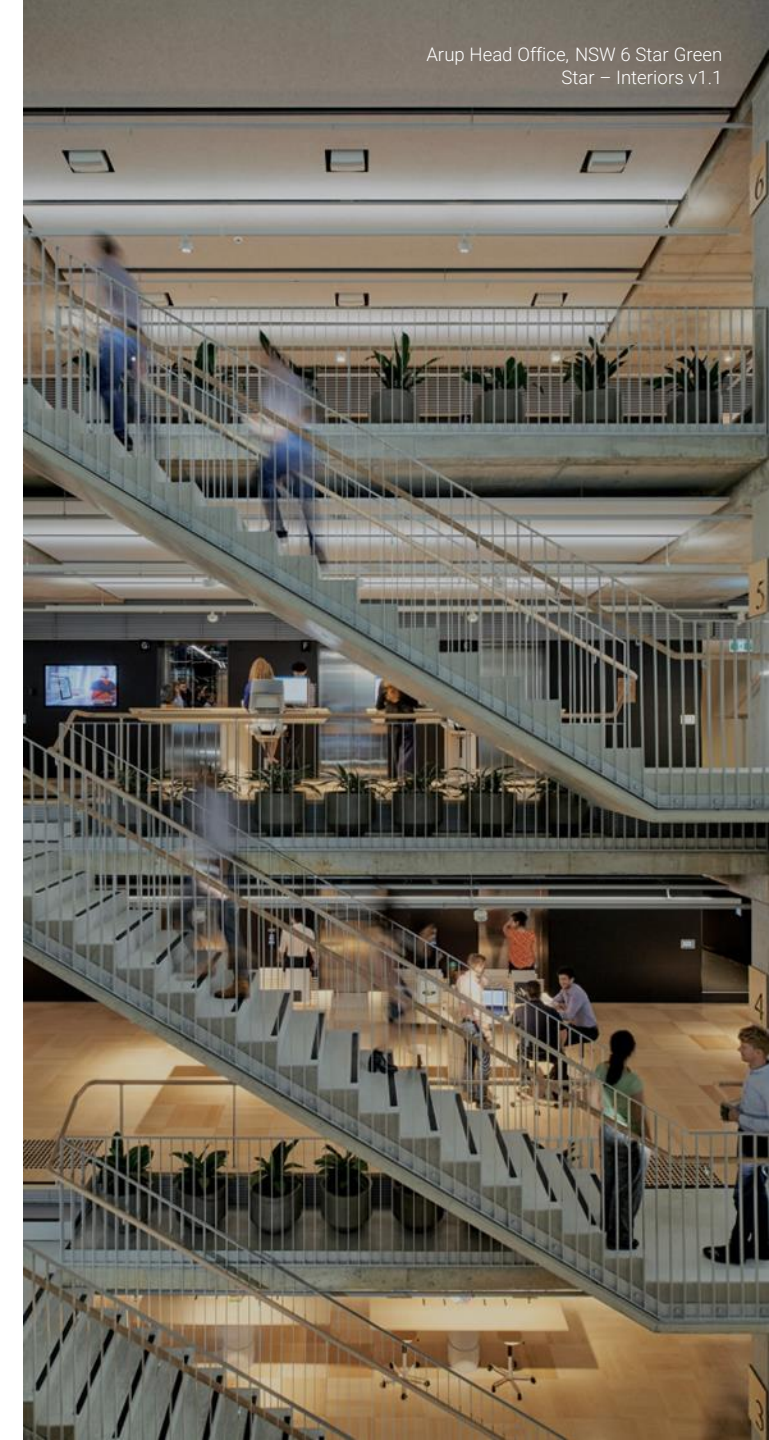
Real estate sector emissions not currently required to be reported

There is increasing recognition that embodied emissions of tenant fitouts and unregulated tenant energy consumption emissions (e.g. energy use from tenant purchased IT equipment etc.) are significant contributors to emissions across the real estate sector.

However, many tenants are not large entities, and therefore will not be required to report these emissions. This results in significant sources of emissions in the real estate sector which, despite the coming mandatory climate-related financial disclosures, will still not be accounted for and reported on.

However, large companies in the real estate sector (developers, landlords and more) have a significant level of influence over their tenants, and therefore may have a role to play in being able to account for, report on and reduce the emissions from tenant fitouts in the buildings they own.

It is worth recognising that in cases where these emissions are not financially material to a landlord (i.e. when a fitout is paid for by the tenant), and therefore unlikely to be required to be included in mandatory climate-related financial reporting, landlords arguably should report on these emissions in non-financial reporting. This would enable greater transparency regarding emissions in the real estate sector, and recognise the role of emissions from fitouts.



Relevant and material for non-financial reporting

When assessing tenant operating and fitout emissions against the protocol criteria, consider them relevant and material to the company's overall emissions. Entities should consider reporting on these emissions regardless of financial control, based on their impact materiality.

Table 7.1. (left) This table shows an example of an analysis of tenancy operating emissions in an all-electric office building in Australia for a building owner under a distinct lease types.

Table 7.2. (right) This table shows an example of an analysis of tenancy embodied fitout emissions in an all-electric office building in Australia for a building owner under a distinct lease types.

Example of an analysis of **tenancy operating emissions** in an all-electric office building in Australia for a building owner under a distinct lease types

Criteria	Analysis	Relevance rating (net lease)	Relevance rating (triple net lease)
Size (1-5)	Fitout operating emissions are the fifth largest emissions source in a building, but are rapidly reducing.	Medium (3)	Medium (3)
Influence (1-5)	Building owners are limited in their influence to reduce emissions from unregulated loads (appliances, equipment and lighting). The rapid decarbonisation of the grid means that while emissions are high, they will be lower over time.	Low (1)	Low (1)
Risk (1-5)	Tenancy emissions are generally appliances, plug loads, and computer equipment. These are managed by existing policies driving energy efficiencies in appliances	Low (1)	Low (1)
Outsourcing (1-5)	Regulated loads (cooling, hot water, heating) are provided through central services owned by the base building owner.	Low (1)	High (5)
Stakeholders (1-5)	Investors ask for whole-building operating emissions as it is common in other countries.	High (5)	High (5)
Sector guidance (1-5)	Guidance from overseas indicates these should be addressed.	High (5)	High (5)
	Resulting rating	Medium (16/26)	Medium (19/26)

Example of an analysis of **tenancy embodied fitout emissions** in an all-electric office building in Australia for a building owner under a distinct lease types

Criteria	Analysis	Relevance rating (net lease)	Relevance rating (triple net lease)
Size (1-5)	Fitout embodied emissions are the third largest emissions source in a building over its lifetime.	High (5)	High (5)
Influence (1-5)	Building owners have significant capacity to influence emissions through fitout guidelines, material banks, preferred suppliers, make good clauses, and contracts	Medium (3)	Medium (3)
Risk (1-5)	Emissions from fitout churn is likely to become an area of risk, either through waste emissions related impacts, or similar	Medium (3)	Medium (3)
Outsourcing (1-5)	Fitout embodied emissions are usually outsourced to the tenant. However, the economic value of the building asset relies on fitouts occurring.	High (5)	High (5)
Stakeholders (1-5)	Investors are currently not asking for fitout embodied emissions to be included	Low (1)	Low (1)
Sector guidance (1-5)	Guidance from overseas indicates these do not need to be addressed.	Low (1)	Low (1)
	Resulting rating	Medium (18/26)	Medium (18/26)

8

Next steps



**Contribute to the discussion
about reporting on scope 3
emissions in the real estate
sector**

Answer our discussion questions about scope 3 emissions in the real estate sector [here](#).

The GBCA is seeking contribution to the discussion about reporting on scope 3 emissions for the real estate sector.

Feedback on this discussion paper will result in a guidance document being developed for reporting scope 3 emissions in the Australian real estate sector in 2025.



Appendix A: Valuable terminology

Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol Corporate Standard): provides requirements and guidance for entities that are preparing a corporate-level GHG emissions inventory.

Greenhouse Gas Protocol – Corporate Value Chain Scope 3 Accounting and Reporting Standard (GHG Protocol Scope 3 Standard): allows companies to assess their entire value chain emissions impact and identify where to focus reduction activities.

Reporting: Presenting data to internal management and external users such as regulators, shareholders, the general public or specific stakeholder groups.

Reporting boundary: the determination of which Scope 3 emissions to include in the reporting company's Scope 3 GHG emissions inventory.

Direct emissions: Emissions from sources that are owned or controlled by the reporting company.

Indirect emissions: Emissions that are a consequence of the activities of the reporting company, but occur at sources owned or controlled by another company.

Upstream emissions: Indirect GHG emissions from purchased or acquired goods and services.

Downstream emissions: Indirect GHG emissions from sold goods and services. Downstream emissions also include emissions from products that are distributed but not sold (i.e., without receiving payment).

Scope 1 emissions: Emissions from operations that are owned or controlled by the reporting company.

Scope 2 emissions: Emissions from the generation of purchased or acquired electricity, steam, heating or cooling consumed by the reporting company.

Scope 3 emissions: All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions

Scope 3 activity: An individual source of emissions included in a scope 3 category.

Scope 3 category: One of the 15 types of scope 3 emissions.

Financial control: The ability to direct the financial and operating policies of an entity with a view to gaining economic benefits from its activities.

Financial materiality: Information on economic value creation at the level of the reporting company for the benefit of investors (shareholders).

Impact materiality: Information on the reporting company's impact on the economy, environment and people for the benefit of multiple stakeholders, such as investors, employees, customers, suppliers and local communities.

Value chain: In GHG Protocol Scope 3 Standard, "value chain" refers to all of the upstream and downstream activities associated with the operations of the reporting company, including the use of sold products by consumers and the end-of-life treatment of sold products after consumer use.

Regulated energy consumption: Regulated energy is building energy consumption resulting from the specification of controlled, fixed building services and fittings, including space heating and cooling, hot water, ventilation, fans, pumps and lighting.

Unregulated energy consumption: Unregulated energy is building energy consumption resulting from a system or process that is not 'controlled'. This may include energy consumption from systems integral to the building and its operation, e.g. IT equipment, lifts, escalators, refrigeration systems, external lighting, ducted-fume cupboards, servers, printers, photocopiers, laptops, cooking, audio-visual equipment and other appliances.

Embodied carbon: Embodied carbon includes upfront carbon (A1 to A5) and emissions from the use and end-of-life stages of a building (B1 to B5 and C1 to C4, respectively). It is defined in the EN 15978 Standard5.

Upfront carbon: Upfront carbon emissions are produced during a building's material production and construction activities before its use.

Cradle to gate: Describes a material or product from resource extraction to the factory gate, before it is transported to the next step in the construction process stage.

Notes:

The word 'carbon' is used throughout this Discussion Paper as shorthand for all greenhouse gas emissions as per the GHG Protocol Corporate Accounting and Reporting Standard.

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