Australian Sustainable Finance Taxonomy V0.1

Public Consultation Paper

First Consultation | May 2024

Australian Sustainable Finance Institute

Acknowledgement of Country and Thanks

The Australian Sustainable Finance Institute acknowledges the Traditional Custodians of Country throughout Australia and recognises their continuing connection to land, waters, species and culture. We acknowledge their ongoing status as the First Peoples of Australia and pay our respects to their Ancestors and Elders past and present.

ASFI values the perspectives, knowledge and experience provided to the development of the Australian sustainable finance taxonomy by First Nations people and thanks those who have and will continue to contribute to its development.

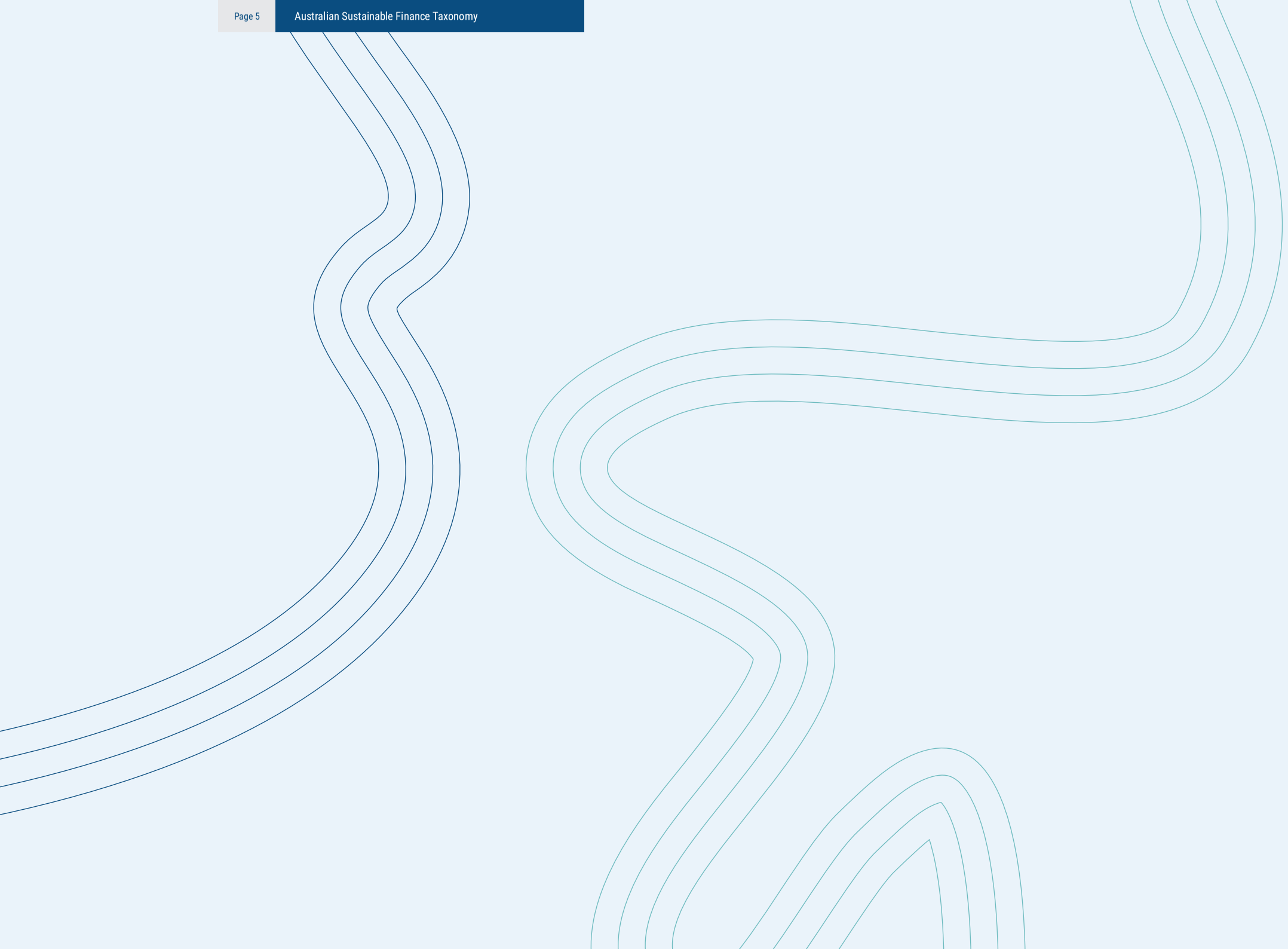
About the Australian Sustainable Finance Institute

The Australian Sustainable Finance Institute's (ASFI) mission is to align the Australian financial system with a sustainable, resilient and inclusive Australia. ASFI's establishment followed an unprecedented collaborative effort by 140 representatives from across the Australian finance sector, civil society, academia, financial regulators and Government to create the Australian Sustainable Finance Roadmap.

Released in November 2020, the Roadmap sets out 37 recommendations to realign the Australian financial system by 2030, to support a more resilient, sustainable and prosperous future for all Australians.

ASFI was established in July 2021 to coordinate and drive Roadmap implementation, working collaboratively across the financial sector, government, regulators, civil society and academia. Our members are Australian banks, asset owners, asset managers, insurers and financial services companies who are committed to ASFI's vision and willing to contribute to sustainable and impactful solutions.

Australian Sustainable Finance Institute



Scope and approach of this consultation

The taxonomy technical criteria set out in this paper have been endorsed by the Taxonomy Technical Expert Group (TTEG) as a draft for public consultation.

The overarching objective of public consultation is to test and obtain feedback on whether draft taxonomy products align with the core principles established by the Treasury for the Australian taxonomy: credibility, usability, interoperability and prioritisation for impact. For more information on the principles, see **Section 1**.

Through public consultation, ASFI is seeking:

- diverse and informed technical feedback to optimise the taxonomy's design in accordance with the core taxonomy principles;
- to ensure all stakeholders with an interest in the Australian taxonomy's development are given multiple opportunities to provide input on matters of interest to them; and
- to socialise the taxonomy with various stakeholder groups and foster a greater understanding of its functions.

ASFI's approach to public consultation is informed by the below principles:

INCLUSIVITY	Identifying diverse stakeholders and the optimal format and forum to engage with those stakeholders; ensuring accessibility by identifying appropriate structures and mechanisms to enable participation.
TIMELINESS	Ensuring early, ongoing, and timely engagement with stakeholders.
TRANSPARENCY	Committing to publicly disclose submissions provided by respondents, and publishing a summary of key themes related to the questions put forward for public consultation. All submissions will be made public by default unless otherwise requested by the author.
RESPECT	Ensuring optimal engagement settings so stakeholder engagement is enhanced and participants feel heard and respected.

ASFI understands that the development of an Australian taxonomy cannot be done well without First Nations people, and we particularly encourage First Nations people to provide feedback through this public consultation process.

This is one of two rounds of public consultation on the Australian taxonomy's initial development phase. This round of public consultation is focused on the draft climate change mitigation criteria for the first three priority sectors under development:

1. electricity generation and supply;
2. minerals, mining and metals, and;
3. construction and the built environment.

ASFI is therefore primarily seeking initial feedback on these components of the Australian taxonomy, as well as the proposed headline ambitions detailed in **Section 3**.

In addition to seeking written feedback on this public consultation paper, ASFI will hold a public webinar covering the content in the consultation paper; and undertake a public consultation roadshow targeting key stakeholder groups.

In Q4 2024, ASFI will consult on the first three sectors in scope for this consultation, in addition to:

- draft climate change mitigation criteria for additional priority sectors, which include transport; manufacturing and industry; and agriculture and land;
- a Do No Significant Harm (DNSH) framework;
- Minimum Social Safeguards (MSS), and;
- the rule set, comprising advice for how taxonomy users can demonstrate alignment with the taxonomy.

ASFI will also undertake rolling targeted consultations throughout 2024 with specific user groups and stakeholders, including First Nations peoples, environmental non-governmental organisations (ENGOs) and organisations involved in international taxonomy development initiatives.

How to engage with this consultation process

The public consultation process will run for 5 weeks from **9:00am Tuesday 28 May 2024** until **9:00pm Sunday 30 June 2024 (AEST)**. We will not be able to incorporate feedback received after this time.

ASFI welcomes feedback from all stakeholders. Feedback that directly addresses consultation questions will be prioritised. To provide feedback, please respond to the survey available here. Please note that only written responses to the survey will be considered. ASFI is not able to accept written feedback via other mediums, such as email.

Feedback received during the first round of public consultation will be used to inform the next iteration of the draft taxonomy, which will be released for a final round of public consultation in Q4 2024. Unless you request otherwise, your feedback will be published on ASFI's website.

We thank you in advance for your participation and look forward to receiving your feedback.

Executive Summary

ASFI and the Australian Government have partnered to develop an Australian sustainable finance taxonomy. This partnership reflects shared appetite across government, the finance sector, and industry for new frameworks to support sustainable finance markets in Australia. The taxonomy is a key part of the Australian Government's sustainable finance agenda.

A sustainable finance taxonomy is a framework to classify economic activities and assets that positively contribute to key sustainability objectives. There are over 40 sustainable finance taxonomies in place or under development globally. The credibility of Australia's taxonomy in global capital markets is important in enabling the continued growth of international capital to support our transition.

The Australian taxonomy will provide common, consistent, scientifically rigorous definitions for green and transition finance in Australia, helping to accelerate the allocation of capital towards sustainable activities to achieve Australia's net-zero ambitions. Its primary purpose is to support the flow of capital into sustainable activities and ensure market integrity, transparency, and fairness, and to address greenwashing.

The taxonomy will help investors make the assessment of green credentials in a consistent and comparable way; however it does not mandate what can or cannot be invested in.

The taxonomy is designed to be updated at regular intervals. It will evolve to reflect changes in modelling, and advancements in technology development and the evolving dynamics of the transition.

The Australian taxonomy will initially comprise technical screening criteria addressing climate change mitigation for six priority economic sectors, and include a 'Do No Significant Harm' framework and minimum social safeguards to ensure activities that positively contribute to climate change mitigation are undertaken in ways that recognise and seek to mitigate impacts on other sustainability objectives and social outcomes.

To inform this work, ASFI is undertaking public consultation at key stages in the project. This is the first of two rounds of public consultation. In this round, ASFI is seeking feedback on the draft climate change mitigation criteria that has been developed for the first three priority sectors:

1. Electricity generation and supply – see **Section 4**.
2. Minerals, mining and metals – see **Section 5**.
3. Construction and the built environment – see **Section 6**.

Additionally, ASFI is seeking feedback on the taxonomy's draft headline ambitions (see **Section 3**), which refer to the broad, long-term goals that underpin the taxonomy's environmental objectives.

The feedback we receive will be critical in shaping the further development of these areas throughout the second half of the year. The second public consultation, scheduled for Q4 2024, will seek additional feedback on the areas in scope for this consultation, along with proposed:

1. technical screening criteria for further priority sectors
2. DNSH criteria;
3. MSS criteria;
4. proposals regarding matters related to the taxonomy's implementation and adoption.

The Australian sustainable finance taxonomy covering climate change mitigation for the priority sectors consulted on, together with DNSH and MSS, will be completed by the end of 2024.


Li-ion
CAUTION

1. Background and Purpose

About the Australian Sustainable Finance Taxonomy

The Australian Taxonomy Project commenced in July 2023. It is a joint industry-government initiative, led by ASFI in partnership with the Australian Commonwealth Department of the Treasury, to develop an Australian sustainable finance taxonomy.

Funding and partnership from the Australian Government reflects shared appetite across government, finance, and industry for new frameworks to support sustainable finance markets in Australia, and the taxonomy constitutes a key part of Treasury's sustainable finance agenda.

The taxonomy's initial development phase, which will conclude in December 2024, covers:

- the development of climate change mitigation criteria for up to six priority sectors;
- the development of a Do No Significant Harm (DNSH) framework and Minimum Social Safeguards (MSS) (see **Section 2C**), and;
- associated technical work related to taxonomy implementation, including proposed longer term institutional arrangements, taxonomy use cases, data requirements and interoperability considerations.

The following sectors are included in this phase of the taxonomy's development:

	IN SCOPE FOR	THIS consultation	NEXT consultation
1	**Electricity generation and supply**	Y	Y
2	**Minerals, mining and metals**	Y	Y
3	**Construction and the built environment**	Y	Y
4	**Manufacturing and Industry**	N	Y
5	**Transport**	N	Y
6	**Agriculture and land**	N	Y

The taxonomy's sectoral coverage aligns with the six sectoral decarbonisation plans being developed by the Australian government. While the sectoral plans will inform the development of Australia's Net Zero Plan and Australia's 2035 emissions reduction target[1], a decision on the 2035 target has not been made. Scenario analysis included in this paper should not therefore be interpreted as decisions of government on these matters.

The taxonomy's initial development phase has been informed by recommendations set out in the project outputs to date, which are summarised in Figure 1. Drawing on a wide range of experts and stakeholders, the scoping phase (October 2022 – May 2023) assessed and built on work done on sustainable finance taxonomies internationally, while also establishing parameters to account for considerations specific to Australia's policy and economic context.

The taxonomy's initial development phase is subject to governance oversight by the Australian Council of Financial Regulators' Climate Working Group (CWG) - comprising representatives from Treasury, the Reserve Bank of Australia, APRA, and ASIC - which is informing and supporting implementation of the Government's sustainable finance strategy.

A Terms of Reference between ASFI and the CWG sets out the primary objectives of the Australian taxonomy, core design principles, governance arrangements, and scope of the taxonomy's initial development.

As stated in the Terms of Reference with the CWG, the primary objectives of the Australian taxonomy are to:

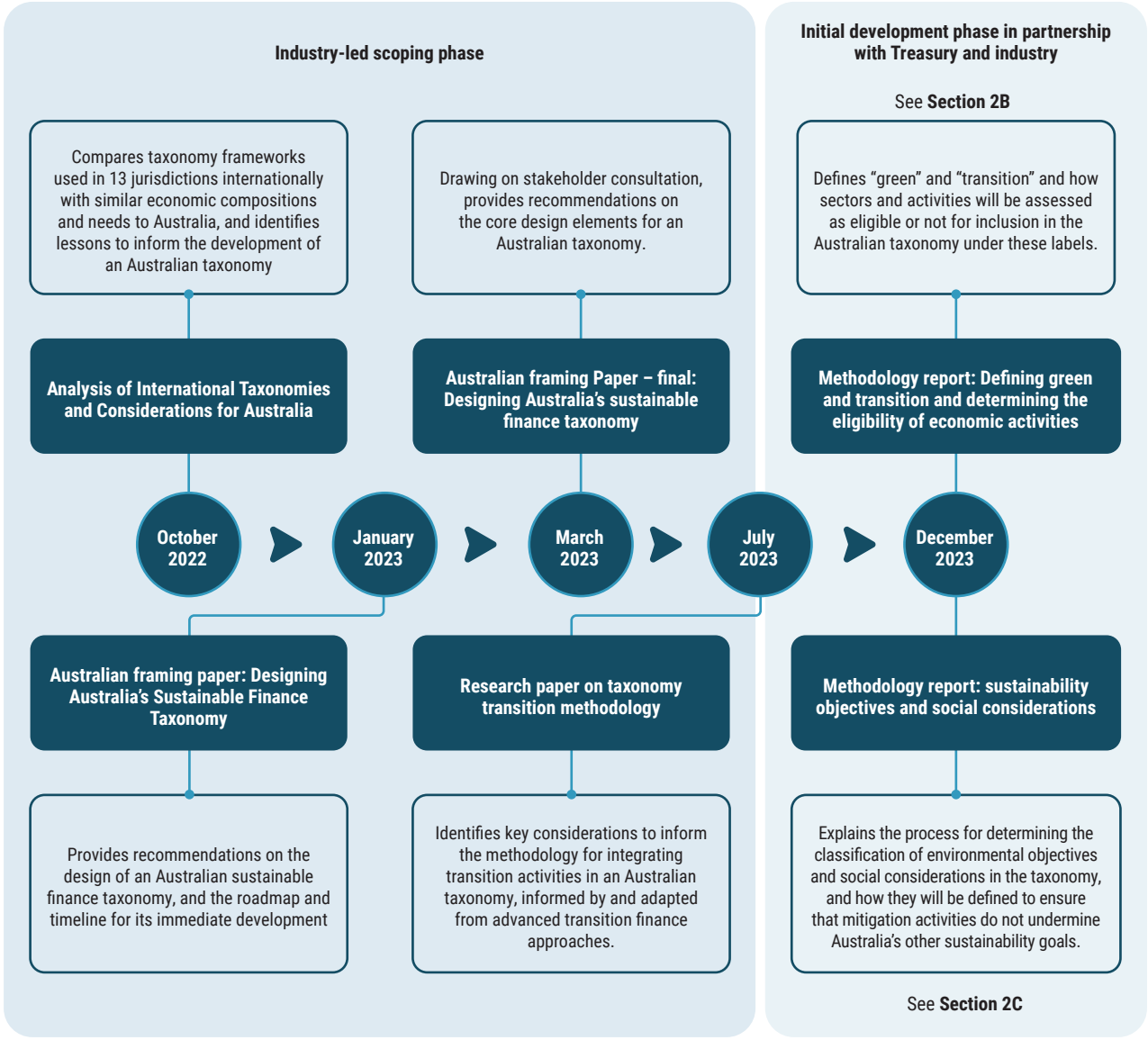
- help drive capital into activities that will decarbonise the economy at the speed and scale required to reach our global climate goals; and
- improve the quality of information available to the market to ensure sustainability definitions are credible, comparable and usable to help promote transparency and trust and reduce greenwashing.

The four core principles informing the Australian taxonomy's design are credibility; usability; interoperability; and prioritisation for impact. In addition to informing the taxonomy's design, these principles informed the composition of the decision-making body for the Australian taxonomy's initial development phase: the Taxonomy Technical Expert Group (TTEG).

With endorsement from the CWG, ASFI constituted the TTEG in August 2023. The TTEG comprises 25 experts across sustainable finance; whole-of-economy decarbonisation; climate and environmental science and policy; human rights; and Indigenous rights and perspectives (see **Acknowledgements**).

The TTEG is tasked with providing strategic direction over, input into, and endorsement of all Australian taxonomy products before they are provided to Treasury and the CWG. In addition to the CWG and TTEG, ASFI draws on input from a range of experts and stakeholders to inform development of the taxonomy.

FIGURE 1:
Timeline – Australian taxonomy project outputs to date



THE AUSTRALIAN SUSTAINABLE FINANCE TAXONOMY'S CORE PRINCIPLES

As set out in the Terms of Reference between ASFI and the CWG, the core principles guiding the initial development of the Australian taxonomy are credibility, usability, interoperability, and prioritisation for impact. These principles were identified in collaboration with industry and Government during the taxonomy scoping phase. In developing an Australian taxonomy, the TTEG and ASFI are required to ensure that the core principles are upheld and, if a conflict between principles occurs, that the right balance is reached and appropriately consulted on.

Credibility: The taxonomy should be science- and evidence-based, technology neutral, and informed by up-to-date information and best practice. Credibility helps ensure the taxonomy is robust and supports the flow of capital towards activities with strong sustainability attributes.

Usability: The taxonomy should be designed in a manner that is clear, efficient, and understandable by the finance and real economy sectors, as well as by organisations of different sizes and maturities. It should also leverage available and fit-for-purpose data and proxies to promote transparent and comparable reporting that reduces the burden on users.

Interoperability: The taxonomy should be broadly compatible with international standards and other jurisdictions' sustainable finance taxonomies, while still taking into account the Australian context in which it will operate.

Prioritisation for impact: The taxonomy should be tailored to Australian priorities, including supporting the transition to net zero emissions, aligning with broader Australian Government climate policy objectives, and helping build the foundation for broader regulatory frameworks on sustainable finance. Prioritisation is particularly important in determining which sectors and activities should be covered by the taxonomy in its initial development phase.

THE AUSTRALIAN TAXONOMY'S COLLABORATIVE APPROACH

ASFI is taking a collaborative approach to the Australian taxonomy's initial development phase, drawing on diverse stakeholder and technical input and views, as depicted in **Figure 2**. ASFI and its technical teams, led by the Climate Bonds Initiative, seek targeted advice, input and feedback on initial draft taxonomy products through sector and subject-specific taxonomy advisory group (TAG).

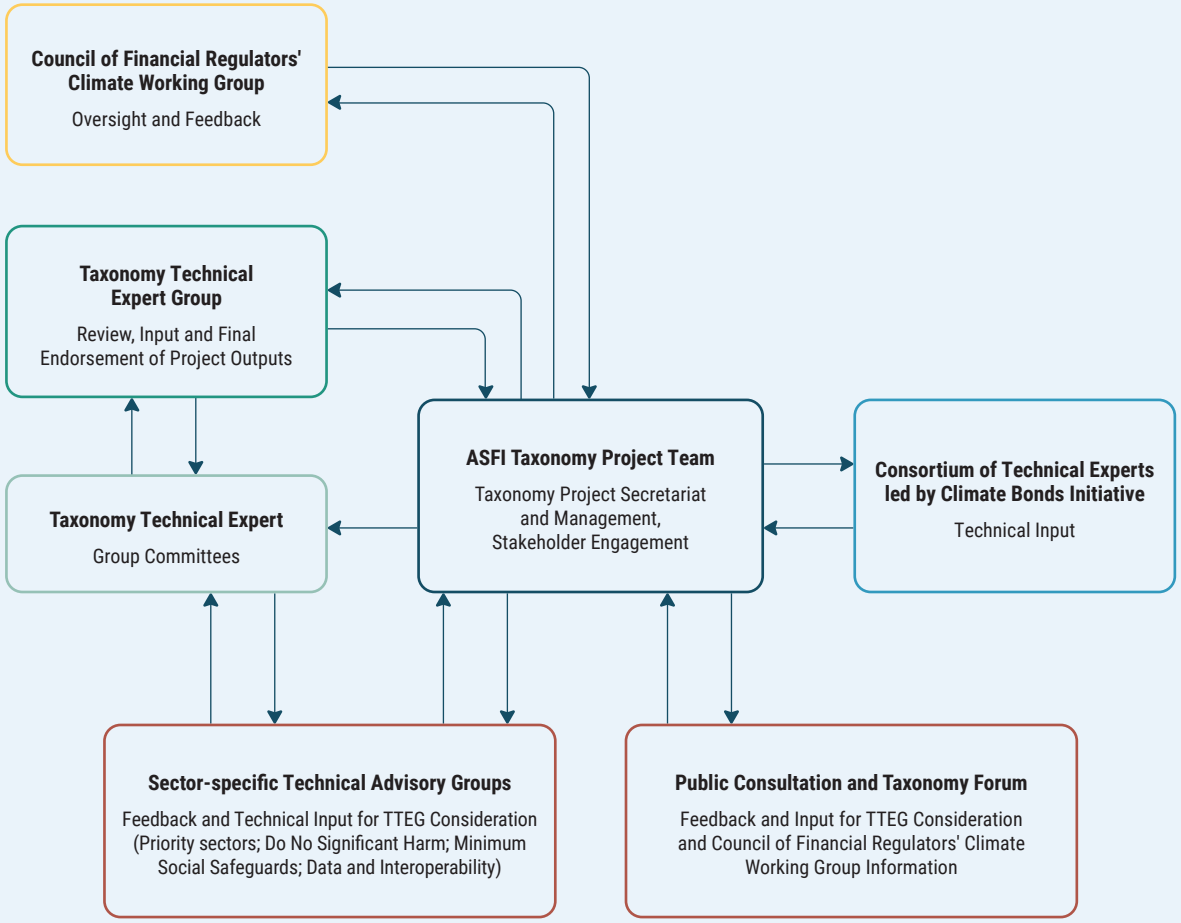
Once draft taxonomy products have been shaped by inputs from the TAGs, they are distributed to the Taxonomy Technical Expert Group (TTEG) committees, which comprise TTEG members with relevant sector and subject-specific expertise. TTEG committees review draft taxonomy products, propose amendments, and put forward recommendations to the full TTEG.

The full TTEG meets periodically to consider, provide input into and ultimately endorse draft taxonomy products for public consultation and finalisation. The minutes of TTEG meetings are published on ASFI's website.

ASFI has also convened several taxonomy forums, including an International Taxonomy Forum and an Environment Non-governmental Organisation (ENGO) Taxonomy Forum and consults with these stakeholder groups – as well as relevant government departments and agencies – at key points in the taxonomy's development.

FIGURE 2:

Governance Structure – Taxonomy Development



WHAT IS A SUSTAINABLE FINANCE TAXONOMY?

A sustainable finance taxonomy is a framework to classify economic activities and assets that positively contribute to key sustainability objectives. There are over 40 taxonomies in place or under development globally. The Australian taxonomy will provide a common standard for green and transition finance in Australia, helping to accelerate the allocation of capital towards sustainable activities to achieve Australia's net zero ambitions.

The taxonomy will:

- make it easier for financial institutions to identify investment and lending opportunities;
- provide the finance sector with greater confidence in and assurance over sustainability claims;
- support the provision of consistent and comparable information to regulating agencies that assess sustainability claims;
- enable comparability between investment products and portfolios; and
- reduce transaction costs associated with due diligence by providing market clarity, thereby increasing the attractiveness of transactions for sustainable activities.

The Taxonomy in the Australian Policy Context

Accelerating the deployment of public and private investment toward net zero-aligned activities is essential for Australia's economy to transition in line with the Government's commitments under the Paris Agreement, and to realise Australia's ambition of becoming a renewable energy superpower through strengthening industry's competitiveness in global low-carbon value chains.

Measures that improve access to consistent, credible, and comparable climate-related information in the market are highly important to unlocking capital at the scale required. Relevant information includes physical and transition risks and opportunities, entities' transition plans, and activities that contribute to Australia's climate and sustainability objectives. Enhancing market transparency in these areas enables investors to better account for climate risk factors when making investment decisions, and identify investment opportunities presented by the transition.

The Australian government's sustainable finance strategy articulates a whole-of-government sustainable finance policy agenda – summarised in Table 1 – that seeks to strengthen transparency, improve financial market regulation, and catalyse growth in sustainable finance markets.

In the 2024/25 budget, the Australian government announced funding for the delivery of key aspects of the sustainable finance agenda, including:

- enforcement against greenwashing and other sustainability-related misconduct;
- the delivery of the sustainable finance framework;
- the design of a sustainability labelling regime; and
- issuing approximately $7 billion of green bonds in 2023–24 to support the development of Australia's broader sustainable finance markets.

The taxonomy is a central component of this approach. As identified in the Strategy, the taxonomy will enable market participants to understand how certain economic activities and investments align with, or contribute to, climate and sustainability outcomes.

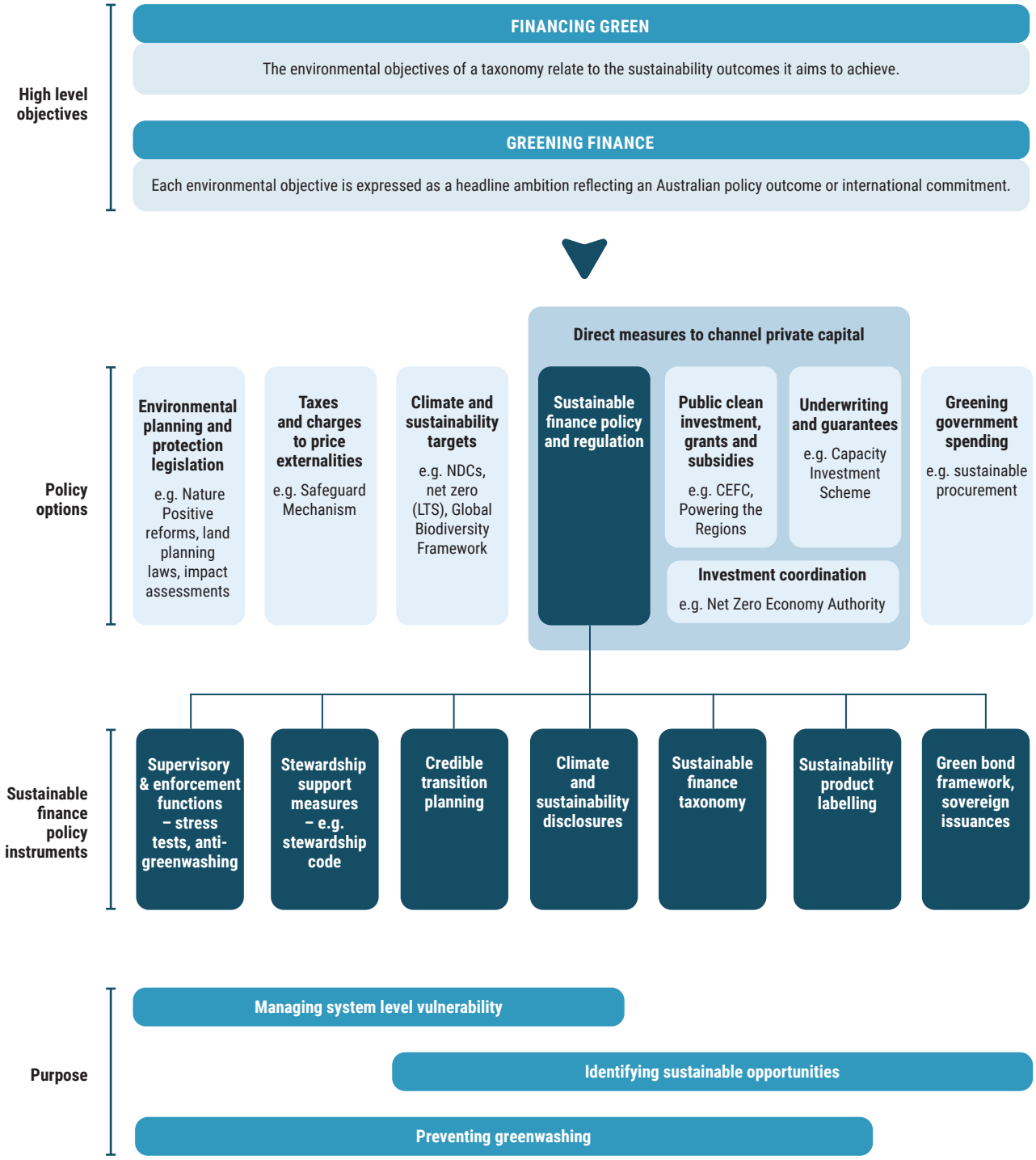
While the taxonomy will initially be voluntary, the sustainable finance strategy consultation paper indicates that "Treasury and the CFR will consider options for embedding the taxonomy in Australia's regulatory architecture", noting that a legislative approach "will give more force to the taxonomy's use cases, provide clearer guidance to markets, and ensure that the taxonomy is an effective foundation of the Government's sustainable finance agenda". Based on international experiences, potential applicable use cases include the interlinkage of the taxonomy with climate-related disclosures, credible transition planning, sustainable finance product labelling, sovereign green bond frameworks, and public investment vehicles.

Sustainable finance policy – including the Australian taxonomy – is one part of a broader range of policy and regulatory tools required to achieve Australia's net zero and sustainability ambitions (see Figure 3). While a credible, interoperable and useable taxonomy is important to help ensure Australia retains access to cost competitive international capital required for the transition, it is not a silver bullet. Other measures, including a strong, science-aligned, 2035 Nationally Determined Contribution (NDC), and effective real economy policies to achieve the NDC, will be critical for Australia's transition.

TABLE 1:
Summary of Priorities – Draft Sustainable Finance Strategy[2]

PILLAR 1: **Improve transparency on climate and sustainability**	**Priority 1:** Establish a framework for sustainability-related financial disclosures	**Priority 2:** Develop a Sustainable Finance Taxonomy
	Priority 3: Support credible net zero transition planning	**Priority 4:** Develop a labelling system for investment products marketed as sustainable
PILLAR 2: **Financial system capabilities**	**Priority 5:** Enhancing market supervision and enforcement	**Priority 6:** Identifying and responding to potential systemic financial risks
	Priority 7: Addressing data and analytical challenges	**Priority 8:** Ensuring fit for purpose regulatory frameworks
PILLAR 3: **Australian Government leadership and engagement**	**Priority 9:** Issuing Australian sovereign green bonds	**Priority 10:** Catalysing sustainable finance flows and markets
	Priority 11: Promoting international alignment	**Priority 12:** Position Australia as a global sustainability leader

FIGURE 3:
Role of sustainable finance policies in Australia's broader climate and sustainability policy architecture

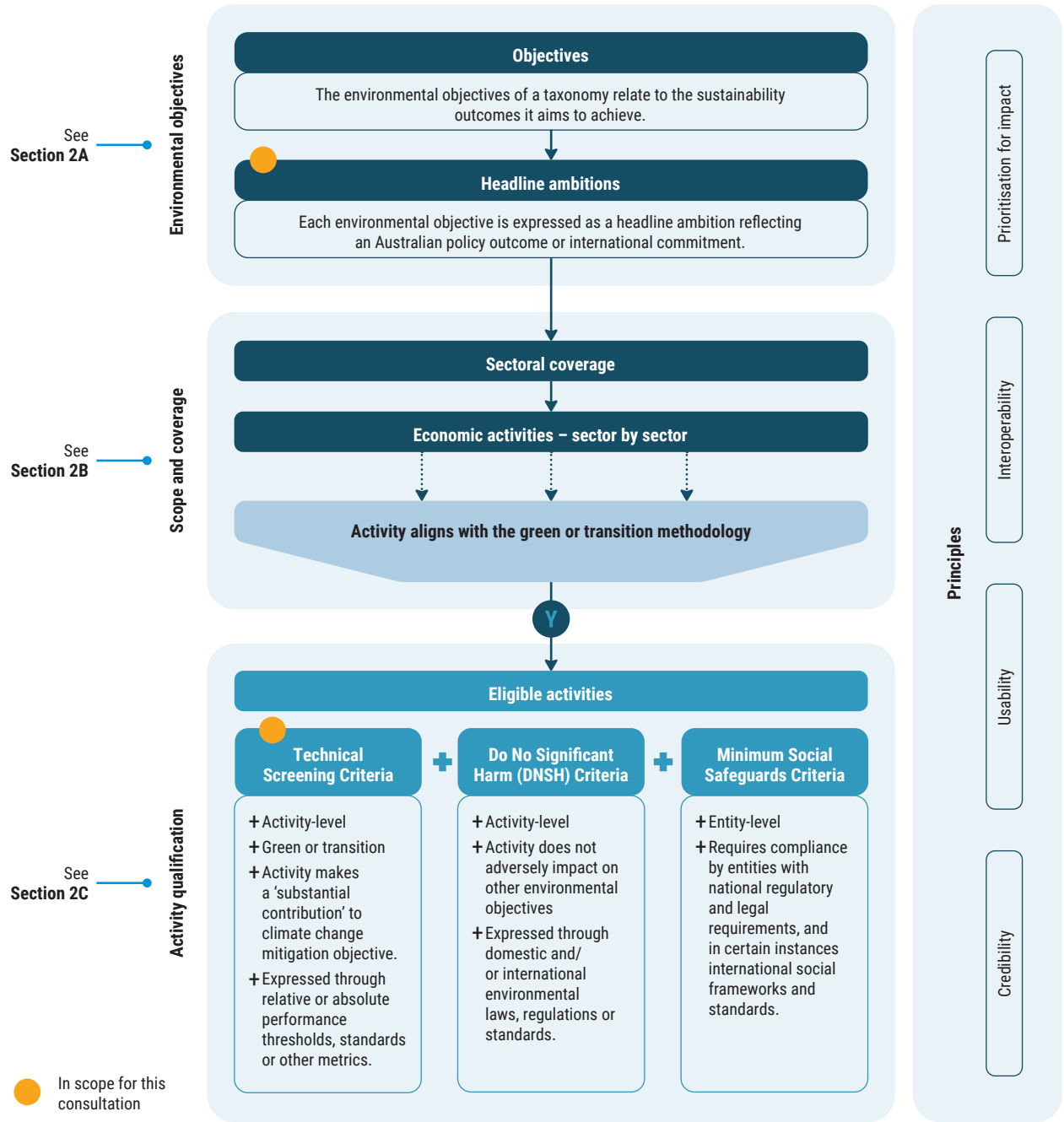


2. Approach to Taxonomy Development

The broad approach to developing a taxonomy framework, illustrated in Figure 4, is as follows:

1. The overarching environmental and social objectives are identified and described;
2. The taxonomy's scope and coverage, including sectors and activities, is determined;
3. Climate change mitigation technical screening criteria (TSC) for those sectors and activities is developed; and
4. Further qualifying criteria is developed to ensure activities that support climate change mitigation meet minimum social safeguards and do no significant harm to the taxonomy's other environmental objectives.

FIGURE 4:
Illustration of the Australian taxonomy framework



A. Environmental Objectives

Environmental Objectives

The Australian taxonomy's environmental objectives, which have been selected based on Australia's environmental priorities and commitments and alignment with other taxonomies, are:

- climate change mitigation;
- climate change adaptation and resilience;
- biodiversity and ecosystem protection;
- sustainable use and protection of water resources;
- pollution prevention and control; and
- transition to a circular economy.

In its initial development phase, the Australian taxonomy will be prioritising the development of substantive criteria (TSC) for climate change mitigation. This reflects the urgent market need for credible and usable guidance on the types of activities – especially transition activities – that are consistent with an Australian 1.5°C-aligned emissions reduction pathway. It also supports interoperability with international taxonomies and consistency with sustainability-related disclosure frameworks, which have similarly prioritised climate change mitigation to date.

Recognising the importance of broader environmental objectives to Australia's long-term sustainability, the Australian taxonomy has been designed to ensure that TSC can be developed for the other environmental objectives in the future.

Consistent with the approach taken by other sustainable finance taxonomies, DNSH criteria will be developed for the taxonomy's other environmental objectives. The purpose of DNSH criteria is to ensure an activity that substantially contributes to climate change mitigation is undertaken in a way that recognises and seeks to mitigate impacts on other sustainability objectives.

Headline ambitions

The Australian taxonomy's environmental objectives are expressed as headline ambitions. Headline ambitions are the broad, aspirational goals linked to each environmental objective. They are not taxonomy-specific definitions or targets. Establishing headline ambitions for all six environmental objectives provides direction for the initial development of both substantive and DNSH criteria for all the environmental objectives covered in the taxonomy.

The proposed headline ambitions for the Australian taxonomy's six environmental objectives are set out in **Section 3**.

B. Scope and Coverage

Sectors

The development of criteria for the initial development phase of the taxonomy, which is focused on climate change mitigation, will prioritise sectors and activities that: are Australia's high-emitting sectors; are instrumental in facilitating the transition to net zero; and/or have a substantial role in a net zero economy based on current technological readiness levels.

Technical screening criteria for the following sectors is in scope for this round of public consultation:

- **Electricity generation and supply – see page 27**
- **Minerals, mining and metals – see page 46**
- **Construction and the built environment – see page 66**

The next round of public consultation, in Q4 of 2024, will seek feedback on:

1. **Criteria for the three sectors in scope for this consultation;**
2. **Proposed criteria for activities covering manufacturing and industry, transport, and agriculture and land;**
3. **Proposed DNSH and MSS criteria; and**
4. **Proposed use cases and the taxonomy's rule set.**

Activity Selection and the Transition Methodology

In accordance with the endorsed transition methodology for the Australian taxonomy, two filters have been applied to assess eligibility of an activity for inclusion in the Australian taxonomy (see Table 2).

TABLE 2:
The nature and performance of an activity in the Australian taxonomy

FILTER	DEFINED AS	DETERMINED BY
The nature of the activity	whether the emissions associated with an activity can be reduced or removed.	The transition methodology
The performance of the activity	how an activity is performing and whether this is sufficient to be considered green or transition.	Technical screening criteria (see **Section 2C**).

HOW WILL THE AUSTRALIAN TAXONOMY BE 1.5°C ALIGNED?

Internationally recognised and credible 1.5°C-aligned scenarios are being used to identify (a) which activities can be classified as green or transition under the taxonomy and (b) the technical screening criteria for those activities, including greenhouse gas emissions (GHG) thresholds.

The core reference scenario for the taxonomy's development is the International Energy Agency's Net Zero Emissions scenario (IEA NZE2050), and the Australian 1.5°C scenario developed by Climateworks Centre based on partnership with CSIRO, which downscales the IEA's TIMES model to the Australian context.

While other credible 1.5°C scenarios have been developed, including by the Intergovernmental Panel on Climate Change and the Network for Greening the Financial System, the IEA's NZE2050 model is commonly used as a reference in global capital markets, and using it strengthens the taxonomy's interoperability.

Aligning a taxonomy with a credible 1.5°C pathway that is recognised by global capital markets is important because it provides clarity about activities that verifiably contribute to emissions reductions, which can support investors in shifting strategic asset allocations toward transition-related opportunities over time.

The nature of an activity is the key feature that determines its eligibility for inclusion in the taxonomy in either the green or transition category, and is assessed by reference to the three broad levers available for decarbonising an economy consistent with a net zero emissions future:

1. **Phase down:** activities that have low-emissions substitutes and where emissions cannot be reduced or decoupled from the activity, which means it has no role in a future net zero emissions economy. For these activities, credible, global climate-science scenarios determine that the only feasible pathway to decarbonisation is to reduce or "phase down and/ or out" that activity.
2. **Decarbonise:** activities that have no low carbon substitute and therefore need to transform, so emissions growth can be decoupled from the growth of the activity. The nature of the activity means that it would need to transform how the activity is undertaken: "transition within", but the activity itself is still needed in a decarbonised world, for example, steel.
3. **Substitute/replace:** high emissions activities with low emissions substitutes.

Phase down activities are, based on current technology readiness and credible global climate-science scenarios, inconsistent with the objective of a net zero future economy and are excluded from the taxonomy. These are activities:

- With low carbon alternatives currently available, or in advanced stages of development;
- That pose a risk of high carbon lock in; and
- With no pathway to decarbonise scope 1, 2 and 3 emissions without phasing down and/or out.

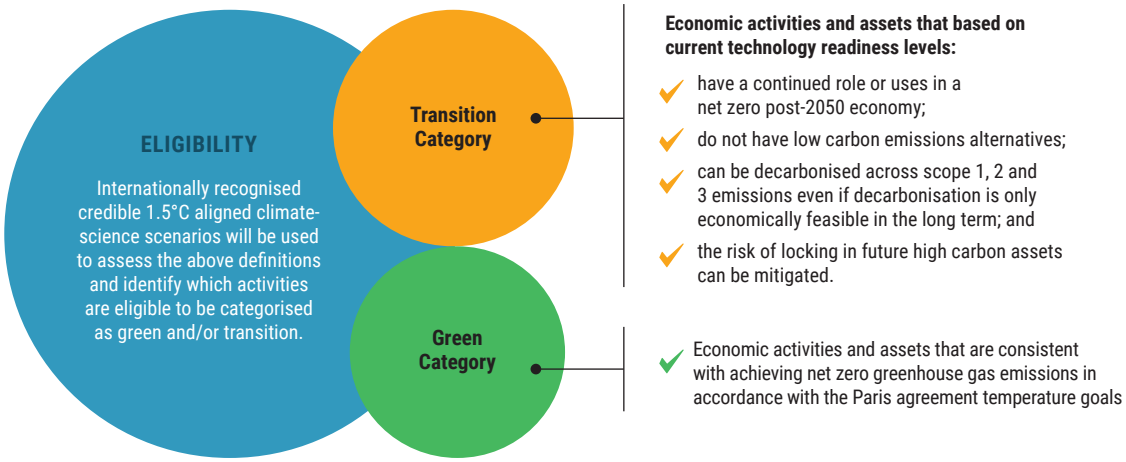
Activities in the 'decarbonise' or 'substitute/replace' categories are included in the taxonomy as either green or transition, provided they meet the requirements illustrated in Figure 5.

Credible 1.5°C aligned emissions reduction pathways, including the IEA's NZE2050 scenario and Climateworks Centre's Australian 1.5°C scenario, which downscales the IEA's TIMES model within the constraints of an Australian carbon budget, are used to qualify the eligibility of activities in relation to the green and transition categories. For example, the production of steel and cement increases to 2050 under the IEA's NZE2050 scenario but growth must be decoupled from emissions.

For more information about how the Australian taxonomy determines the eligibility of activities as green or transition, please see the endorsed transition methodology report.

Activities currently classified as phase down activities may become eligible for inclusion if and as technological developments bring them into alignment them with the eligibility requirements set out in Figure 5.

FIGURE 5:
Characteristics of green and transition activities



C. Activity Qualification

Technical Screening Criteria

For each activity that is found to be eligible for categorisation as green or transition under the taxonomy according to an assessment of its nature (as outlined above), TSC will be developed. TSC define the specific substantive performance requirements, thresholds, and/or other metrics, which the activity must meet to be classified as 'green' or 'transition'.

Where data are available and applicable to the activity, the Australian taxonomy defines performance level requirements for green and transition activities using objective science-based technical screening criteria, utilising emissions intensity thresholds aligned with 1.5°C-aligned pathways.

For some activities, emissions intensity thresholds are not applicable. In these cases, other relative or absolute performance indicators, targets, and measures, including specific technologies or products, and standards or codes are used depending on which is more appropriate to set the thresholds for green or transition activities.

For a limited range of activities, automatic eligibility is granted based on the verified contribution that can be attributed to the underlying technology. For example, all solar, wind, and ocean energy generation activities are proposed as automatically eligible until 2030 due to a high degree of certainty that they fit within the 100g CO2e/kWh emissions intensity threshold fixed until that date.

Do No Significant Harm

In sustainable finance taxonomies, the DNSH principle ensures an activity that substantially contributes to one taxonomy objective (in this case, climate change mitigation) does no significant harm to any of the taxonomy's other environmental objectives. The DNSH principle supports a holistic approach to sustainability and helps to reduce greenwashing.

DNSH criteria consider impacts throughout the lifecycle of an asset, activity, or project, and associated impacts across supply chains. DNSH criteria can be 'generic' or 'specific'. Generic DNSH criteria are defined for each taxonomy objective (see **Section 2A**) and apply to all activities, while specific DNSH criteria are defined at an activity level for each objective by identifying the material impacts of the activity. The Australian taxonomy will include generic and specific DNSH criteria based on the endorsed sustainability objectives and social considerations methodology.

Minimum Social Safeguards

The purpose of MSS is to ensure that companies engaging in taxonomy-aligned activities adhere to a set of defined social standards and guidelines, including in relation to corporate governance; human and labour rights; and First Nations Peoples and cultural heritage. MSS criteria is generic and defined at the entity or asset level, due to the significant challenges associated with activity-level disclosure.

The Australian taxonomy's draft social objectives and their underlying core pillars are set out in Table 3. These objectives and core pillars will inform the development of draft MSS criteria and form part of the second consultation phase in Q4 2024.

The Australian taxonomy's DNSH and MSS criteria are currently under development. Draft criteria that covers all sectors will be put out for public consultation in Q4 2024.

TABLE 3:
Draft social objectives and core pillars – the Australian sustainable finance taxonomy

SOCIAL OBJECTIVE	CORE PILLARS		
Elements of corporate governance	Corporate governance Anti-corruption and bribery	Taxation Fair competition Consumer protection	Community engagement Procurement practices
Human rights	Employment Labour and working conditions	Occupational health and safety Modern slavery	Gender equality Non-Discrimination, diversity and equal opportunity
Indigenous Peoples and cultural heritage	Indigenous Peoples	Indigenous cultural heritage	

3. For Consultation: Taxonomy Headline Ambitions

The approach to developing 'headline ambitions' – or vision statements – for the Australian taxonomy's six environmental objectives is set out in the endorsed sustainability objectives and social considerations methodology, and is summarised below. Headline ambitions are the broad, longer-term goals that underpin a taxonomy's environmental objectives and are designed to be considered holistically. Importantly, they are not definitions or taxonomy-specific targets.

While the development of TSC for climate change mitigation is the focus of the Australian taxonomy's initial development phase, it will include DNSH criteria for the other five environmental objectives. Establishing headline ambitions for all six of the taxonomy's environmental objectives as an initial step provides direction for the development of DNSH criteria and establishes the framework for building the taxonomy's TSC out over time to cover sustainability objectives beyond climate change mitigation.

The Australian taxonomy's headline ambitions should:

- be based on international environmental and climate agreements that Australia supports (for example, the Paris Agreement; and the Kunming-Montreal Global Biodiversity Framework);
- be underpinned by science-based information, including alignment to a 1.5°C trajectory;
- be informed by local commitments and strategies on environmental objectives, including Australia's response to international agreements or Australia's leadership on an objective;
- define or facilitate clear goals and targets, both short and long term where applicable;
- determine timelines to achieve the defined targets; and
- assess whether the targets are achievable at the defined levels and timescales.

Informed by this approach, the following draft headline ambitions have been developed for the Australian taxonomy's six environmental objectives in close consultation with TTEG and TAG members, relevant government representatives, and other key stakeholders.

TABLE 4:

Objectives and Proposed Headline Ambitions – the Australian sustainable finance taxonomy

Climate change mitigation

Advance a 2050 net zero greenhouse gas emissions future in Australia and contribute to the Paris Agreement goal of keeping global temperature increases well below 2°C and seeking to limit temperature increases to 1.5°C based on credible, science-aligned scenarios.

To support the achievement of this ambition, rapid and sustained greenhouse gas emissions reductions consistent with Paris-aligned, quantitative interim targets informed by the best available science and based on Australia's remaining carbon budget are required to avoid further accumulation of greenhouse gases in the atmosphere to reduce adverse climate impacts. This includes the ongoing transformation of the energy sector to zero-emissions sources.

Biodiversity and ecosystem protection

By 2050, Australia's biodiversity, soils and terrestrial and marine ecosystems are valued, conserved, restored and wisely used. The impacts of climate change, invasive species and human pressures are minimised, to enable a continued flow of ecosystem services based on the principle of equitable outcomes for diverse societal needs.

Elevating First Nations-led traditional practices is critical to support the achievement of this ambition. Environmental impacts should be minimised while efforts to protect, conserve and restore the environment should be scaled up over time. At least 30 per cent of Australia's terrestrial, inland water, and coastal and marine areas – especially areas of particular importance for biodiversity and its contributions to people – should be effectively managed by 2030 through a combination of conservation, protection and restoration efforts that consider ecological representativeness; genetic diversity within and between species; improved connectivity of ecosystems; maintenance of forest cover; and the prevention of further extinctions.

Pollution prevention and control

People and the environment enjoy the benefit of equivalent protection from air, water, soil, noise, light and heat pollution through the identification of pollution sources, sinks and pathways, the application of risk-based measures to prevent pollution and safely remediate contamination, and where possible eliminate all pollution sources in our lifetime.

To support the achievement of this ambition, reduce pollution risks to the extent possible and remediate identified contamination sources, including air toxins, international convention chemicals such as Persistent Organic Pollutants, and other chemicals of concern; and eliminate waste sources as far as possible, among other things.

Climate change adaptation and resilience

Businesses, communities, landscapes and ecosystems in Australia have the capacity to resist, absorb, adapt to, transform and recover from current and projected impacts of climate change, both direct and indirect, in a timely and effective manner by 2050.

To support the achievement of this ambition, immediate actions and investments that anticipate, prepare for, reduce, respond and adapt to climate-related risks and vulnerabilities are required across businesses, communities, landscapes and ecosystems to reduce the costs and impacts associated with response and recovery.

Sustainable use and protection of water resources

Protect, enhance and restore the integrity, resilience, genetic diversity and connectivity of aquatic ecosystems at a catchment level by 2050 to enable a continued flow of aquatic ecosystem services based on the principle of equitable outcomes for diverse societal needs.

To support the achievement of this ambition, freshwater withdrawals from surface water bodies and groundwater are effectively managed so that deterioration in the water quality and biodiversity of aquatic ecosystems is halted; degraded aquatic ecosystems are restored and aquatic ecosystems with continuing ecological integrity are protected in line with Australia's 30 per cent biodiversity conservation target by 2030.

Circular economy

Achieve sustainable production and consumption patterns in Australia by transitioning from the current linear "take-make-waste" economic system to a more circular economy by 2030.

To support the achievement of this ambition, increase Australia's circularity rate through a focus on designing out waste and pollution; shift to renewable and long-lived materials; implement more materials-efficient production processes and circular business models; circulate materials and products (at their highest value); and regenerate nature, among other things.

FOR CONSULTATION

Do the headline ambitions reflect Australia's highest national goals for climate and environmental sustainability?

4. For Consultation: Electricity Generation and Supply

A. Context

Global

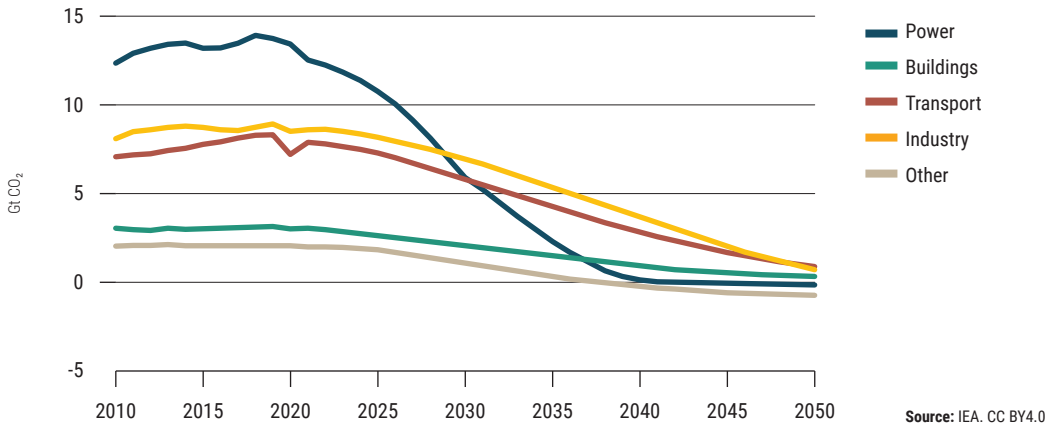
Globally, decarbonisation of electricity generation is critical to meet the Paris Agreement and to enable the decarbonisation of other sectors. Furthermore, low-carbon production of electricity generation is both economically and technologically viable in most jurisdictions, including Australia.

The International Energy Agency's NZE2050 scenario (IEA 2023) for electricity generation shows that the global power sector will need to be decarbonised by 2040 to enable the net zero transition (Figure 6).

Australia

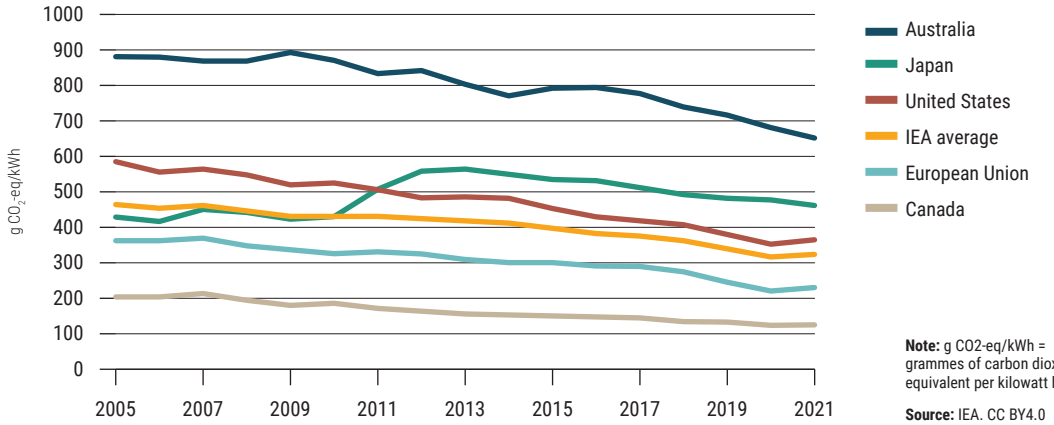
The Australian government, through the Climate Change Act (2022), has committed to meet a net zero target by 2050 and to reduce emissions by 43 per cent below 2005 levels in 2030. Energy sector related emissions account for approximately 80 per cent of Australia's total carbon emissions (2020), of which approximately 50 per cent stem from electricity and heat generation. As demonstrated in Figure 7, the GHG emissions intensity of electricity generation in Australia has exceeded the emissions recorded by economies such as Canada, the EU or the US over the last two decades, and has been almost two-fold the average level recorded for the IEA member countries.

FIGURE 6:
CO2 emissions by sector in the IEA's NZE2050 scenario[3].



Source: IEA. CC BY4.0

FIGURE 7:
Greenhouse gas emissions intensity of electricity generation in Australia and selected countries, 2005-2021[4]



Note: g CO2-eq/kWh = grammes of carbon dioxide equivalent per kilowatt hour.

Source: IEA. CC BY4.0

The decarbonisation of the sector is critical to meet Australia's climate pledges – according to emissions projections shown by IEA (2023), from 2020 to 2030, the biggest lever for emissions reduction is the electricity sector due to the strong uptake of renewables reinforced by national, state and territory policies[5].

To decarbonise electricity generation the Australian Government has also announced a goal of reaching 82 per cent of renewable energy in Australia's electricity generation by 2030. At COP28, the Australian government also joined the Global Pledge, which aims to triple the installed capacity of renewable energy and double the rate of energy efficiency improvements[6]. Already the country has the highest share of rooftop solar per capita in the world, and solar PV together with wind were able to cover energy demand increases that have been recorded in the last decade[7].

However, according to Climateworks Centre's modelling[8], to align with the 1.5°C objective Australia's renewable generation capacity will need to be scaled up almost three-fold, from 55GW to 151GW by 2030[9].

B. Activity Selection

As detailed in **Section 1**, the guiding principles in the development and implementation of an Australian taxonomy are credibility, usability, interoperability, and prioritisation for impact. The scope of economic activities selected within the energy sector has been guided by the following understanding of the identified principles:

TABLE 5:
Assessment of energy sector activities relative to the taxonomy's core principles

Credibility	• Consistency with the science and well-respected pathways globally and for Australia; • Operationalisation of the endorsed transition methodology approach for the Australian taxonomy.
Prioritisation for impact	• Ability to deploy a given activity (technology) before 2030, given the immediate need to decarbonise electricity generation and considering this is a critical decade to achieve net zero by 2050; • Focus on major decarbonisation levers as a first priority rather than solving for edge cases and residual emissions; • Role of a given activity (technology) as major decarbonisation lever; • Maturity of the given activity (technology) as described by the Technology Readiness Level (TRL), with the taxonomy aiming to focus on TRL of 9 and above; • The role of a given economic activity in the 2050 economy envisaged both by the science-based modelling and governmental strategies and policies.
Usability and interoperability	• defined based on the assessment of international practices implemented in the development of taxonomies and ease of use of the methodology by the market.

C. Application of the Transition Methodology

In line with the endorsed transition methodology, energy sector activities have been categorised as listed in Table 6 below.

TABLE 6:
Selection of activities – electricity generation and supply

	Economic activity	Green	Transition/ Decarbonise	Grey/Phase down to phase out	Out of scope
Energy generation (including electricity, heating, cooling) from:					
Renewables	Solar PV and CSP	X			
	Wind power generation	X			
	Ocean energy	X			
	Hydropower	X			
	Geothermal	X			
	Modern bioenergy*	X			
Unabated fossil fuels	Methane gas			X (See Box 2)	
	Coal			X	
	Oil			X	
Abated fossil fuels	Methane gas Coal Oil				X (See Box 1)
Other	Nuclear				X (See Box 3)
Storage	Storage of electricity	X			
District heating / cooling	District heating and cooling systems	X			
Waste heat	Production of heat/cool using waste heat	X			
Transmission and distribution	Transmission and distribution of electricity	X			
	Transmission and distribution of renewable and low-carbon gases, including but not limited to low-carbon hydrogen and its derivatives such as ammonia	X			

**excludes the use of traditional biomass*

Rationale

As recommended in the transition methodology paper, the nature of the activity has been determined based on the internationally recognised climate scenarios. The IEA NZE2050 (2023) scenario has been used as a first point of reference, for separation of transition and phase down/out activities where activities are classified as 'phase down' if such activities are required to be phased down (or the use of resulting products is assumed to reduce substantially) in order to meet the net zero scenario. Climateworks Centre's 1.5°C scenario was also reviewed to ensure incorporation of considerations relevant to the Australian context.

A more detailed overview of the rationale for the selection of activities is provided in **Appendix 1**.

BOX 1. OUT OF SCOPE: POWER GENERATION FROM ABATED FOSSIL FUEL

Electricity generation via abated fossil fuels is currently out of scope as an activity in the transition methodology due to the low technological readiness level[i] (below level 8, i.e. prior to Early Adoption stage) of carbon capture and storage. Prioritisation is a key underpinning principle of the taxonomy which ensures a focus on major decarbonisation levers based on their potential for impact as well as their viability of being implemented. This principle is critical for electricity generation where the decarbonisation pathway is steeper than for other sectors. With the sector needing to near zero by 2030, any levers that are not ready to be implemented now are not a focus of this taxonomy.

The taxonomy is designed to be updated at regular intervals. It will evolve to reflect changes in modelling, and advancements in technology development and the evolving dynamics of the transition. Therefore, current exclusion of this activity does not predetermine whether it will not become part of future iterations.

BOX 2. THE USE OF METHANE GAS FOR FIRMING

Grid or capacity firming refers to the maintaining of output from an intermittent power source for a required length of time to ensure grid stability[10]. By definition, firming power is low capacity – meaning that it is turned on only in certain circumstances if there is there is a lack of wind, solar or other intermittent power - usually with capacity of less than 10 per cent. Firming capacity can be provided by several storage technologies such as batteries and pumped hydro as well as by flexible gas-powered generation (gas firming).

Various studies have been evaluated to assess the role of gas firming through the transition methodology. The studies utilise different assumptions around the price and availability of both gas and alternative firming and storage technologies. Studies evaluated include Climateworks Centre's Decarbonisation scenarios 2023[11] (by 2050 the gas-fired power comprises under 1 per cent of the energy mix), AEMO ISP 2022 (10GW flexible gas capacity required but with low utilsiation)[12], Draft AEMO ISP 2024 (16.2GW flexible gas capacity required but with utilisation anticipated to be less than 5 per cent)[13] and others.

While results vary widely based on assumptions around rapidly evolving technologies (e.g. battery storage) and the rate of new storage capacity (e.g. Snowy 2.0), there is no plausible future for high-capacity factor gas generation in a 1.5°C future. There will, however, be a short to medium term role for low-capacity gas as backup firming capacity while alternative firming technologies such as batteries are scaled up.

As an activity, gas firming plants have been assessed as 'phase down to phase out' using the transition methodology and therefore beyond the scope for the current work (see below) in the taxonomy given that:

- Gas firming has an uncertain role in the 2050 economy, and;
- the risk of locking in future high carbon assets cannot be mitigated by investors/ taxonomy end users, and;
- the activity cannot be decarbonised across Scopes 1-3.

Phase down activities are not in scope for this phase, which focuses on the development of criteria for activities that can be classified as green and transition. Further, while the need for all forms of firming capacity to enable renewables (particularly in the short term) is recognised, defining what kind of gas plant operations constitute a "firming activity" requires a system level assessment which is not possible for an activity-level taxonomy.

Given this challenge, the TTEG have proposed to consider the following for consultation in the next phase:

Future development and proposed next steps:

While gas firming is not in scope at an activity level, there is demand for guidance for sustainable investors to evaluate the role of a firming capacity at a systems-level within a credibly transitioning portfolio of assets. Given this, the taxonomy will explore the potential for providing advice for entities (electrical utilities) to cover the following key issues:

- How firming capacity may be eligible as part of a mix of activities;
- What requirements/checks are needed of the system and how these can be applied to an entity;
- How an eligible mix of activities will need to change over time in line with 1.5°C scenarios;
- Any link with phase out criteria (e.g. coal);
- How technology changes will alter the advice proposed.

BOX 3. OUT OF SCOPE: NUCLEAR POWER

Nuclear power is currently prohibited in Australia through laws that prevent the construction of nuclear power facilities[14] as well as upstream (fuel) and downstream (waste) activities through the:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), and;
- Australian Radiation Protection and Nuclear Safety Act 1998 (ARPANS Act)

Historically, individual states have also introduced legislation preventing nuclear developments.

Given the legal context, there is no case to include nuclear power generation in the taxonomy at this point in time. If and when this changes, the role of nuclear power in the taxonomy will be re-evaluated in accordance with the taxonomy design principles.

FOR CONSULTATION

Do you agree with the proposal to provide the market with system-level advice for energy utilities or portfolios of assets that contain gas firming facilities?

If so, please provide feedback on what issues should be covered in the guidance.

i Current technology readiness level (TRL) is defined using the TRL index. The TRL index is a globally accepted benchmarking tool for tracking progress and supporting development of a specific technology through the early stages of the innovation chain, from blue sky research (TRL 1) to actual system demonstration over the full range of expected conditions (TRL 9), which is used by the Australian Renewable Energy Agency (ARENA) and the International Energy Agency (IEA)

D. Technical Screening Criteria: Overview and Methodology

This section provides an overview of the criteria and the methodology for the electricity generation sector.

Criteria for whole activities: Modelling of 1.5 degrees

IEA's NZE2050 Scenario for the electricity sector presented in Figure 8 shows the average grid intensity reductions required to reach net zero. The modelling shows that the grid average needs to reach 186g CO2/kWh by 2030 at a global scale (Table 7), and below 150g CO2/kWh in advanced economies to allow emerging and developing countries more time. According to the IEA, by 2035, emissions need to decline by 80 per cent in advanced economies and 60 per cent in emerging market and developing economies compared to the 2022 level[15].

In line with IEA's NZE provisions, Climateworks Centre's modelling shows that for Australia to reach alignment with 1.5°C, CO2 intensity of electricity generation cannot exceed 101g CO2/kWh in 2030, and it declines by almost 100 per cent by 2035 from 2024 levels at 561g CO2/kWh (see Table 7)[17].This means that for power generation, until 2030, the green threshold for new activities is set at 100g CO2e/kWh to bring the grid average down at the pace required by the pathway.

FIGURE 8:
Global electricity sector emissions and CO2 intensity of electricity generation in the IEA's NZE2050 scenario[16]

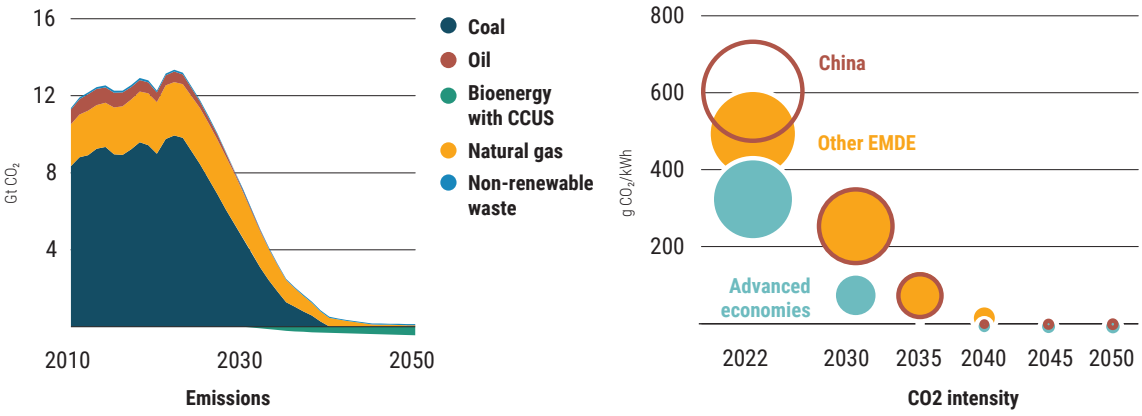
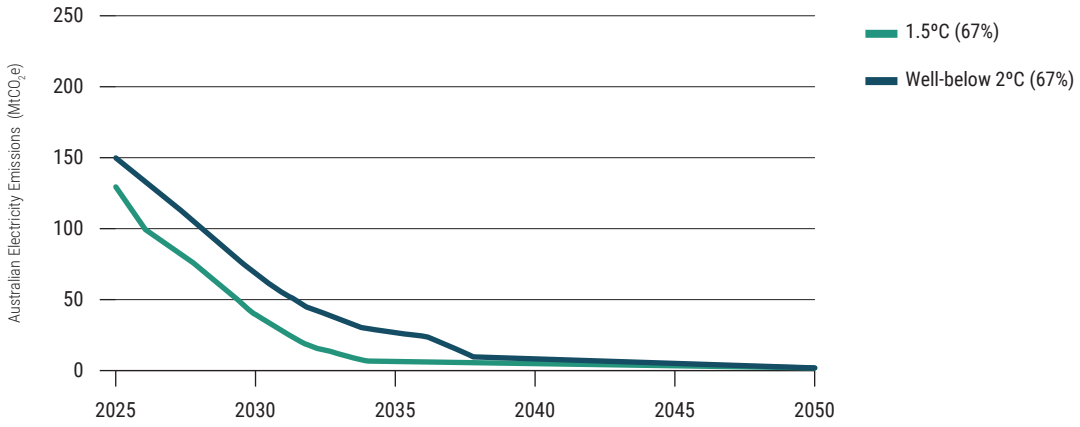


TABLE 7:
CO2 intensity of electricity generation - IEA's Net Zero by 2050 Scenario and Climateworks Centre's 1.5°C Scenario[18]

	CO2 intensity of electricity generation (g CO2 per kWh)				
	2024	2030	2035	2040	2050
GLOBAL AVERAGE – IEA NZE2050	460	186	48	3	-4
AUSTRALIA – 1.5°C	561	101	10	6	1

FIGURE 9:
Australian electricity emissions in 1.5°C and 2C scenarios – Climateworks Centre[19]



After 2030, this threshold will reduce based on a) the pathway and b) the need to account for lifecycle emissions – particularly upstream scope 3 emissions through the production of materials and products. Further guidance on how this will reduce will be released in the second consultation period in late 2024.

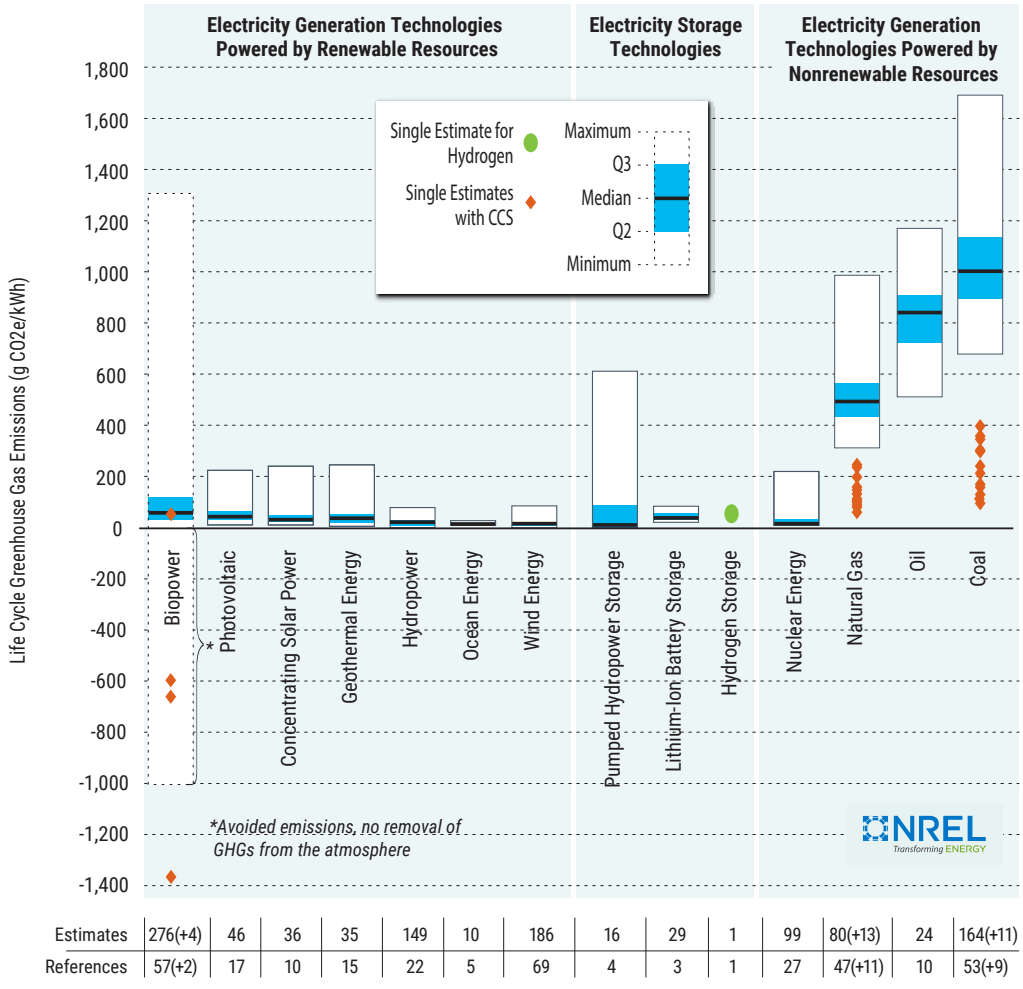
To aid usability and in line with the approach taken in the EU and other jurisdictions, certain types of electricity generation have been deemed 'directly eligible' until 2030. For these types of generation, the evidence shows that in almost all cases, the life cycle assessment (LCA) of generation will meet the 100g threshold to 2030 and it has therefore been classified as directly eligible. This means that for these activities it is not necessary to measure LCA for each plant or investment.

Choice of metrics

To be consistent with other global taxonomies for the purpose of ensuring interoperability, the primary metric for measuring emissions for electricity generation is **g CO2e/kWh**. The green threshold is based on LCA. Life cycle GHG emissions are proposed to be calculated using ISO 14067:2018 and ISO 14064-1:2018.

Ultimately, life cycle emissions are essential to account for GHG emissions throughout the value chain of electricity production processes (e.g., electricity generation from natural gas can have significant emissions due to methane leakage during extraction, transportation, and distribution in addition to combustion). National Renewable Energy Laboratory (NREL) data below shows the significant range of emissions.

FIGURE 10:
Lifecycle emissions range for types of electricity generation[20]



Notes: The number of estimates is greater than the number of references because many studies considered multiple scenarios. Numbers reported in parentheses pertain to additional references and estimates that evaluated technologies with CCS.

FOR CONSULTATION

On a scale of 1-3, how much of a challenge is it to acquire LCA data for upstream scope 3 emissions? (1 = data not likely to ever be available, 2= challenging but can be resolved in time with better disclosures and evolving practices, 3= not challenging, data is readily available).

Are the proposed ISO standards suitable for assessing lifecycle emissions requirements in Australia? If not, which standard(s) is more suitable?

E. Proposed Technical Screening Criteria: Eligible Activities

1. Energy generation using solar PV and CSP

Includes electricity, heating, and cooling.

Sector	Energy
Activity	Energy generation from solar PV and CSP (including electricity, heat, cool)
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2619 Other Electricity Generation 3109 Other Heavy and Civil Engineering Construction 3231 Plumbing Services 3233 Air Conditioning and Heating Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Until 2030 all energy generation activities from solar PV and solar CSP are directly eligible. *Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are ineligible.

2. Energy generation from wind power

Sector	Energy
Activity	Wind power generation
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2619 Other Electricity Generation 3109 Other Heavy and Civil Engineering Construction
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Until 2030 all electricity generation activities from onshore and offshore wind power plants are directly eligible. *Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are excluded

3. Energy generation from ocean energy

Sector	Energy
Activity	Electricity generation from ocean energy
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZIC codes, in particular: 2619 Other Electricity Generation 3109 Other Heavy and Civil Engineering Construct
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Until 2030 all electricity generation activities from ocean energy are directly eligible. *Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are ineligible.

4. Energy generation from hydropower

Sector	Energy
Activity	Hydropower generation
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2612 Hydro-Electricity Generation 3109 Other Heavy and Civil Engineering Construction
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	All pumped storage systems for hydropower plants that comply with either of the following criteria are eligible. • Power density greater than 5 W/m^2 or • Until 2030 emission intensity measured during the life cycle of the power plant is less than 100gCO2e/kWh until 2030. *Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are ineligible.

5. Geothermal energy generation

Includes electricity, heating, and cooling

Sector	Energy
Activity	Geothermal energy generation (including electricity, heat, cool)
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2619 Other Electricity Generation 3109 Other Heavy and Civil Engineering Construction 3233 Air Conditioning and Heating Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Until 2030 the emission intensity measured during the life cycle of the power plant is less than 100g CO2e/kWh. *Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are ineligible

6. Energy generation from modern bioenergy

Includes electricity, heating, and cooling.

Sector	Energy
Activity	Modern bioenergy power generation (including electricity, heat, cool)
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2619 Other Electricity Generation 2619 Other Electricity Generation 3109 Other Heavy and Civil Engineering Construction 3233 Air Conditioning and Heating Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Until 2030 the emission intensity measured during the life cycle of the power plant is less than 100gCO2e/kWh until 2030*, and; Either bioenergy is produced from waste (e.g., agriculture, municipal sources), or; feedstock used for production of bioenergy should comply with one of the following standards: • Forest Stewardship Council (FSC) • Biomass Biofuels voluntary scheme (2BSvs) • Bonsucro (Better Sugarcane Initiative) • Roundtable of Sustainable Biomaterials (RSB) • Round Table on Responsible Soy (RTRS) • International Sustainability and Carbon Certification (ISCC and/or ISCC plus) ** Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for Q4 2024.*
Specific ineligible cases	Power plants dedicated to support fossil fuel infrastructure (e.g., operations of fossil fuel activities) are ineligible.

7. Storage of electricity

Sector	Energy
Activity	Storage of electricity
Associated ANZSIC codes	ANZSIC codes not available Construction and operation of facilities that store electricity and return it at a later time in the form of electricity. The activity includes pumped hydropower storage.
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The activity is the construction and operation of electricity storage including: • mechanical energy storage systems, or • thermal energy storage systems, or • pumped hydropower storage, or • electrochemical storage systems, or Where the activity includes chemical energy storage, the medium of storage complies with the criteria for manufacturing of the corresponding product specified in the taxonomy
Specific ineligible cases	N.A.

8. District heating and cooling systems

Sector	Energy
Activity	District heating and cooling systems
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 3233 Air Conditioning and Heating Services 5021 Pipeline Transport
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	All activities related to renewables-based district heating and cooling are eligible.
Specific ineligible cases	N.A.

9. Production of heat or cool from waste heat

Sector	Energy
Activity	District heating and cooling systems
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 3109 Other Heavy and Civil Engineering Construction 3233 Air Conditioning and Heating Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	All activities related to the production of heat or cool from waste heat are eligible
Specific ineligible cases	N.A.

10. Transmission and distribution of electricity

Sector	Energy
Activity	Transmission and distribution of electricity
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2620 Electricity Transmission 2630 Electricity Distribution
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The activity complies with <u>one</u> of the following criteria: Until 2030 transmission and distribution infrastructure dedicated to a direct connection or an expansion of connection between power plants with energy intensities less than 100g CO2e/kWh (life cycle emissions) are directly eligible until 2030*, or; Transmission and distribution infrastructure dedicated to a inter-country/region direct or grid connection to access existing or new power plants with energy intensities less than 100g CO2e/kWh (life cycle emissions) are directly eligible, until 2030*, or; Transmission and distribution infrastructure that is on a decarbonisation trajectory where at least 67% of the newly connected generation capacity in the system is below the generation threshold value of 100g CO2e/kWh measured on a Product Carbon Footprint (PCF) basis, over a rolling five-year period, or; the average system grid emissions factor is below the threshold value of 100g CO2e/kWh measured on a PCF basis, over a rolling five-year average period until 2030* • All enabling ICT systems and smart management systems and those required for procurement of electricity that meet the green thresholds are eligible. Methodology note: The energy intensity computation of the infrastructure must be carried out for the electricity grid network under consideration. For interconnected grids, the computation must be carried out for the whole network. **Thresholds for electricity generation beyond 2030 will follow in the next public consultation scheduled for end 2024.*
Specific ineligible cases	• Transmission and distribution infrastructure dedicated to connecting fossil fuel plants to the grid • Transmission and distribution infrastructure dedicated to a inter-country/region direct or grid connection to access existing or new power plants that is greater than a threshold set for green

11. Transmission and distribution of renewable and low-carbon gases

Sector	Energy
Activity	Transmission and distribution of renewable and low-carbon gases, including but not limited to low-carbon hydrogen and its derivatives such as ammonia
Associated ANZSIC codes	The economic activities in this category could be associated with several ANZSIC codes, in particular: 2700 Gas Supply 3109 Other Heavy and Civil Engineering Construction 5021 Pipeline Transport
Description	Transmission and distribution networks of low-carbon gases i.e. gaseous fuels originating from renewable (non-fossil) and sustainable feedstocks such as waste or other sources that meet relevant taxonomy thresholds.
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	New or retrofitted gas transmission pipelines that are transporting 100% hydrogen and/or its derivatives and/or other low-carbon gases and; Hydrogen and other low carbon gases have to meet taxonomy criteria, and; the activity must meet all of the following: • Leak detection, repair mechanisms and mitigation measures must be in place, and; • A plan to avoid and minimise gas leakages must be presented.
Specific ineligible cases	• Residential distribution networks are ineligible – i.e. any activity relating the retrofit of natural gas distribution lines of which end-user is a household sector

FOR CONSULTATION

Are the proposed TSC usable and clear? In this context, usability of criteria refers to whether they are comparable, clear, objective and easy to understand.

Are the proposed TSC credible? In this context credibility of criteria refers to whether a transparent scientific approach aligned to the Paris agreement temperature goal was used, informed by the latest technological understanding.

Are there any activities for which the TSC are unclear?

Are there any activities for which further guidance is required?

Are there any additional activities that should be included, which comply with the taxonomy methodology? Note: hydrogen production will be included under the Manufacturing and Industry sector of the taxonomy.

5. For Consultation: Minerals, Mining and Metals

A. Context

Global

Large quantities of metals will be needed for clean energy infrastructure and technology to support the global transition to net zero in line with the Paris Agreement.

The IEA finds that in a "below two degrees" (B2DS) warming scenario, shown in Figure 11, total demand for metals will reach a projected 3.5 billion tons by 2050. Annual demand will rise from approximately 40 million tons currently to over 180 million tons in 2050. Metals used in clean energy infrastructure and technology, including copper, nickel, lithium and cobalt, are likely to see the biggest demand rises.

This will create significant growth opportunities for Australia's mining sector. Therefore it is imperative that mining activities can be decoupled from GHG emissions and are undertaken in an environmental and socially sustainable way as demand increases[22].

According to Wood Mackenzie's accelerated energy transition scenario (AET-2), which analyses the capital needed for a 2°C pathway, investors would have to inject a total of US$1.7 trillion into metals and mining from 2020-2035 to fulfil mineral demand (see Figure 12). This is a sharp increase on the US$600 billion invested in the last 15 years in the five metals studied in the scenario (lithium, cobalt, copper, nickel and aluminium)[23].

There is currently no generally accepted international framework to determine which mining and mineral processing projects can be considered 'sustainable' for the purpose of financing. As a key global producer of mined materials, Australia is well placed to consider this issue.

FIGURE 11:
Projected annual average demand for minerals up to 2050 under the IEA energy technology perspective scenarios[21]

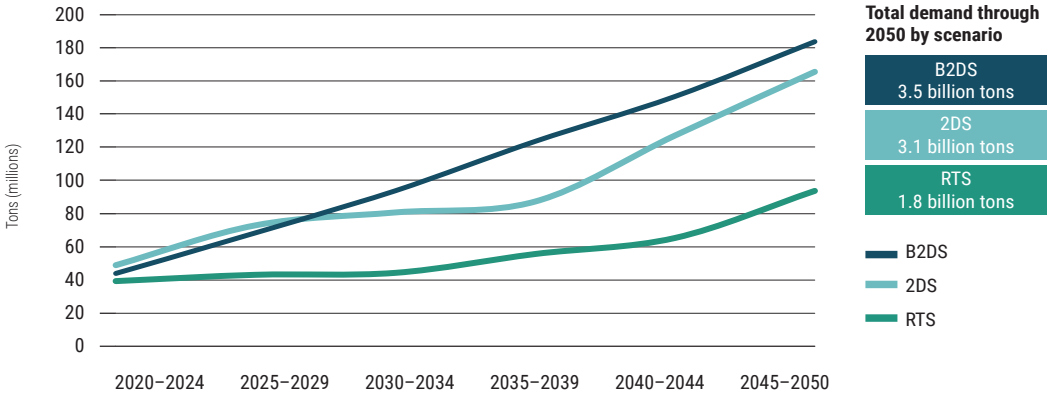
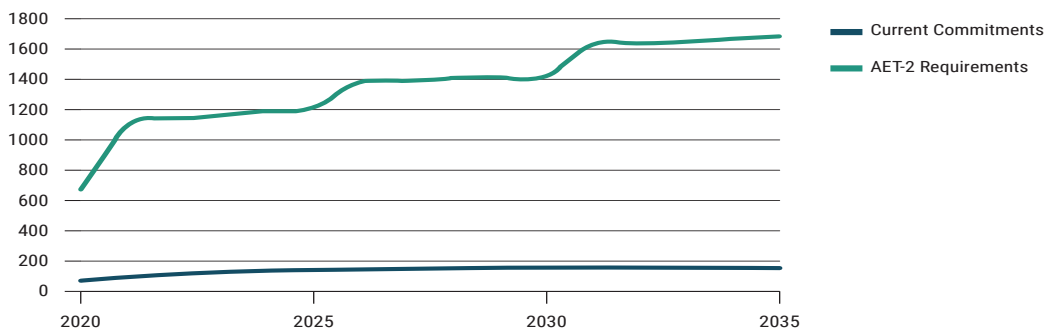


FIGURE 12:
Cumulative CapEx needed to meet Wood Mackenzie's AET-2 scenario compared to current commitments (as of December 2020)[24]



Australia

Australia is a major global minerals producer. According to United States Geological Survey (USGS) data, Australia produces 48 per cent of the world's lithium[25], 38 per cent of iron ore[26], 25 per cent of bauxite[27], 15 per cent of manganese[28], 10 per cent of zinc[29], 4 per cent of nickel[30] and copper[31] and 2 per cent of cobalt[32].

The Australian government recognises Australia's potential to increase mineral production further, supplying metals for the clean energy transition and stimulating the domestic economy. Australia has established a Critical Minerals Strategy for 2023-2030 to pursue these aims, which it states will be achieved through partnership with communities, industry, investors, the research and innovation sector, states and territories and international partners[33].

Critical minerals in Australia are those deemed essential for modern technologies, which are also vulnerable to supply chain disruption. This list includes nickel and lithium, which are key battery metals for electric vehicles and other applications. Copper, a metal that is essential for wiring and energy transmission infrastructure, features on a separate list of strategic minerals. Strategic minerals are important minerals whose supply chains are not deemed sufficiently vulnerable for them to be included on the critical minerals list.

Steel is an essential component in almost all modern technologies and infrastructure, including those that are needed for the clean energy transition. Its principal precursor material, iron ore, is produced in substantial quantities in Australia. It is Australia's second largest export overall[34] and its largest resources export accounting for 41 per cent of Australia's total mineral export earnings[35].

THE MINING SECTOR IN GLOBAL TAXONOMIES: APPROACHES AND CHALLENGES

To date, the inclusion of mining activities has been limited within national and regional taxonomies, particularly when it comes to understanding what 1.5°C alignment looks like for the sector.

There are ongoing technical discussions taking place in the EU as well as some major mining economies as to how these can or should be incorporated. The Indonesia Taxonomy has broad coverage (bauxite, iron ore, copper, Nickel etc.) with standardised transition criteria of 12.5 per cent emissions reduction against business-as-usual by 2030. There are no green criteria.

Given the essential role of mining in the global transition and its role in the Australian economy, this iteration of the Australian taxonomy proposes green and transition criteria for climate mitigation only. These criteria are aimed at decarbonising mining activities across four minerals.

In developing criteria to meet these objectives, the TAG and TTEG have:

- Focused on minerals considered critical, strategic and/or essential to the transition;
- Considered Scope 3 emissions requirements in some circumstances to limit the downstream emissions from use cases that are not 1.5˚C aligned.

The current draft does not yet address or define criteria for other environmental and social criteria through DNSH and MSS. DNSH considerations are currently being analysed and considered to address key environmental objectives, and social safeguards, including around Indigenous rights and cultural heritage. **Both DNSH and MSS criteria and will be put forward for consultation as part of the next iteration in the fourth quarter of 2024**.

DNSH and MSS criteria will:

- Address environmental impacts like pollutants, water use etc.
- Establish a strong baseline for engagement and consent with Indigenous communities
- Embed consideration of circularity to achieve sustainable production and ensure materials are circulated at their highest value.

B. Activity Selection

In selecting mining activities and minerals to cover in the first phase of work, the TAG considered the following factors:

- The sector and activity boundaries informed by the classification of activities according to the ANZSIC codes
- A mining activity's role in the transition:
  - Importance for key technologies and infrastructure for the clean energy transition
  - Strategic and critical minerals to the transition: global
  - Strategic and critical minerals to the transition: Australia
- Importance to Australian economy

While four minerals – namely copper, iron ore, lithium and nickel – have been prioritised in the initial development phase, the inclusion of other minerals is under active consideration.

ANZSIC codes

Similar to lithium, many mining activities that are likely to be considered in future taxonomy expansions and updates will not be explicitly categorised, and would therefore fall under Other Metal Ore Mining and Other Non-Metallic Mineral Mining and Quarrying.

TABLE 8:
ANZSIC codes applicable to mining sector activities

DIVISION	SUB-DIVISION	SUB CATEGORIES
06 Coal mining	060 Coal Mining	0600 Coal Mining
07 Oil & gas extraction	070 Oil and Gas Extraction	0700 Oil and Gas Extraction
08 Metal ore Mining	080 Metal ore mining	0801 Iron Ore Mining 0802 Bauxite Mining 0803 Copper Ore Mining 0804 Gold Ore Mining 0805 Mineral Sand Mining 0806 Nickel Ore Mining 0807 Silver-Lead-Zinc Ore Mining 0809 Other Metal Ore Mining
09 Non-metallic Mineral Mining and quarrying	091 Construction Material Mining	0911 Gravel and Sand Quarrying 0919 Other Construction Material Mining
	099 Other Non-Metallic Mineral Mining and Quarrying	0990 Other Non-Metallic Mineral Mining and Quarrying
10 Exploration and other services	101 Exploration	1011 Petroleum Exploration 1012 Mineral Exploration
	109 Other Mining Support Services	1090 Other Mining Support Services

Critical and Strategic Minerals: Role in Australia's and the global transition

The terms 'critical' and 'strategic' minerals (or raw materials more broadly) have specific but varied policy meanings across various global jurisdictions. In general, strategic minerals are those minerals that are vital for economic development, national security, and the clean energy transition. Critical minerals have the same characteristics, as well as having significant supply chain vulnerabilities due to the concentration of mining or processing in a single country.

When selecting priority minerals for the Taxonomy, minerals' presence on global critical and strategic minerals lists was considered as a proxy indicator for their importance for clean energy, but this was not the exclusive determining factor. Other indicators of importance for the clean energy transition, and the Australian economy, were also considered. The prioritisation process is summarised in Table 9.

TABLE 9:
Prioritisation of minerals for the Australian sustainable finance taxonomy

INDICATOR	SUMMARY
Australia critical and strategic mineral list	Australia maintains a list of 31 critical minerals and 5 strategic minerals. Lithium and nickel appear on the Australian critical minerals list, and copper appears on the strategic minerals list[36]. There is no globally agreed list of critical or strategic minerals. However, there are many similarities between country-level critical minerals lists.
Projected demand increases for clean energy technologies	Copper demand is projected to more than double by 2050[37]. Most copper is used for electrical equipment, in wiring, motors and other components. Nickel demand is projected to triple by 2050[38]. The main use of nickel currently is as an alloying material in stainless steel, but future nickel demand is expected to be driven by its use as a battery metal. Lithium demand is projected to rise almost fivefold by 2050, in a 2°C warming scenario[39], as it is a crucial mineral for the manufacture of electricity storage devices.
End uses of minerals in the clean energy transition	As demonstrated in Figure 13 below, copper and nickel are used in the widest range of low-carbon technologies, followed by molybdenum and chromium.

FIGURE 13:
Key minerals across selected energy system technologies[40]

	Wind	Solar photovoltaic	Concentrated solar power	Hydro	Geothermal	Energy Storage	Nuclear	Coal	Gas	Carbon capture and storage
Aluminium	●	●				●	●	●	●	
Chromium	●			●	●	●	●	●	●	●
Cobalt						●		●	●	●
Copper	●	●	●	●	●	●	●	●	●	●
Graphite						●				
Indium		●					●			
Iron	●					●				
Lead	●	●		●		●	●			
Lithium						●				
Manganese	●			●	●	●		●	●	●
Molybdenum	●	●		●	●		●	●	●	●
Neodymium	●									
Nickel	●	●		●	●	●	●	●	●	●
Silver		●	●				●			
Titanium				●	●		●	●	●	
Vanadium						●	●	●		
Zinc	●	●		●		●	●			
Total	**10**	**8**	**2**	**8**	**6**	**11**	**11**	**9**	**8**	**6**

Importance to the Australian Economy

Australia's largest export revenues for (non-coal) minerals in 2023 were for iron ore (AUD$125 billion), gold (AUD$27.4 billion), aluminium (AUD$14.9 billion) and copper (AUD$12.5 billion)[41].

The Australian government has stated that it will take a "concerted, targeted and proportionate approach to developing [the] critical minerals sector so it contributes to broader national security, economic security, emissions reduction, green trade, investment and industry growth outcomes"[42].

Future work will aim to cover other minerals based on their priority. Other minerals discussed as potential next priorities included:

- Bauxite (not listed as critical or strategic but high emissions materiality);
- Cobalt;
- Rare earths.

EXISTING RESOURCES FOR DEVELOPING MINING CRITERIA

IFC Net Zero Roadmap to 2050 for Copper & Nickel Mining Value Chains

The IFC has produced a roadmap to net zero for copper and nickel mining value chains, which examines the carbon intensity of multiple copper and nickel production routes and recommends measures for mining and mineral processing sites to adopt to achieve net zero.

This resource can be leveraged in the development of Taxonomy criteria for copper and nickel (and other metals with analogous production and supply chains).

Climate Bonds CRM criteria:

The Climate Bonds Initiative is currently developing sustainable finance criteria for global **copper, nickel and lithium mining**. Existing work on this project can feed into the development of Taxonomy criteria.

MINERALS IN SCOPE

After considering the above the TTEG have selected the following minerals for initial coverage in the Australian taxonomy:

TABLE 10:
Minerals in scope for the initial development phase

Mineral	Status in Australia	Rationale for inclusion
Lithium	Critical mineral	Australia a key global producer. Demand set to grow significantly. Important battery metal.
Nickel	Critical mineral	Demand set to grow significantly. Important metal for batteries and other clean energy technologies.
Copper	Strategic mineral	Demand set to grow significantly. Important metal for a wide range of clean energy technologies. Important for the Australian economy.
Iron ore	Neither strategic nor critical	Vital mineral for the Australian economy as world's largest producer of iron ore. Essential component in modern technologies and infrastructure, including those needed for the clean energy transition for example, wind turbines, green buildings etc.

C. Application of the Transition Methodology

In line with the transition methodology paper, all minerals selected for this first phase of the taxonomy have been classified as either green or transition based on the fact that:

- they have a role in the global economy post 2050;
- the risk of locking in future high carbon emissions is moderate although can be mitigated;
- they can be decarbonised across scope 1, 2, 3 emissions.

This means that the TTEG have proposed both green criteria which indicate an activity is aligned with a 1.5°C pathway and transition criteria which are intended to facilitate substantial movement towards a 1.5°C pathway within a predetermined period of time.

D. Technical Screening Criteria: Overview and Methodology

This section provides an overview of the criteria for sustainable finance in the mining sector, and the methodology undertaken to develop them for the sector overall. Detailed activity-specific criteria corresponding to the methodology can be found in **Part E** of this section.

Boundary

Criteria proposed cover the mining and on-site refining only. The criteria do not generally cover refining and processing activities unless stated. Downstream emissions associated with mining may be covered in other parts of the taxonomy in time (e.g. low carbon steel criteria will be covered in manufacturing and industry).

All criteria are primarily focussed on determining substantial contribution to climate mitigation for this phase of work. Additional criteria covering pollution, water, adaptation will be proposed in the next iteration, which will be published for consultation in the fourth quarter of 2024.

Types of criteria proposed

A few options were explored to develop climate mitigation criteria, and have been applied as shown in Table 11 to the selection of minerals in scope.

The way these criteria are applied, and their corresponding requirements, are presented in more detail in **Part E** of this section.

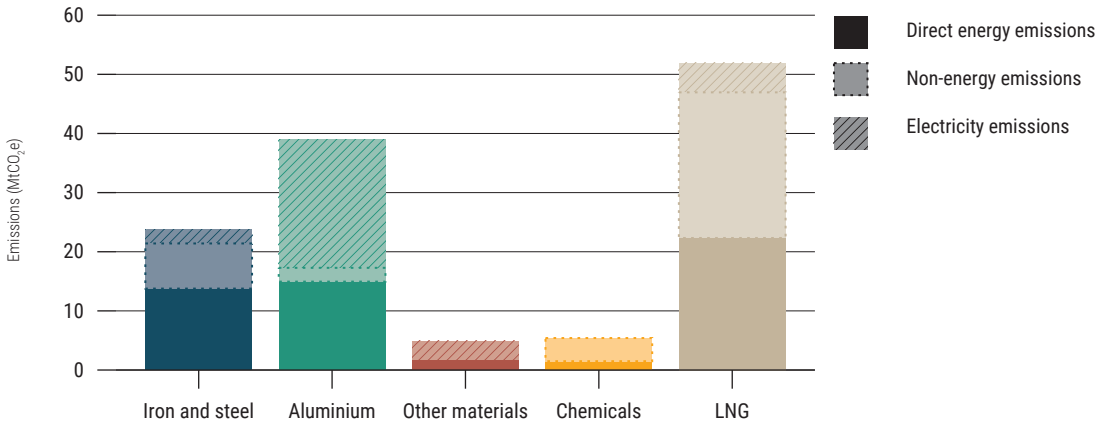
The markedly different GHG footprints and roles in the clean energy transition of copper, nickel and lithium, compared to iron, call for differing approaches to criteria development, as is reflected in Table 11. As a result, the TTEG selected both measures and some emissions performance thresholds to determine alignment with the Paris Agreement. Mineral specific characteristics and emissions were also discussed for their relevance in developing criteria.

TABLE 11:
Application of green and transition criteria types by mineral

	COPPER		LITHIUM		NICKEL		IRON ORE	
	Green	Transition	Green	Transition	Green	Transition	Green	Transition
Emissions performance thresholds and pathways	✓		✓		✓			
A list of automatically eligible measures		✓		✓		✓	✓	✓
Scope 3 requirements							✓	✓

As shown in Figure 14, iron ore mining in Australia is responsible for more than five times the emissions of the mining of copper, nickel and lithium ores combined.

FIGURE 14:
The comparative GHG emissions associated with iron ore mining and copper, nickel and lithium mining in Australia[43]



Moreover, the emissions generated by mining copper, nickel and lithium can, to some extent, be justified by considering the emissions savings associated with the clean energy technologies these minerals can be incorporated into. Figure 15 demonstrates that a large proportion of the production of each of these minerals will be used for clean energy technologies by 2040, in the IEA's Sustainable Development Scenario.

FIGURE 15:
Percentage of mineral demand attributable to clean energy technologies, 2010-2040 – IEA Sustainable Development Scenario and Stated Policies Scenario[44]

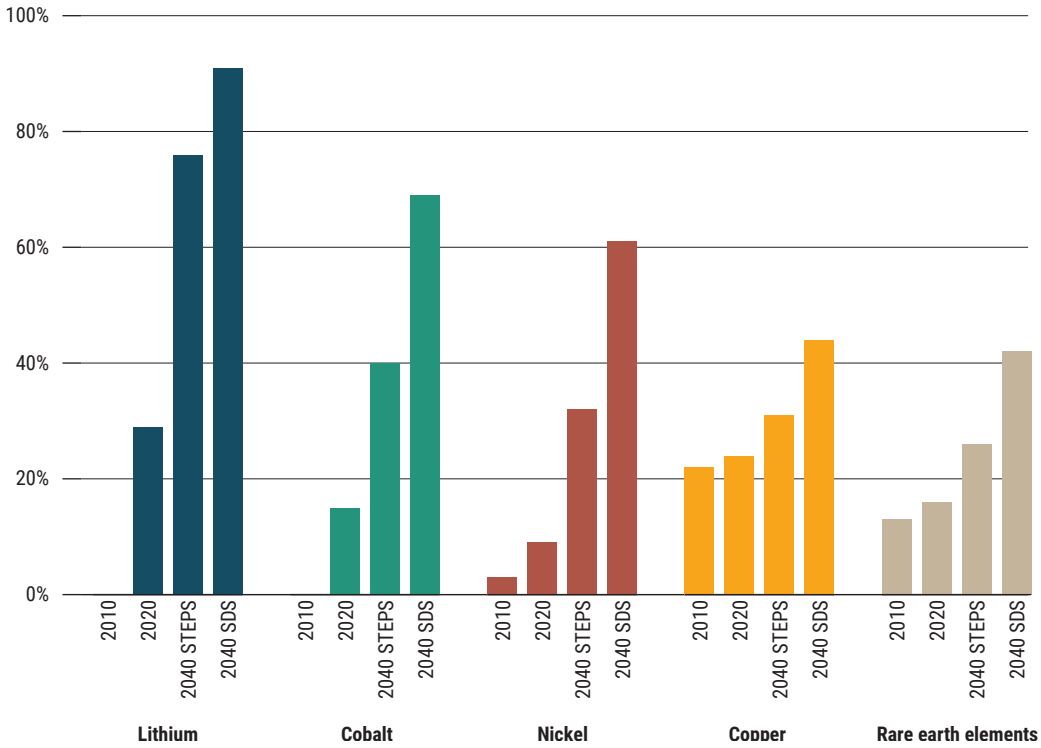
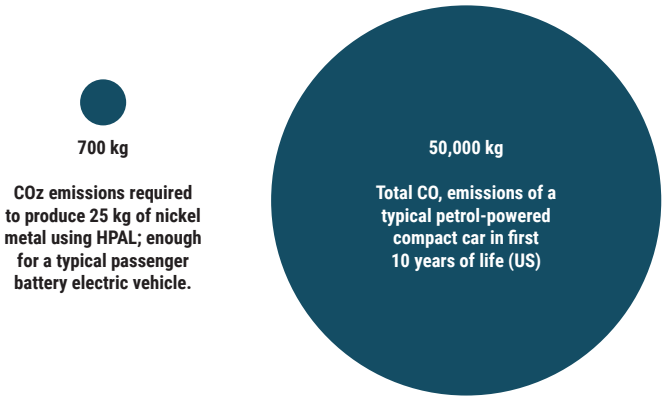


Figure 16, below, contrasts the CO2 emissions associated with the production of battery nickel for an electric vehicle with the emissions that an equivalent petrol-powered vehicle produces on average in the first ten years of its life. The stark difference suggests that concerns over carbon emissions from nickel mining and processing should not be translated into high barriers for the financing of nickel projects. It would not be desirable for a situation to arise where nickel production was held back through a lack of financing, if fewer electric vehicles were manufactured and more petrol-powered cars stayed on the road, as a result.

Consideration of the data presented in the figures above suggests that more stringent emissions criteria should be adopted for iron ore than for copper, nickel and lithium.

Iron ore production has a significantly larger contribution to overall emissions in the Australian context, while copper, nickel and lithium are projected to play a vital role in future emissions savings, through the production of technology and in infrastructure for the clean energy transition.

FIGURE 16:
A simple comparison of the emissions associated with nickel production for an electric vehicle's batteries versus the emissions generated by an equivalent petrol-powered car [45 46 47]



Emissions Performance Thresholds and Pathways

Most taxonomy criteria are based on emissions thresholds (usually intensity) that represent a Paris-aligned or best in class threshold for what is eligible as green at a point in time that reduces to zero following a 1.5°C pathway.

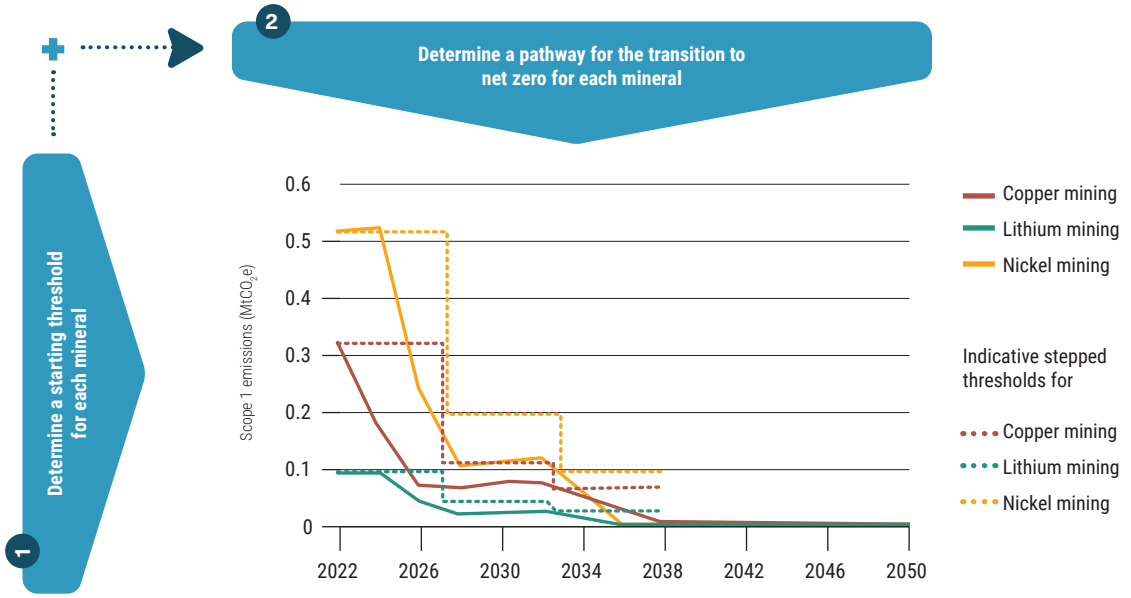
The benefits of having emissions intensity thresholds for critical minerals include:

a. They are a scientific threshold for 1.5°C;
b. It provides a benchmark to assess how close/ far different mine sites are from 1.5°C;
c. They are technology neutral;
d. They can be used to identify climate revenue streams or business lines.

As demonstrated indicatively in Figure 17 below, a starting emissions intensity threshold and scope 1 emissions pathway have been brought together to inform the proposed green criteria for lithium, copper and nickel:

The methodology below defines thresholds for lithium, copper, and nickel but not iron ore. On reviewing the data variation between sites and ore grades, the decision was made to focus iron ore criteria on measures and scope 3 emissions. Further research will be undertaken in the second half of 2024 to assess further data.

FIGURE 17:
Methodology to define mineral specific-pathways[48 49]



1	**Determine a starting threshold for each mineral**	To determine a starting point for 2024 threshold, the taxonomy will utilize data provided by Skarn Associates[50]. This data source is being used because the publicly available pathways developed by Climateworks Centre are expressed in absolute emissions. The data used to determine the starting point will be based on the best performing 20 per cent of mining by volume based on emissions per ton of product. The data is split into type of mining (e.g. Lithium brine vs hard rock given differing emissions profiles).
2	**Determine a pathway for the transition to net zero for each mineral**	Green criteria should align with widely recognised timelines for transition to net zero that are compatible with a 1.5°C warming scenario. Generally, emissions thresholds are expressed in emissions intensity given that in just about every sector it is impossible to set a meaningful absolute emissions threshold given the differences in site/facility size etc. Climateworks Centre has developed emissions reductions curves for copper, lithium and nickel that, according to its model, are compatible with a 1.5°C warming scenario. These pathways have been developed to cover scope 1 emissions across an aggregation of all sites and are expressed in absolute emissions. While absolute emissions are not usable, the slope of the curve can be combined with the starting point data above to define indicative thresholds into the future.

RATIONALE - THE PROPOSED 'STEPPED' PATHWAY APPROACH

To ensure pathways can be translated into usable thresholds the following was considered:

- Typical large capex programme time lines (5-8 years)
- Potential supply side constraints of low carbon technologies
- Stability of a threshold over a period of time (3-5 years) rather than declining each year
- Application of thresholds at a site level (given pathway is an aggregate)
- Converting absolute emissions pathways into emissions intensity thresholds

Considering the above, a stepped approach is proposed to reducing Scope 1 emissions for copper, nickel and lithium mining as demonstrated above in Figure 17. The steps are benchmarked against the Climateworks Centre's emissions reductions curves, with an initial eight-year lead-in to the first step downward in emissions intensity.

The resulting thresholds are as follows in Table 12, and are reflected in green criteria for copper, lithium, and nickel.

TABLE 12:
Proposed scope 1 emissions intensity reduction thresholds for copper, lithium and nickel – 2024 to 2036 – based on data provided by Skarn Associates

	2024	2028	2032	2036*
COPPER	20th percentile: 0.58 t CO2e / t Cu	0.58 - 66%	0.58 - 85%	0
LITHIUM	20th percentile: 0.52 t CO2e / t LCE	0.52 - 60%	0.52 - 80%	0
NICKEL	20th percentile: 6.99 t CO2e / t Ni equiv.	6.99 - 50%	6.99 - 70%	0

**indicative threshold will be refined upon further data*

FOR CONSULTATION

Is the methodology for development of intensity thresholds clear?

Are emissions intensity thresholds usable at the mine site level?

Does the trajectory for future thresholds adequately balance ambition, credibility and usability?

Measures-based criteria

Measures are the granular technologies that will be implemented to reduce the emissions intensity of a product or process.

The benefits of using a measures-based approach includes that:

- It is usable, particularly in the short term;
- It can cater to different starting points and doesn't automatically advantage or disadvantage any sites based on their inherent characteristics;
- They can be easily linked to use-of-proceeds green and transition bonds.

The downsides of a measures-based approach include that:

- Measures cannot be used to classify green revenues or business lines as they are one off (usually) expenditures that are eligible at a point in time;
- They are not, by definition, technology neutral as the list of eligible technologies needs to be sufficiently specific/ narrow so as not to allow technologies that are not low carbon as eligible.

A measures-based approach is proposed to focus on the adoption of clean energy technologies at mine sites under transition criteria for all four minerals in scope.

CONSIDERING MATERIALITY IN THE APPLICATION OF MEASURES

Measures are generally eligible on their own without the need for extensive data requirements. They are, however, accompanied by a materiality threshold defining a minimum proportion of emissions that the measure should look to address to be eligible. This materiality threshold is 50 per cent.

For example, if vehicle emissions account for 50 per cent of emissions and the measures addresses the whole vehicle fleet, this materiality threshold would be met.

Defining measures

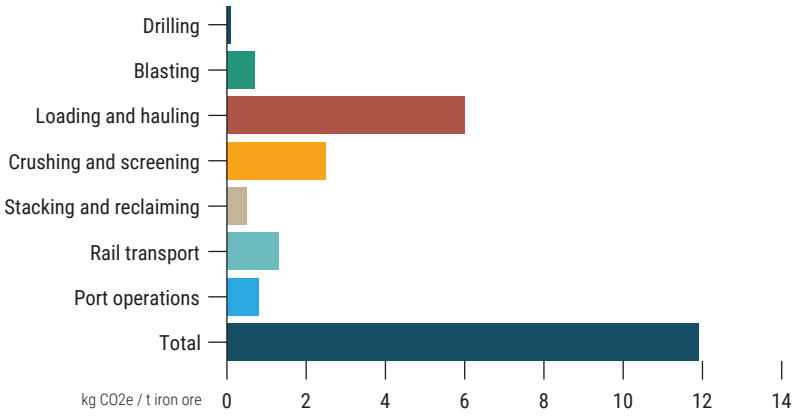
Emissions associated with mineral production can vary significantly, due to factors that are intrinsic to the mine site and outside the control of the mine operator. These factors can include ore grades, the presence of impurities, the depth of the deposit, and the proximity of the mine site to infrastructure such as ports, railways and electricity grids.

Complicating the picture further, factors that currently contribute to high emissions intensities may abate in future, with the development of new technologies. For example, more energy-efficient methods of recovering metal from low-grade ore.

As Figure 18 shows, the vast majority of emissions at typical iron ore mining sites in Western Australia are attributable to loading and hauling, and crushing and screening of ore (rail transport and port operations are also associated with significant emissions, but these activities do not occur at mine sites).

The data presented in Figure 18 suggests that decarbonisation measures at iron ore mining sites should be focused on the electrification of loading, hauling, crushing and screening operations, and the transition to clean electricity use.

FIGURE 18:
Comparative emissions intensities of the various stages of iron ore production, from a study of four mines in Western Australia[51]



This finding is echoed in data presented as part of the Australian Industry Energy Transition Initiative (ETI), presented in Figure 19 for iron ore, and Figure 20 for other minerals.

FIGURE 19:
Technology deployment timeline for the decarbonisation of iron and steel in Australia in a 'coordinated action scenario'[52]

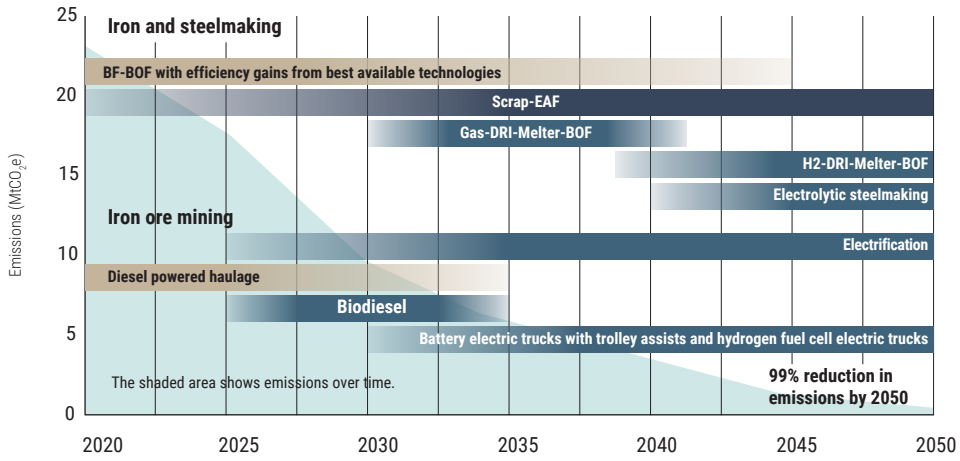
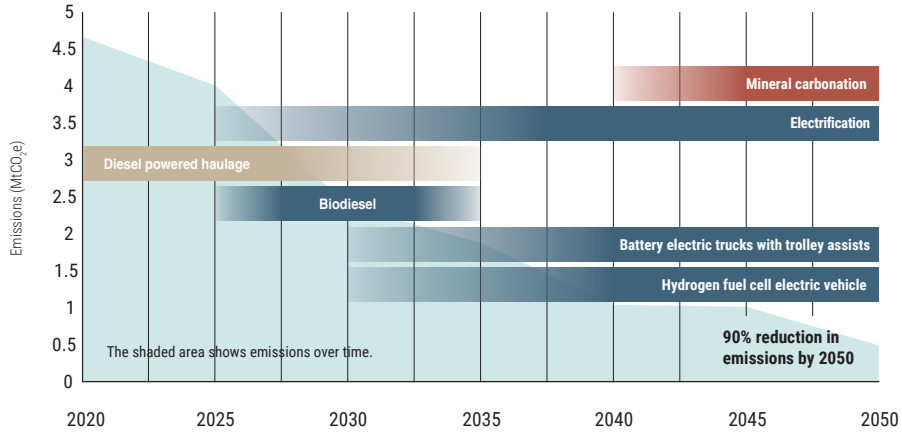


FIGURE 20:
Technology deployment timeline for the decarbonisation of minerals other than iron and aluminium, in Australia, in a 'coordinated action scenario'[53(1)]



The electrification of the vehicle haulage fleet is the predominant feature of the ETI scenarios at the mining stage of the supply chain, both for iron ore and for other minerals. In these scenarios, electrification is achieved through the adoption of technologies including battery powered vehicles, trolley assist systems and hydrogen fuel cells.

Technology for ammonia handling, conversion and combustion may one day play a role in mine decarbonisation in some cases. Although still an early stage emerging technology, green ammonia is easier to store and transport than green hydrogen, and it can be chemically converted to hydrogen for use in hydrogen fuel cells, or even combusted as a fuel directly[53(2)].

The use of biodiesel as an interim power source, as envisaged in the ETI scenarios, is ethically complex given its links, in many source countries, to deforestation, biodiversity loss and the displacement of Indigenous communities to make way for plantations[54].

Likewise, renewable diesel is made by a different chemical process to biodiesel (hydrogenation rather than transesterification) and is chemically very similar to petroleum diesel. However, it comes from broadly similar feedstocks to biodiesel and is associated with the same concerns over use of productive land.

Developments that are currently underway for 'next generation' biofuels, produced from inedible lignocellulosic plant material, algae or organic waste materials, suggest that current ethical issues with biodiesel and renewable diesel could be mitigated[55]. If criteria are developed to include biodiesel and renewable diesel use in the Taxonomy, these criteria should be restricted to next generation biofuels only.

The International Finance Corporation (IFC) identifies a very similar set of measures for the decarbonisation of copper and nickel production, to those identified for iron ore and other minerals[56].

The origin of the electrical energy and hydrogen fuel used at mine sites is as important as the adoption of technologies that utilise these power sources.

To effect decarbonisation, electrical power and hydrogen fuel must not be generated from the burning of fossil fuels. Criteria for the Taxonomy should specify how electrical power and hydrogen fuel are produced and should consider ruling out certain classes of mine site that would 'lock in' high emissions production – e.g. mines with dedicated off-grid fossil fuel power plants.

FOR CONSULTATION

Should biofuels and e-fuels be included in the list of eligible measures? Why or why not?

Which biofuels and e-fuels are most important to include specifically for the mining sector, and why?

Should any requirements be attached to the inclusion of biofuels or e-fuels (e.g. standards, certifications)? In answering this question, please consider how your answers are aligned to the taxonomy's core principles of credibility and usability.

Scope 3 Requirements

Scope 3 emissions requirements and criteria were put forward based on their materiality to total emissions. Utilising industry best practices and norms, scope 3 emissions were deemed material where they account for over 40 per cent of total emissions. Using this as a threshold, scope 3 requirements were put forward for all mining activities where scope 3 emissions over 40 per cent.

Over 90 per cent of CO2 emissions associated with iron and steel supply chains occur in the iron and steelmaking process when iron ore is reduced to metallic iron[57]. The predominant production method – coal-fired blast furnaces – is extremely emissions intensive.

Consequently, a strong rationale exists for the inclusion of Scope 3 criteria for iron ore mines under the taxonomy, to incentivise the development and deployment of less CO2-intensive forms of iron reduction.

The criteria for low carbon steel production will be developed within the manufacturing and industry sector in the taxonomy where it is anticipated that a threshold to produce low carbon steel which is unlikely to be near zero in the short term but will decrease over time based on a science-based pathway.

However, taxonomy criteria addressing how upstream mining processes can feed into, and encourage the growth of, low carbon iron and steelmaking value chains is important to consider as a substantial contribution to the taxonomy's climate change mitigation objective. To this end the taxonomy advisory and expert groups explored a range of options.

THE CASE FOR INCLUDING SCOPE 3 THRESHOLDS IN IRON ORE CRITERIA

A threshold of 25 per cent of mine offtake flowing to low carbon iron producers is a significant step up from the status quo. The principal current method of low carbon iron production is the Direct Reduced Iron (DRI) process. In China, which processes approximately 85 per cent of Australia's iron ore[58] the DRI process accounts for less than 1 per cent of overall annual iron production (5.5 million tonnes of DRI capacity[59] versus 871 million tonnes for pig iron from blast furnaces[60]).

For Australian iron ore mine sites, 25 per cent offtake to low carbon iron producers represents a highly ambitious target. By pushing to increase sales to low-carbon producers, the intention is for mining entities to indirectly incentivise the establishment of greater DRI capacity, both in Australia and overseas.

For scope 3 commitments and plans, the plans and commitments of the key iron ore miners in Australia and globally revealed a range of different approaches all of which indicated that the thresholds proposed are ambitious. Some key points:

- Not all miners have a scope 3 commitment or target in place and those that do have longer term time horizons targeting 2040 and 2050.
- Most transition address scope 3 emissions although to varying degrees of detail
- Some miners make commitments to support their clients in reducing their own emissions intensity by up to 30 per cent.
- All companies evaluated have committed to disclosing better data in the short term.

FOR CONSULTATION

Does the rationale for including scope 3 emissions requirements for minerals align with the taxonomy's core principle of credibility? Please explain.

Are the proposed criteria around scope 3 emissions usable and clear? If you answer no, please provide suggestions on how it could be improved.

Do you agree with the 40% materiality threshold for scope 3 emissions? If not, how would you change it and based on what?

Which other factors could be considered for determining whether a scope 3 requirement should or should not be applied to criteria for minerals covered in the taxonomy?

E. Proposed Technical Screening Criteria: Eligible Activities

Note that the following criteria apply to **existing mines**.

Existing literature on low-carbon mining focuses on the decarbonisation of operational mines. No best practice frameworks have been identified for the design and planning of new low-carbon mines.

Consequently, we envisage establishing taxonomy criteria for planned mines that align with the operational mine criteria. We are currently considering the details for these criteria, which will be put forward for consultation as part of the next iteration in Q4 2024.

FOR CONSULTATION

What are the key considerations that should be taken into account when developing criteria for new mines, within the defined emissions boundary?

1. Iron ore

Includes electricity, heating, and cooling.

Sector	Mining
Activity	Iron ore mining
Associated ANZSIC codes	0801 Iron Ore mining
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	**Measures requirement:** Either: mine site emissions reduced by >90% on 2020 baseline Or • >90% Low carbon vehicle fleet is: — Electrified or — low carbon fuels as defined by the taxonomy, and; • All electricity produced/sourced has, on aggregate, an emissions intensity of <100g CO2e/kWh AND **Scope 3 requirement** Either: • The mine site has an offtake agreement in place to supply: — >25% of the current volume of iron ore to a low carbon steel producer* and — >50% of volume produced at mine site is agreed to be part of the offtake agreement by 2030 Or • The mining entity has offtake agreements with whole entities that are decreasing steel production emissions in line with a 1.5 degree pathway. If a 1.5 degree pathway is not defined the averages emissions intensity then the entity is decreasing production emissions by 4.2% per year from a 2024 baseline. *as defined by the taxonomy
Transition (measures)	**Measures requirement:** Mine site is implementing eligible measures as defined by the taxonomy to address >50% of scope 1 emissions (2020 baseline) and/or 50% fuel costs. Eligible measures (to 2030): • Electrification of the vehicle fleet • Energy storage technology • Low carbon fuel technology – e.g. H2/NH3 (as defined by the taxonomy) • Trolley assist • Switching electricity sources (from grid non-renewables and on-site diesel generation to grid and on-site renewables) • Block chain like systems for increase traceability of downstream chain of custody AND **Scope 3 requirement:** The entity has in place: • A transition plan covering scope 1,2 and 3 emissions • A commitment and plan to reduce scope 3 emissions by >25% by 2030 any by 100% by 2050

FOR CONSULTATION

GREEN CRITERIA

Measures

Are the proposed measures and materiality thresholds for iron ore mining criteria clear and usable, including from a data availability perspective? If not, how could they be improved?

Is using 2020 as a baseline for iron ore emissions reductions suitable?

Scope 3: offtake requirements

Is the requirement to measure/audit and report on offtake agreements feasible? Please comment on any constraints users may face in complying with this requirement.

Are iron ore producers able to evaluate the emissions intensity of the steel producers they sell to?

Scope 3 entity requirements

What reporting requirements would be needed to support producers meeting this target?

Is there adequate data availability to assess entity-level requirements for producers outside Australia? Please substantiate your response.

TRANSITION CRITERIA

Are there any material decarbonisation levers missing from the measures listed?

Is the 50% materiality threshold needed to demonstrate that measures programmes are sufficient/significant?

What additional detail is needed to ensure it can be used?

2. Lithium

Sector	Mining
Activity	Lithium hard rock mining
Associated ANZSIC codes	0809 Other metal ore mining
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	2024: 20th percentile - 0.52 t CO2e / t LCE 2028: 0.52 t CO2e / t LCE - 60% 2032: 0.52 t CO2e / t LCE - 80% 2036: 0
Transition (measures)	Mine site is implementing eligible measures as defined by the taxonomy to address >50% of scope 1 emissions (2020 baseline) and/or 50% fuel costs. Eligible measures: • Electrification of the vehicle fleet • Energy storage technology • Low carbon fuel technology – e.g. H2/NH3 (as defined by the taxonomy) • Trolley assist • Switching electricity sources (from grid non-renewables and on-site diesel generation to grid and on-site renewables) • Block chain like systems for increase traceability of downstream chain of custody

FOR CONSULTATION

GREEN CRITERIA

Does the proposed threshold adequately align with the core taxonomy principles of credibility and usability? If not, why?

What additional guidance is required to aid usability?

Is the trajectory proposed feasible?

TRANSITION CRITERIA

Are there any material decarbonisation levers missing from the measures?

Is the 50% materiality threshold needed to demonstrate that measures are sufficient/significant?

What additional detail is needed to ensure thresholds can be used?

3. Nickel

Sector	Mining
Activity	Nickel
Associated ANZSIC codes	0806 Nickel ore mining
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	2024: 20th percentile - 6.99 t CO2e / t Ni equiv. 2028: 6.99 t CO2e / t Ni equiv. - 50% 2032: 6.99 t CO2e / t Ni equiv. - 70% 2036: 0
Transition (measures)	Mine site is implementing eligible measures as defined by the taxonomy to address >50% of scope 1 emissions (2020 baseline) and/or 50% fuel costs. Eligible measures: • Electrification of the vehicle fleet • Energy storage technology • Low carbon fuel technology – e.g. H2/NH3 (as defined by the taxonomy) • Trolley assist • Switching electricity sources (from grid non-renewables and on-site diesel generation to grid and on-site renewables) • Block chain like systems for increase traceability of downstream chain of custody

FOR CONSULTATION

GREEN CRITERIA

Does the proposed threshold adequately align with the core taxonomy principles of credibility and usability? If not, why?

What additional guidance is required to aid usability?

Is the trajectory proposed feasible?

TRANSITION CRITERIA

Are there any material decarbonisation levers missing from the measures?

Is the 50% materiality threshold needed to demonstrate that measures are sufficient/significant?

What additional guidance is needed to ensure thresholds can be used?

4. Copper

Sector	Mining
Activity	Copper mining
Associated ANZSIC codes	0803 Copper ore mining
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	2024: 20th percentile - 0.58 t CO2e / t Cu 2028: 0.58 t CO2e / t Cu - 66% 2032: 0.58 t CO2e / t Cu - 85% 2036: 0*
Specific ineligible cases	Mine site is implementing eligible measures as defined by the taxonomy to address >50% of scope 1 emissions (2020 baseline) and/or 50% fuel costs. Eligible measures: • Electrification of the vehicle fleet • Energy storage technology • Low carbon fuel technology – e.g. H2/NH3 (as defined by the taxonomy) • Trolley assist • Switching electricity sources (from grid non-renewables and on-site diesel generation to grid and on-site renewables) • Block chain like systems for increase traceability of downstream chain of custody

FOR CONSULTATION

GREEN CRITERIA

Does the proposed threshold adequately align with the core taxonomy principles of credibility and usability? If not, why?

What additional guidance is required to aid usability?

Is the trajectory proposed feasible?

TRANSITION CRITERIA

Are there any material decarbonisation levers missing from the measures?

Is the 50% materiality threshold needed to demonstrate that measures are sufficient/significant?

What additional detail is needed to ensure thresholds can be used?

6. For Consultation: Construction and the Built Environment

A. Context

Decarbonising the building sector can contribute significantly to meeting the goals of the Paris Agreement and limiting global temperature rise to well below 1.5°C above pre-industrial levels. Buildings and their users are responsible for significant GHG emissions. Emissions sources include direct emissions from using gas (for water heating, space heating, and cooking) and indirect emissions from using non-renewable electricity (for cooling, ventilation, lighting, and equipment). Transitioning to low-emission or net zero-emission buildings is essential for reducing these emissions.

According to the IEA, building operations account for approximately 26 per cent of global energy-related carbon dioxide (CO2) emissions[61]. This figure excludes embodied emissions from the construction process. In Australia, building operations were responsible for approximately 20 per cent of Australia's total emissions in 2020[62]. Electricity comprised 58% of energy consumption in 2020, with gas accounting for most of the remaining energy use.

According to the World Green Building Council (WGBC), building construction contributes another 11 per cent to global greenhouse gas emissions[63]. These emissions arise during the procurement, manufacturing, transport, and installation of building materials.

The building sector's potential to contribute to decarbonisation has been recognised in Australia for many years with energy efficiency within the national construction code, voluntary energy and green building rating tools and requirements for mandatory disclosure of energy ratings for commercial offices at the point of sale or lease. Despite these efforts, challenges remain in achieving deep decarbonisation in the Australian buildings sector. These include addressing the significant stock of existing buildings, encouraging the adoption of energy efficiency and electrification across all building use types, and overcoming financial barriers to implementing energy-efficient and low-emissions solutions.

The buildings sector can make a significant contribution to decarbonisation through:

1. Removing dependency on the use of fossil fuels as an energy source.
2. Reducing emissions and improving energy efficiency in the operation of existing buildings through retrofits and renovations.
3. Constructing new buildings to reduce construction impacts and maximise the potential for energy-efficient and low-emission operations.
4. Providing onsite renewable energy generation to reduce demand and contribute to the decarbonisation of electricity supply.
5. Phasing out the use of Synthetic GHGs as refrigerants in air conditioning systems and hot water heat pumps.

B. Activity Selection

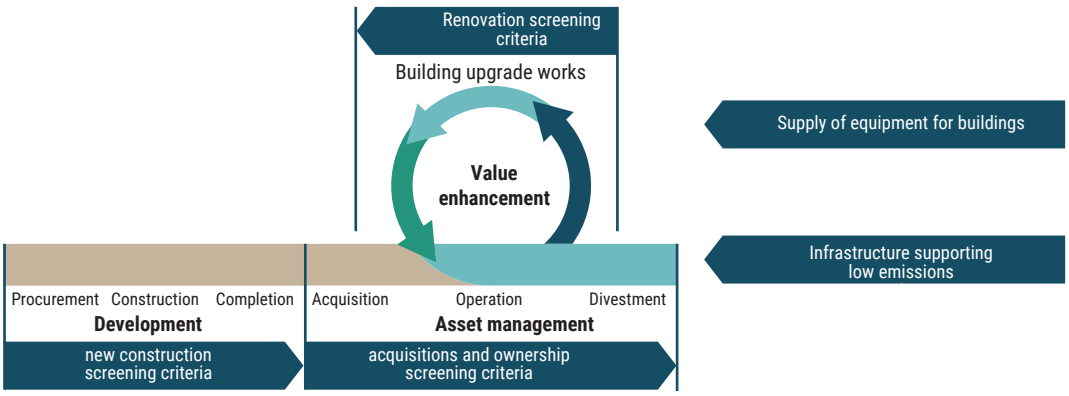
The scope of activities in the built environment can be summarised as direct activities and supporting activities. Direct activities include constructing new buildings, acquiring and owning buildings, and renovating.

Supporting activities include installing equipment and appliances, manufacturing and supplying equipment, and enabling infrastructure to support low-emission precincts.

Figure 21 illustrates the points of interface between direct activities over the lifecycle of a building, and the supporting activities, which together comprise the scope of activities proposed in the Construction and Built Environment sector.

The nature of each direct activity, and key issues of boundary and scope, are addressed in turn.

FIGURE 21:
Relationship of building screening criteria over the typical lifecycle



New Construction

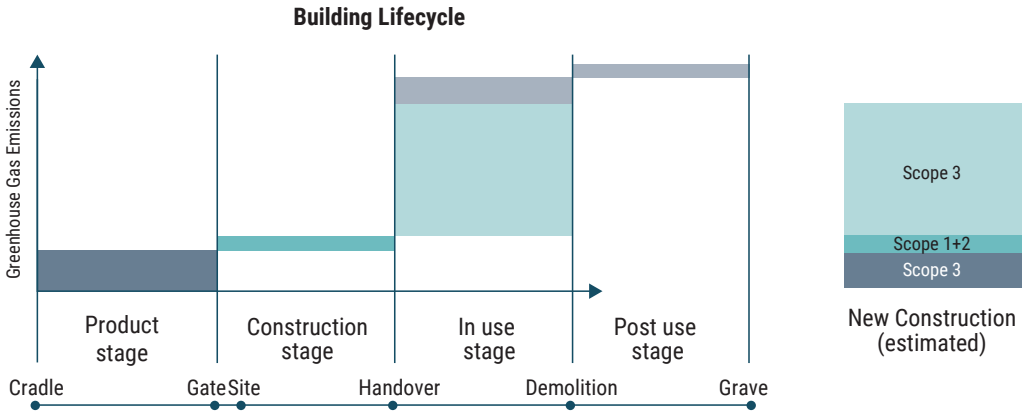
The new construction criteria include developing, redeveloping, financing, and constructing new buildings.

The boundary of direct emissions is challenging for new construction, where the crucial building climate mitigation-related impacts are either downstream, from materials, or upstream from future operational energy use. Scope 1 and 2 emissions in this context would limit the activity to accounting only for the energy used in the construction process, which would not appropriately characterise the environmental alignment of that activity.

The framework proposes that the screening criteria for new construction consider the Scope 3 emissions embedding in the materials used in the constitution and the potential Scope 3 emissions associated with the building operations in addition to the direct Scope 1 and 2 emissions as a result of the construction activity.

The components of a building's life cycle GHG emissions included in the new construction criteria are illustrated in Figure 22.

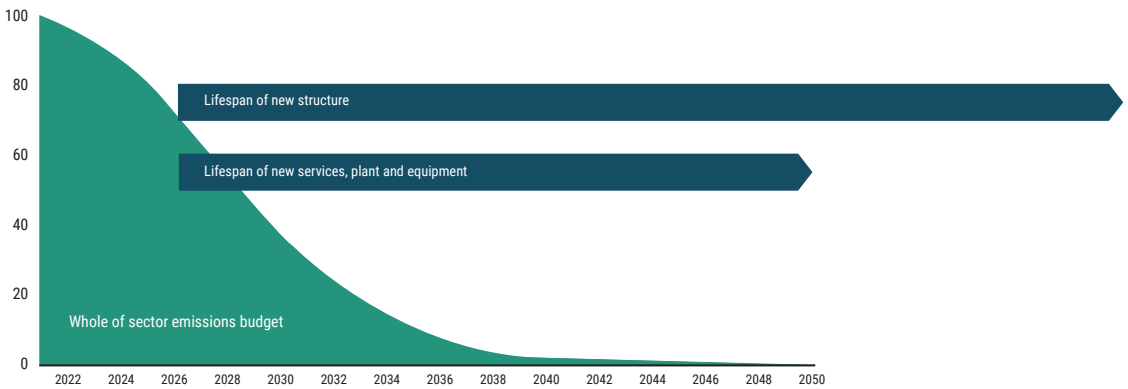
FIGURE 22:
The components of lifecycle emissions in the new construction criteria[64]



There are no transitional screening criteria for new construction. This is because new construction will lock in ongoing operational impacts for at least the useful life of its plant and equipment.

Figure 23 illustrates the expected lifespan of new construction in the context of a sectoral emission budget through to 2050.

FIGURE 23:
Legacy impacts of new construction activities



Acquisition and Ownership

The scope of the criteria for the acquisition and ownership includes the purchasing, financing and operation of existing and newly constructed buildings.

The screening criteria consider the nature of ownership when considering the emissions. For buildings owned to generate rental incomes, the boundary is the energy associated with the building owners' operations, often referred to as the base building. For a hotel where the operations and guest impacts cannot be separated, the boundary includes the entire Scope 1 and 2 emissions of the building and its occupants.

Green and transition criteria are provided for the acquisition and ownership of buildings. The transition criteria are screened solely on a verified emissions intensity basis and are agnostic to fuel sources.

The green criteria require that acquired and owned buildings achieve best-practice energy efficiency, avoid fossil fuel combustion during regular operation, and have a refrigerant inventory with low global warming potential to align with a 1.5°C future.

Renovation

The renovation screening criteria cover activities that substantially contribute to reducing a building's emissions intensity or replace fossil fuel and high global warming potential refrigerant plant and equipment. Green and transition criteria are provided for the renovation of buildings.

The green criteria require that a building be refurbished to meet the green criteria applied to building ownership and acquisition. Transition criteria screen activities that meet a minimum threshold for reducing operating emissions through the works.

C. Application of the Transition Methodology

The screening criteria for green and transition criteria applied to the selected activities are detailed in Table 14.

Green-aligned criteria identify activities that meet current and future emissions thresholds aligned with a 1.5°C pathway, and transition criteria identify activities that meet current emissions performance thresholds aligned with a 1.5°C pathway but are not aligned to meet future requirements.

The TSC for each activity is detailed in **Part E** of this section.

TABLE 14:
Alignment of activities to green and transition criteria

Activity	Alignment	Emission/ Energy threshold	No Fossil Fuel	Synthetic Greenhouse Gases	Embodied Carbon	Renewable Energy
New Construction	Green	✓	✓	✓	✓	✓
	Transitional	-	-	-	-	-
Acquisition and Ownership	Green	✓	✓	✓		✓
	Transitional	✓				
Renovation and upgrades	Green	✓	✓	✓		
	Transitional	✓				
Residential and small commercial upgrades	Green	✓ + eligible products	✓	✓		✓
	Transition					
Manufacturing and Supply of goods	Green	✓ + eligible products	✓	✓		✓
	Transition					
Supporting infrastructure	Green	eligible infrastructure	✓	✓		✓
	Transition					

✓ Green criteria

✓ Green criteria implemented after sunrise date

✓ Transition criteria only available before sunset date

D. Technical Screening Criteria: Overview and Methodology

Sectoral Carbon Budgets

A sectoral carbon budget approach was issued to ensure the alignment of the screening criteria for ongoing operational emissions. The critical aspects of sectoral carbon budgets are summarised below, and include:

I. Non-residential buildings sector budget
II. Residential buildings sector budget
III. Refrigerants emissions budget

Assumptions are made external to activities within the sector that have a material impact on the development of the carbon budgets and the rate of decarbonisation of electricity and gas.

For electricity, the rates of decarbonisation of each state-based distribution network are taken from the Department of Climate Change Energy Efficiency and Water's (DCCEEW) projections[65] for each state through to 2035 and constant rates of decarbonisation after that. No significant decarbonisation of gas supplied to buildings is assumed.

Budgets have been developed for residential and non-residential operational energy-related emissions. Additionally, a whole sector budget has been developed for the Scope 1 emissions associated with the fugitive emissions of refrigerants used in buildings' air conditioning and hot water generation. The development of these three distinct sectoral budgets aligns with the disparate data sources and the expected influences of regulation and behaviour.

The sector budgets do not distinguish between building operators and the impact on tenants and building users, as the available data sources do not provide data separated by necessary emissions boundaries.

The stock of buildings existing stock of non-residential buildings is sourced from the Commercial Buildings Baseline Study 2022[66].

ABS data on dwelling numbers from the 2021 Census was used to determine existing residential stock numbers, and the ABS Households and Family Projections[67] were used to guide stock growth and propensity toward dwelling types.

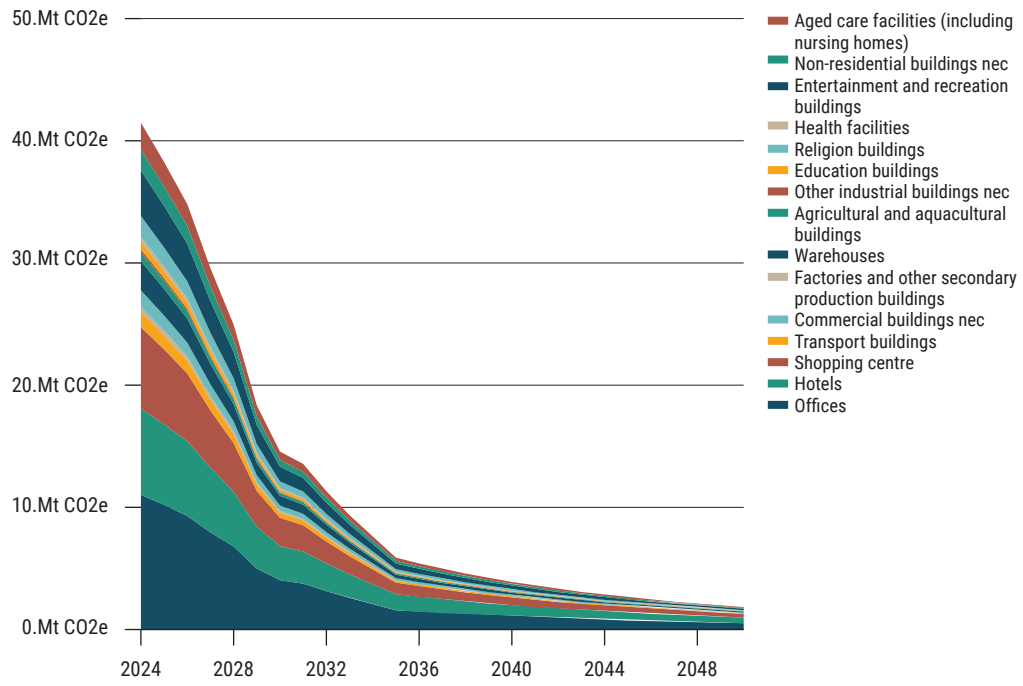
Data on the current refrigerant bank within buildings is taken from Cold Hard Facts 2022[68].

I. Non-residential buildings sector budget

The non-residential buildings sectoral emissions budget used is shown in Figure 24.

41.48Mt of emissions is allocated to the sector in 2024, reducing to 1.83Mt in 2050. The sector's emissions trajectory does not provide zero emissions in 2050. This is due to residual gas use within some existing buildings and an assumption that the gas network that serves non-industrial uses does not significantly decarbonise.

FIGURE 24:
Non-residential buildings sectoral emissions budget[69]



Key inputs for the development of non-residential floor space included:

- New floor space is added at a rate of 1.8 per cent per year.
- Existing floor space is lost at a rate of 0.2 per cent per year.
- Renovation every 25 years (to align to the life of plant and equipment)

Figure 25 shows an example of the evolution of floor stock within the model for short-term accommodation in Sydney.

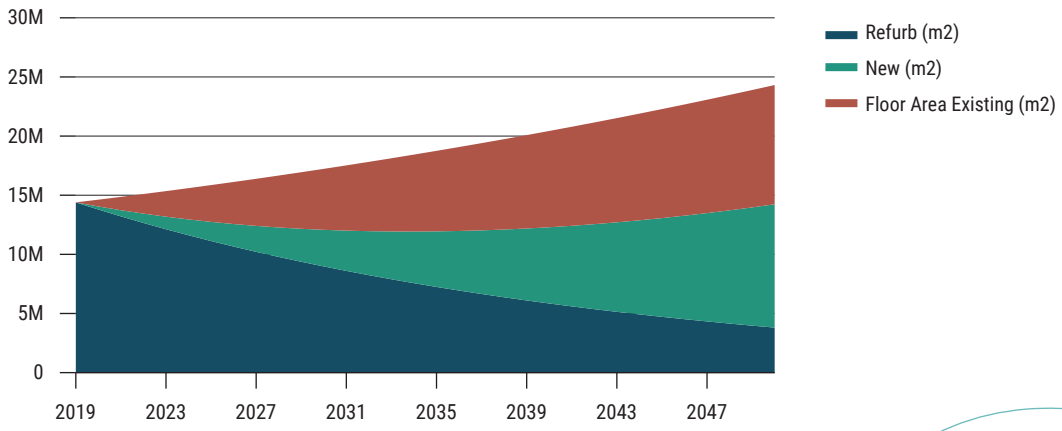
Key inputs for the development of energy efficiency and performance include:

- A behaviour dividend of 0.5 per cent improvement per annum in existing buildings.
- An assumed improvement in building code energy efficiency requirements of 36 per cent by 2050 is annualised at 1.5 per cent per year.
- A rapid transition from fossil fuel use through new construction and renovation activities.

The energy efficiency benefits realised from energy efficiency settings within the model show a 45 per cent reduction in energy efficiency when compared to the same development assumptions without energy efficiency improvements.

A 96 per cent reduction in GHG will be achieved in 2050 compared to the 2024 base.

FIGURE 25:
Projected impact of activities on non-residential floor space[70]

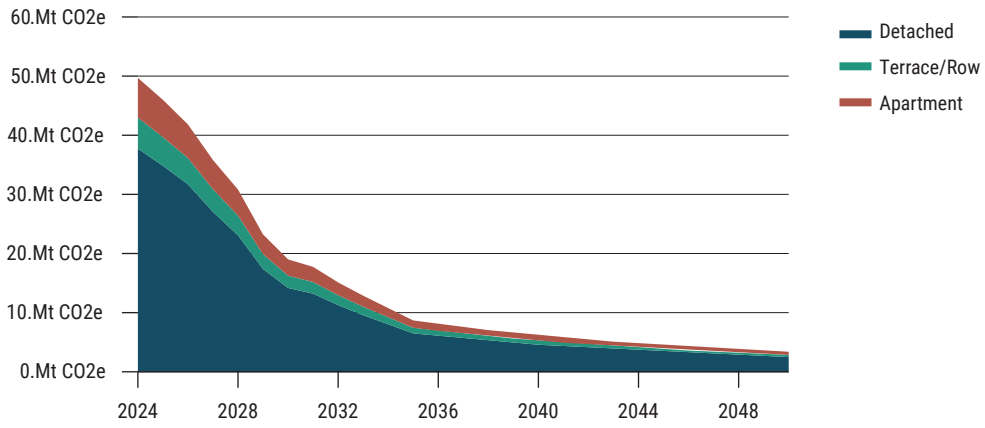


II. Residential Buildings Sectoral Budget

The residential buildings sectoral emissions budget used is shown in Figure 26.

49.7Mt of emissions has been allocated to the housing sector in 2024, reducing to 3.4Mt in 2050. The sector's higher residual emissions than non-residential buildings reflect a slower transition of existing dwellings away from methane gas.

FIGURE 26:
Emissions budget for residential buildings[71]



The evolution of the average intensity of existing, refurbished and new dwellings, together with the average energy intensity across all buildings, is shown in Figure 27, using apartments in Brisbane as an example.

Key inputs for the development of non-residential floor space include:

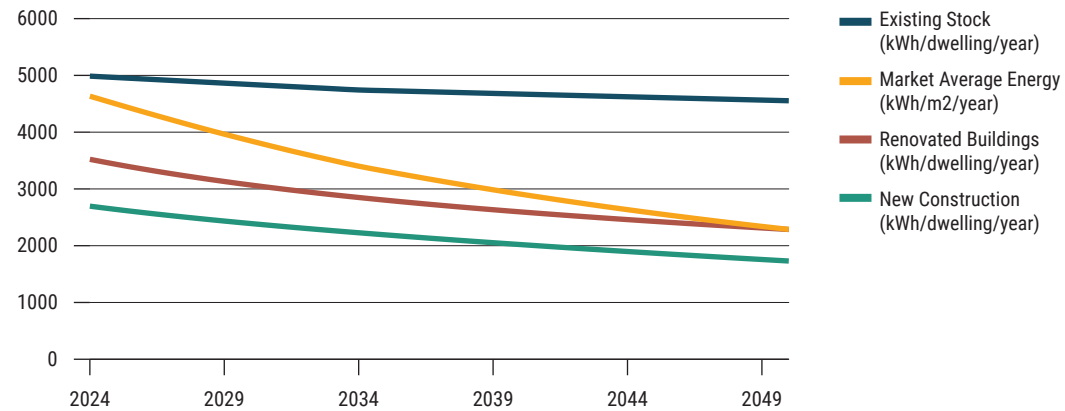
- New separate housing floor space is added at a rate of between 1 and 1.35 per cent per year.
- New terrace housing floor space is added at a rate of between 1.2 and 1.6 per cent per year.
- New apartment floor space is added at a rate of between 3.1 and 3.7 per cent per year.
- Existing floor space is lost at a rate of 0.3 per cent per annum.
- Renovation every 33 years.

Key inputs for the development of energy efficiency and performance include:

- A behaviour dividend of 0.2 - 0.5 per cent improvement per annum in existing buildings.
- An assumed improvement in building code energy efficiency requirements of 36 per cent by 2050 is annualised at 1.5 per cent per year.
- A rapid transition from fossil fuel use through new construction and renovation activities.

The energy efficiency benefits realised from energy efficiency settings within the model show a 41 per cent reduction in energy efficiency when compared to the same development assumptions without energy efficiency improvements. A 94 per cent GHG reduction will be achieved in 2050 compared to the 2024 base.

FIGURE 27:
Evolution of activity average operation energy intensity[72]



III. Refrigerants Emissions Budget

The refrigerant emissions budget, shown in Figures 28 and 29, assumes that commercial buildings can immediately transition to very low GWP refrigerants. In contrast, residential buildings with small air conditioners will rely on HFC refrigerants with a GWP_{100} of 675 (R32) for the next four to five years. Some HFCs are still used until two years after the end of the phase-down, allowing for local stockpiling. This results in residual emissions of 0.64MtCO2e in 2050.

FIGURE 28:
Emissions budget for refrigerants[73]

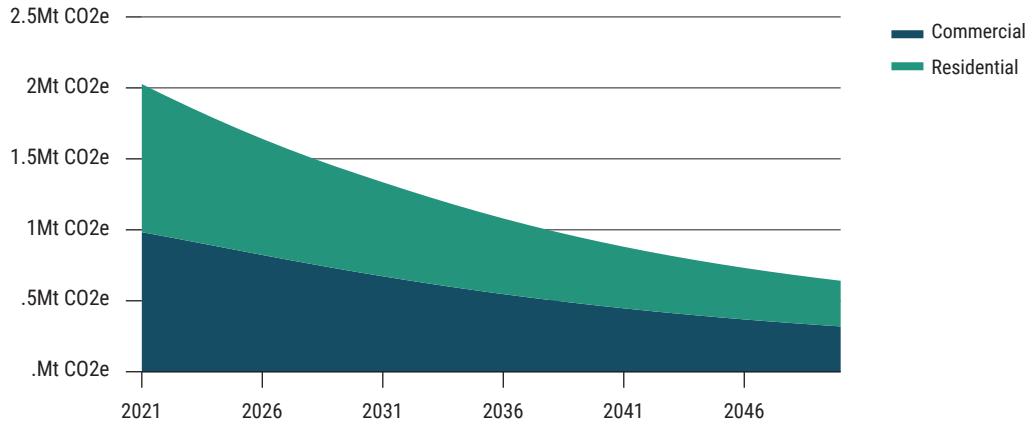
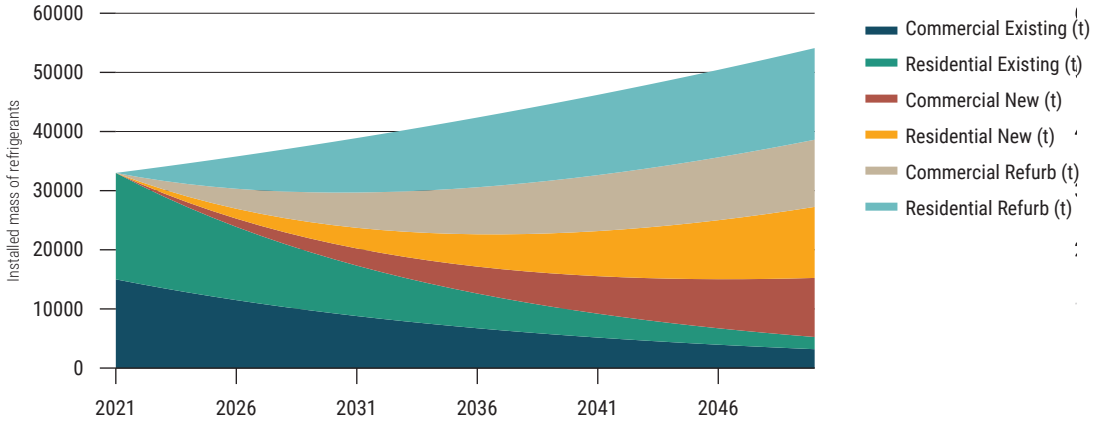


FIGURE 29:
The evolution of the refrigerant inventory by residential and non-residential activity to 2050[74]



WHY ARE REFRIGERANTS IMPORTANT?

Hydrofluorocarbon synthetic GHGs contributed 2 per cent of Australia's total GHG emissions in 2015.

Building air conditioning is the biggest user of HFC refrigerants and contains 65 per cent of the mass installed in Australia and accounts for 34 per cent of refrigerant-related direct GHG emissions.

A sector trajectory for reducing the emission contribution of the HFCs used as refrigerants in air conditioning and heat pumps have been created to understand the actions needed to provide a pathway to zero allocation of Hydrofluorocarbon synthetic refrigerant gas to the property sector by 2036 in keeping with the federal government's phase-down requirements.

Data on the current refrigerant bank within buildings is taken from Cold Hard Facts 2022. Annual direct emissions of GHGs from building air conditioning are estimated to be 2.15Mt, or about 2.5 per cent of the total sectoral GHG budget in 2024. Importantly, as buildings continue to become more efficient and the trajectory of rapid grid decarbonisation continues, the relative contribution of synthetic GHGs will increase to 20-30 per cent of the sector's carbon footprint in the next 10 years.

Direct emissions result from leakage into the atmosphere. Typically, end-of-life refrigerant charges are found to be only 70 per cent of the initial charge for an average operating life of 13.7 years, equating to an average annual rate of 2.2 per cent.

Key Methodological Considerations

The modelling of sectoral carbon budgets has confirmed the need for several key considerations to guide the development of the screening criteria and are reflected in the criteria corresponding to activities in scope.

Decarbonisation of energy

The projected rapid decarbonisation of electricity supplied through Australia's distribution utilities is seen to have the most significant effect on reducing emissions within the building sector.

Presently, most building emissions come from electricity, but this will change due to decarbonisation and electricity supply. This has been key to influencing the framework approach to electrification, embodied carbon, refrigerants, and metrics.

Electrification

The emissions projections showed electrification as the most effective strategy for reducing emissions. The majority of emissions projected to remain in the sector are associated with existing buildings that have not been renovated to remove dependence on fossil fuels.

The prospects of decarbonising the gas network supplying buildings were reviewed, and dependence on this within the taxonomy was rejected due to:

- the lack of certainty and technology readiness;
- that low-carbon alternatives are immediately available through electrification;
- the expectation that biogas and green hydrogen sources (once available) will need to prioritise industrial uses, and;
- If biogas and hydrogen are viable and readily available in the long term, replacing existing gas distribution networks that supply buildings will also be necessary.

Embodied carbon

As building operations are decarbonised with assistance from the electricity grid, the relative impact of the emissions generated in constructing a building becomes more significant. Whilst these are Scope 3 emissions in the activity of constructing a building, the inclusion of screening criteria for the emissions embedded in the construction process is consistent with the direction of local building regulations and market expectations.

Refrigerants

The modelling of refrigerant emission budgets shows that even with the rapid adoption of low GWP alternatives to the commonly used HFC blends that dominate the market, emissions from the leakage of refrigerants into the atmosphere will contribute 13 per cent of the building sector's emissions in 2050.

Given the lack of visibility of drop-in replacements for many conventional HFC blends, the framework recognises that refrigerant choice is a fundamental aspect of climate-aligned activities in the building sector.

Energy efficiency

Energy efficiency remains an important contributor to achieving a climate-aligned building sector. The framework's ambitions for energy efficiency are established from a whole-of-sector energy efficiency dividend to be achieved in 2050.

New construction contributes by limiting the growth in energy demand. However, renovating the existing building stock is the most significant contribution to attaining sector-wide energy efficiency, particularly avoiding sub-optimal outcomes where plant and equipment require replacement.

On-site renewable energy

Scenarios for decarbonising Australia's electricity distribution network rely on a continued increase in rooftop solar installation. CSIRO's rapid decarbonisation pathway requires more than five times more rooftop PV to contribute to the National Electricity Market in 2040 than in 2020[75].

Rooftop solar is intrinsically tied to new construction, acquisition and ownership, and building renovation, so related screening measures are proposed within parts of the building sector criteria for consideration.

Off-site renewable energy

Off-site renewable energy sources are excluded from the framework as they do not confirm whether the underlying building is climate-aligned. The purchasing decision made concerning off-site renewable energy is better attributed to the entity, and the term of purchasing agreements is short compared to the building and its plant and equipment.

Metrics

The only way to correctly align the expectation for building emissions in a high-carbon energy environment with mixed energy sources is by emissions impact.

When the electricity grid decarbonises, an emissions indicator can be problematic as it becomes susceptible to small fluctuations in electricity's emission intensity. An emissions indicator also becomes redundant once electricity is the only energy source, as a measure of energy intensity can be used with the risk of misleading on climate impacts.

The framework requires emissions intensity as a measure during the transition period and moves to an energy efficiency indicator post-transition or when considering fully electric buildings.

HOW IS NORMALISATION APPLIED IN THE TAXONOMY?

The taxonomy seeks transparency on climate-related impacts, so normalisation is carefully applied within the building sector criteria.

Normalisation is required to apply the screening criteria independently of building size. Normalisation allows a standard hurdle rate in kgCO2/m2 of net lettable area to be used for a 5,000 m2 building or a 50,000 m2 building.

The primary economic value generator is used for normalisation as it provides a carbon budget relevant to that economic activity. Primary economic value generators from building ownership include earning rent or letting short-term accommodation. The screening criteria do not seek to compare disparate commercial offerings, such as a 3-star hotel versus a 5-star hotel, so separate targets are provided to accommodate the fundamental difference in these activities.

Other characteristics of a building, such as the extent of the mechanically ventilated car park, hours of operation, and provision of energy-intensive amenity offerings, can make a material difference to its emission intensity. In other cases, the impact can be minimal.

The TSC are based on a sectoral budget allocation, and additional emissions are not allocated to allow for the effects of ancillary amenity enhancements or commercial offers.

Externalities impacting building emissions and energy performance, including local climate and energy infrastructure, are not normalised and are accommodated by establishing targets and trajectories for each urban centre.

Emissions boundaries

The emissions boundaries of existing buildings vary for each activity to provide the best fit to cover all Scope 1 and 2 emissions.

For buildings owned to generate rental incomes, the boundary is the energy associated with the building owners' operations, also referred to as the base building. For a hotel, where the operations and guest impacts cannot be separated, the boundary includes the entire Scope 1 and 2 emissions of the building and its occupants.

In addition to being aligned with the activity, the emissions boundary also aligns with the constraints imposed on data access by Australia's privacy laws. For example, tenants of a commercial office building will have a separate energy supply, and the landlord is not afforded a statutory right to access the tenant's energy meters or billing information.

Normalisation

Emissions and energy impacts are normalised by the primary economic value generator for the buildings.

Screening criteria are normalised to a rate per m2 of lettable area for offices and shopping centres owned to generate rental income. Normalisation is based on a rate per MWh of utilised contracted load for co-location data centres. Short accommodation is normalised by guest rooms for hotels, etc.

No other normalisations are adopted. Localised screening criteria make necessary allowances for climate and energy infrastructure context. Separate targets are also provided to accommodate critical secondary income value generators not captured by the primary value normalisation. An example is a hotel's service-grade star rating, where a 5-star hotel is allocated a higher carbon budget than a 3-star hotel.

Measurement

A measure of operating emissions or energy use is necessary wherever possible to provide credibility. However, due to the nature of the activity, there are some circumstances where predicted energy consumption and emissions must be relied upon within the screening criteria. These include new construction and renovation, where predicting the building or upgrades' work future energy efficiency potential is relied upon. The risk of operating below the expected potential once the works are complete, known as the 'performance gap', is minimised through the taxonomy's design.

The performance gap refers to the disparity between the predicted or expected performance of a building's energy efficiency and its actual performance in practice. In other words, it's the difference between how well a building is supposed to perform in terms of energy efficiency, as estimated during the design and planning stages, and how it performs once in use.

Before a building is constructed or renovated, energy models and simulations are used to predict its energy usage and efficiency. These predictions are based on factors such as building design, materials, systems, and occupant behaviour.

Once the building is in operation, its actual energy usage and efficiency may differ from what was predicted. This can be due to various factors such as design flaws, construction errors, equipment malfunction, inadequate maintenance, changes in occupancy patterns, and user behaviour.

The performance gap can significantly undermine efforts to achieve sustainability and climate mitigation in the built environment.

The new construction and renovation criteria only apply to the activities related to the works. Once the construction or renovation works are complete and the building is operational, the acquisition and ownership criteria will be used. This will bring transparency to the completed building's actual operating performance and ultimately determine whether the operating building is aligned with the taxonomy's green criteria.

This visibility of ongoing verification in operation will incentivise developers and constructors to take necessary risk mitigation measures to deliver the design performance and allow owners and potential purchasers to include operational requirements in agreements.

Implementation

The screening criteria provide metrics and hurdles for an activity to align to 1.5°C. The following elements are essential design aspects of the requirements that impact credibility and usability, and feedback is being sought on their appropriateness and positioning in relation to the screening criteria.

Sunrise Provisions and Sunset Dates

As demonstrated in Figure 30, sunrise and sunset dates refer to the gradual introduction and discontinuation of screening criteria, respectively.

Sunrise provisions applied to criteria components identified as essential elements of green screening criteria but are challenging to demonstrate or report on now. The requirements for low GWP refrigerant inventories and the reduced embodied carbon are considered unable to be reliably measured and reported on at this time. These screening criteria requirements are implemented as sunrise provisions, and reporting or verification of that criteria component will not be required until the sunrise date is triggered.

A period of two years from the date of publication is proposed.

FOR CONSULTATION

Do you support a 'sunrise' trigger for refrigerants and embodied carbon?

Is the two-year nominated (1 Jan 2027 sunrise) appropriate? If not, what should it be and why?

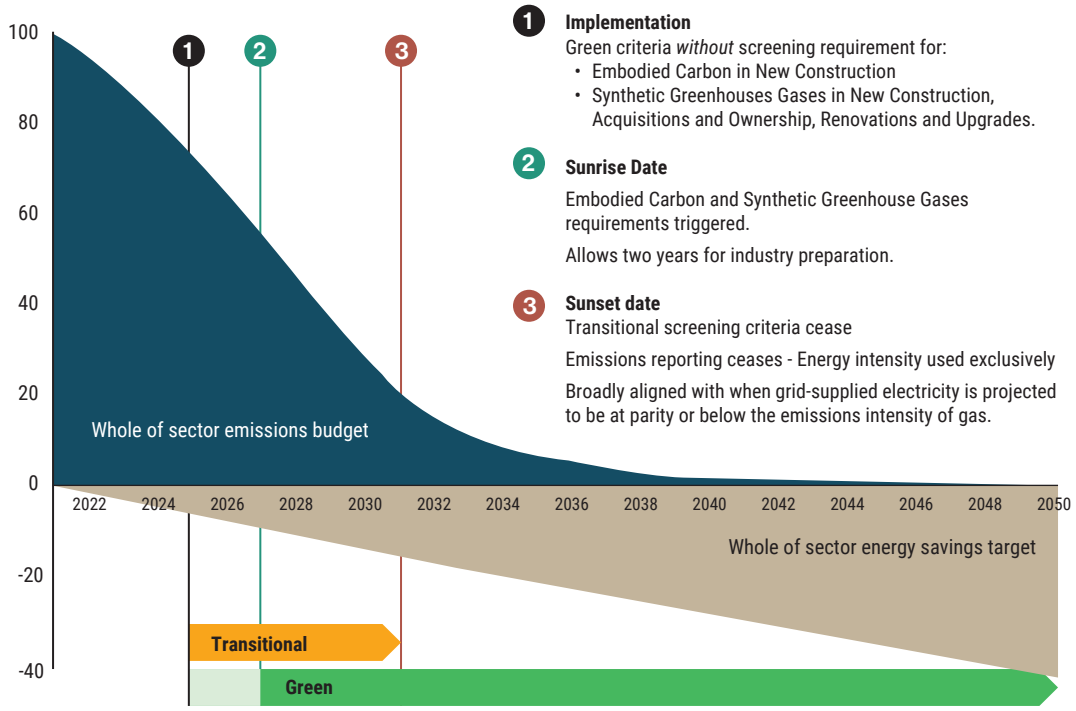
The sunset date defines when the transition criteria will cease operation. It gives visibility into when activities will only be measured based on complete alignment with the green screening criteria.

The sunset date of transition screening criteria is proposed to be 1 July 2031.

FOR CONSULTATION

Do you support a sunset date for transition criteria? If not, what should it be and why?

FIGURE 30:
Sunrise and sunset date sequencing – Construction and Built Environment criteria



Assessment Methods

The screening criteria are supported with guidance on the assessment methods for each component.

Primary source data can be used to address all screening criteria. For example, an office's emission intensity can be verified from energy bills, published emissions factors, and the net lettable area of the building. This allows the use of information already at hand.

Wherever possible, existing assessment methods available within the building sector are used. The range of assessment methods is expected to expand over time as the industry adopts new tools and expands existing tools to cover additional aspects of the screening criteria.

Assessment methods may include proxies for screening criteria or part of screening criteria. In this case, a third-party verified measure will be taken as provided full confirmation of alignment with the screening criteria.

A framework for weighing the suitability of potential proxies has been developed to balance the credibility of emission accounting and the benefits of improved usability. The framework is summarised in the box below.

The alignment of NABERS Energy star ratings, the Green Star Rating system, and the Nationwide House Energy Rating Scheme (NatHERS) are currently being tested for different building use types. Information on the availability of proxies will be provided during the second consultation period, which will take place in the fourth quarter of this year.

FRAMEWORK FOR ASSESSING PROXIES

The framework for assessing proxy methods establishes the attributes of a standard, code, rating, or labelling scheme that are suitable for confirming whether an activity meets the transition or green screening criteria.

Table 15 summarises the principles used for the evaluation of whether an assessment method is suitable to support the taxonomy.

TABLE 15:

Principles to assess the suitability of proxies – Construction and the Built Environment

Credibility	Assessment methods should demonstrate a good correlation to the underlying requirements of the relevant screening criteria. Where the screening criteria requirements are binary, the assessment method needs to provide full alignment. Where the screening criteria are numeric, the assessment method should demonstrate consistent and good correlation when applied to individual buildings.
Usability	Usability considers the rate of current usage of the method or the ease and cost efficiency of adoption at a broader scale. The consideration of usability extends to efficiencies achieved by consistency with other climate-related reporting and investment frameworks and the ease of access to records when financing. The primary aim is to reduce implementation friction, avoid proprietary or bespoke processes, and avoid reliance on any single method.
Balance	The assessment of methods should also consider the inherent nature of the type of buildings. For example, investment-grade assets are able to accurately capture and report relevant data, whereas residential financing presents many challenges for reliable data collection.

FOR CONSULTATION

Do you agree with the framework for assessing the suitability of proxies for the screening criteria?

Are there additional proxies that should be considered for the Australian building sector?

Energy Efficiency for New Construction

The energy efficiency potential of new buildings is critical in the screening criteria for new construction activities.

The NCC measures the energy efficiency component of new construction. Energy efficiency requirements are guided by Trajectory for Low Energy Buildings, a cross-government strategy for low-energy and net-zero-emissions commercial and residential buildings. NCC revisions occur every three years, with higher energy efficiency requirements for residential and commercial buildings introduced in alternating updates. The residential building requirements were substantially amended in NCC 2022, and the commercial requirements are expected to be similarly amended in NCC 2025, which will be exhibited in mid-2024.

The critical question for the energy efficiency component of the taxonomy is whether the provision of the NCC is sufficiently ambitious to align the building sector with a 1.5°C future. This was tested in the sectoral carbon budgets, and energy efficiency savings of 40-45 per cent were found depending on the State and building use type, without any additional uplift.

Other taxonomies and voluntary rating tools, including Green Star Buildings, require an additional 10 per cent uplift beyond the NCC's minimum requirements. Uplift may also insulate against potential non-conformance with the code's energy efficiency provision and assist in mitigating the performance gap.

The forecast benefit of a 10 per cent uplift in NCC requirements was tested. The testing showed that requiring an additional 10 per cent improvement in the screening criteria for new construction would reduce energy consumption in the building sector by an additional 3 per cent in 2050 and GHG emissions by 0.013 per cent from a 2024 base.

A further consideration for introducing an uplift is the potential risk of over-investing in energy efficiency when the return on investment diminishes, and capital is best directed to other activities where increased climate mitigation can be achieved. The NCC is supported by robust societal cost benefits to calibrate its ambitions, which provides confidence that any over-investment risk has been mitigated.

In addition to energy efficiency, the new construction screening criteria require the non-use of fossil fuels, the limitation of refrigerant GWP, and renewable energy, which all increase the minimum requirement established by the NCC and offer significant climate mitigation benefits. The combination of screening criteria requirements will support interoperability by meeting or exceeding the EU taxonomy requirements for a 10 per cent improvement on member states Nearly Zero Energy Building regulations.

Given that the screening criteria are already substantially above minimum requirements and satisfy interoperability, energy efficiency with the new construction criteria is proposed to be set at the level determined by the NCC revisioning process, which is guided by the low-carbon building trajectory.

FOR CONSULTATION

Is the proposed alignment with the NCC requirements and revisioning process for the energy efficiency of new building supported, of should those requirements be subject to an uplift, like the 10% required by the Green Star Buildings criteria?

If you support an uplift, what should it be and for what reasons?

If you currently support an uplift, should this continue indefinitely or should it be revisited in the future as the NCC continues to be revised?

NOTE: the screening criteria and this paper were prepared prior to the public exhibition of NCC2025. The proposed treatment of a 10% uplift within the draft NCC 2025 is relevant and can be seen at this link

Targets for Existing Buildings

The targets for existing buildings are established best on the current bet performers in the market. This approach ensures that the best practice targets are technologically and economically achievable.

Emissions targets are determined from the 15th percentile of the best operation emissions intensity performance in the market in the baseline year and then reduced annually on a linear trajectory towards net zero emissions in 2040.

The choice of the 15th percentile to determine the baseline is consistent with the method introduced by the Climate Bonds Initiative (CBI) for their building sector criteria. The linear trajectory approach is also consistent with the CBI criteria. However, the net-zero 2040 target is ten years earlier than that currently adopted by CBI and better aligned with the forecast for the decrease in electricity generation in Australia.

The 15th percentile is applied only when determining the baseline, and it is not intended that a building always has to be in the best 15th percentile to satisfy transition or green screening criteria. The energy and emissions reductions required for the sector to align to a 1.5°C future can only be achieved by moving average and poor performers to the level achieved by the current best performance, and the pool of best performers must grow over time.

Energy intensity targets are used where the screening criteria require no onsite fossil fuel combustion. The energy target is fixed at the energy needed for an all-electric building to achieve the 15th percentile of best operations emission intensity in 2024. The energy target is not reduced over the term as the energy and emissions-saving dividends in the sector require the rest of the market to shift toward the standard set by the best performance in the market. Requiring future year-on-year improvements for the buildings that already perform at best in the market could risk over-investment in energy efficiency and establishing a future hurdle rate that disincentivises existing buildings' renovation for limited climate mitigation benefits.

Emission targets are applied to the transition criteria. This allows buildings that achieve very low emissions through the use of gas to be eligible until the sunset date.

The green screening criteria apply emission or energy intensity targets before the sunset date and only energy intensity targets after.

The emissions and energy targets are provided for each urban centre in Australia and by climate zone for regional locations. The targets are provided in the publicly available worksheet attached to the public consultation materials – **Attachment 1: Construction and the Built Environment - Emissions and Energy Targets - Urban Centres and Regions**.

Rooftop Solar

Screening criteria have been developed for rooftop solar on the basis that Australia's decarbonisation trajectories assume a role for the built environment to make a minimum contribution to the generation of renewable energy and the decarbonisation of electricity supply. It is recognised that finding an appropriate solution for each building use type and topology is nuanced, so the proposed criteria take a simple approach of either a minimum proportion of utilised roof area being dedicated to PV generation or a minimum amount of power generation capacity for any given site, based on the site area.

This approach does not consider maximum demand reduction as a contribution to a renewable energy grid or the role distributed batteries could play in firming. Consultation questions regarding the inclusion of rooftop solar are included under the proposed technical screening criteria for New Construction activities in **Part E** of this section.

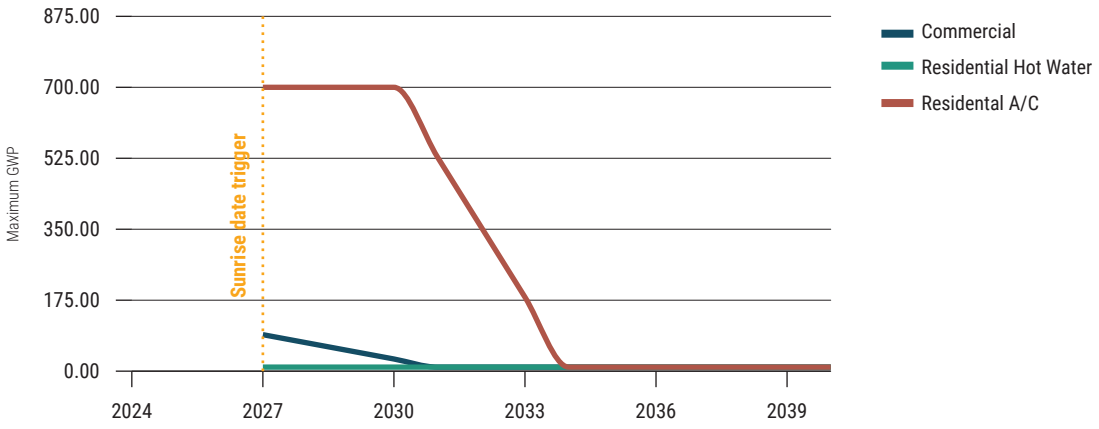
Targets for Refrigerants

Screening criteria have been developed for refrigerants that accommodate current market product and skills capacity.

Residential air conditioning is the main challenge for rapid transition due to the very limited product options and the need to reskill trades and design to different standards to allow for the increased flammability of alternatives to synthetic GHGs. Domestic hot water heat pumps for residential use are easier to deal with, and 60 per cent of the products currently available in Australia use natural refrigerants with a GWP of 1 (R744) or 3 (R290)[76].

The proposed GWP thresholds are shown in Figure 31.

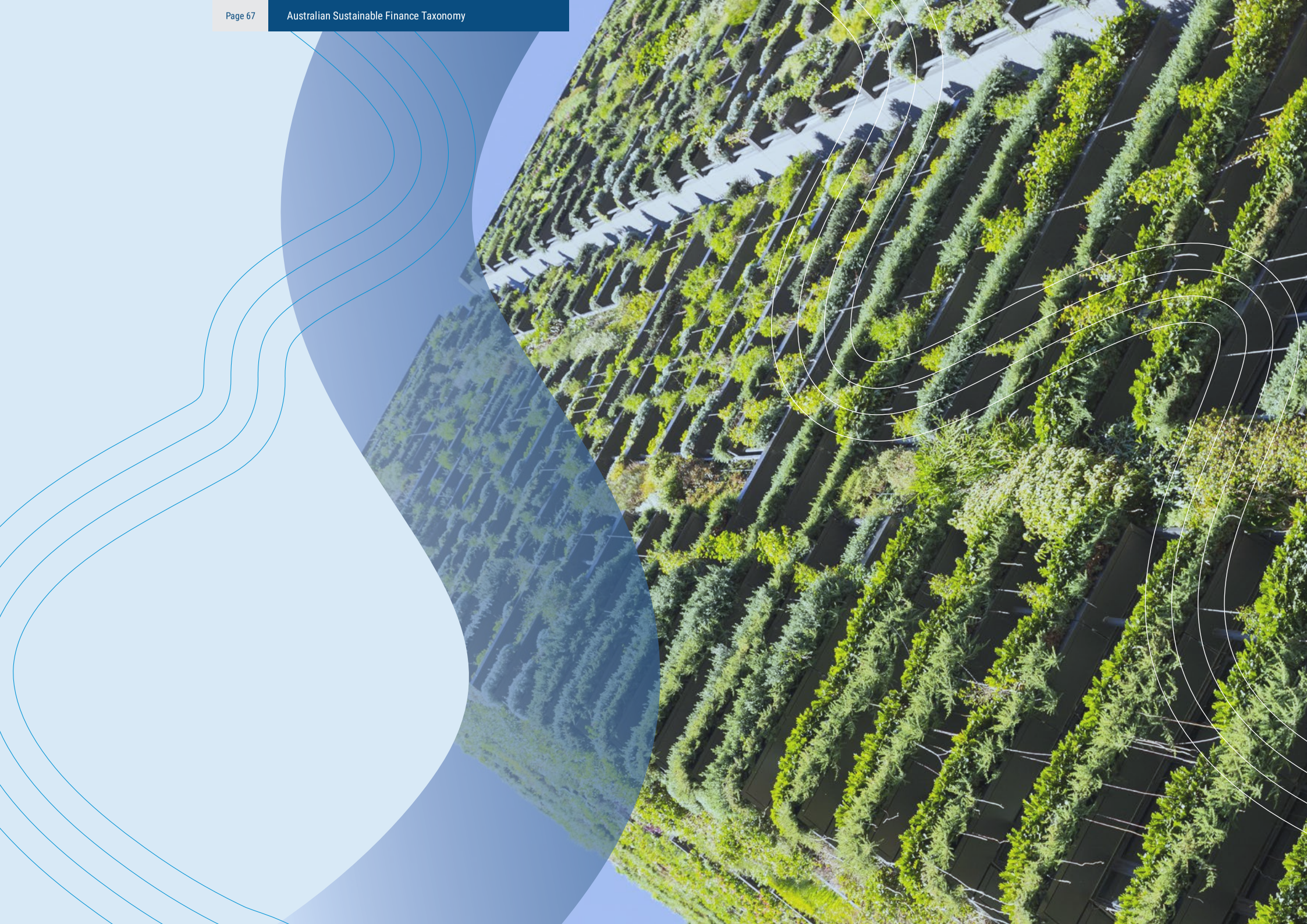
FIGURE 31:
Proposed GWP threshold trajectories



FOR CONSULTATION

Is the time allowed for industry adaptation appropriately calibrated for commercial and residential applications?

Should the sunrise date apply to all buildings or be restricted to only some sectors such as houses?



E. Proposed Technical Screening Criteria: Eligible Activities

1. New Construction

Supporting detail can be found in Appendix 2.1

Sector	Construction and the Built Environment
Activity	Construction of new buildings
Associated ANZSIC codes	E301 Residential Building Construction E3020 Non-residential Building Construction E32 Construction Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Constructed to: the relevant energy efficiency requirements of the National Construction Code, and; avoid future emissions from the onsite combustion of fossil fuels, and; limit the global warming potential of installed refrigerant inventory.*, and; limit the amount of greenhouse gas emissions resulting from the materials used and the process of construction*, and; provide renewable energy generation (TBC for some or all building types)

* Sunrise provisions to be activated 1 January 2027. The proposed GWP limits can be found in Table 17 in Appendix 2.1.

FOR CONSULTATION

Should rooftop solar be a prerequisite for green screening criteria?

Should rooftop solar screening criteria by applied to all building use types or is it only appropriate for a limited selection of building use types, such as single-family dwellings?

If your support limiting to select building use types, which types of buildings and why?

Are there other measures instead of or in addition to on-site solar that should be recognised?

Are there better ways to screen for the contribution of rooftop solar for any building than currently proposed?

Note: the screening criteria and this paper were prepared prior to the public exhibition of NCC2025. The proposed requirements for rooftop solar within the draft NCC 2025 is relevant and can be seen at this link.

2. Acquisition and Ownership

Supporting detail can be found in Appendix 2.2.

Sector	Construction and the Built Environment
Activity	Acquisition and ownership
Associated ANZSIC codes	L6712 Non-Residential Property Operators L6711 Residential Property Operators H4400 Accommodation Q8601 Aged Care Residential Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	Operated with: • An emissions intensity^ or energy intensity at or below the published target, and; • no fossil combustion on site, and; • low global warming potential of installed refrigerant inventory*, and; • provide renewable energy generation (TBC for some or all building types)
Transition	Operated with: • An emissions intensity at or below the published target. Only eligible until 1 July 2031.

^ Emissions intensity can be only used prior to the sunset date. The energy intensity target can be used before and after the sunset date.

* sunrise provision to be activated 1 January 2027. re a sunrise provide and will commerce on 1 January 2027. The proposed GWP limits can be found in Table 19 in Appendix 2.2

3. Renovation

Supporting detail can be found in Appendix 2.3.

Sector	Construction and the Built Environment
Activity	Renovation of existing buildings
Associated ANZSIC codes	E301 Residential Building Construction E3020 Non-residential Building Construction E32 Construction Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The renovated building will meet all relevant Green screening criteria provided for the Acquisitions and Ownership of existing buildings. Where a building is constrained by heritage listing a 30% reduction in emissions is to be achieved.
Transition	The renovated works will: • Reduce the operational emissions of the building by more than 30%. • Not include fossil fuel combusting equipment, or extend the life of existing fossil fuel combusting equipment. • Not include refrigerants above the published GWP threshold or extend the life of existing HFC or HCFC charge equipment*.

* The requirements relating to HFC and HCFCs are a sunrise provide and will commerce on 1 January 2027. The proposed GWP limits can be found in Table 20 in Appendix 2.3.

4. Replacement of major plant and equipment

Supporting detail can be found in Appendix 3.1.

Sector	Construction and the Built Environment
Activity	Replacement of major plant and equipment
Associated ANZSIC codes	E301 Residential Building Construction E3020 Non-residential Building Construction E32 Construction Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The plant replacement works: • Improve the energy efficiency of the replaced services by more than 30%. • Replace all fossil fuel combusting plant and equipment with electric alternatives and have refrigerants that meet the published maximum GWP requirement at the time of supply*, or • Replace all HFCs or HCFC equipment on-site with alternatives having a GWP_{100} <10 and that do not use fossil fuel combustion.

*The requirements relating to GWP thresholds are a sunrise provide and will commerce on 1 January 2027.

5. Residential and small commercial upgrades

Supporting detail can be found in Appendix 3.2.

Sector	Construction and the Built Environment
Activity	Residential and small commercial upgrades
Associated ANZSIC codes	E301 Residential Building Construction E3020 Non-residential Building Construction E32 Construction Services
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The installation of the following components: • Heat pumps and air conditioning systems that meet the published maximum GWP requirement at the time of supply* • Electric vehicle charging equipment • Induction cooktops • Installation of rooftop solar and batteries • Appliances with the top 15% of the best star ratings under the GEMS Act that meet the published maximum GWP requirement at the time of supply*. Thermal insulation to meet state-based regulation and incentive schemes.

* The requirements relating to the GWP of refrigerants are a sunrise provide and will commerce on 1 January 2027.

Eligible GEMS star ratings can be found in Table 21 in Appendix 3.2.

6. Supply of equipment for buildings

Supporting detail can be found in Appendix 3.3.

Sector	Construction and the Built Environment
Activity	Supply of equipment for buildings
Associated ANZSIC codes	C24 Machinery and Equipment Manufacturing F349 Other Machinery and Equipment Wholesaling
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The following products and their key components are manufactured, imported or distributed: • Heat pumps and compressors and air conditioning systems not using HFCs refrigerants or blends. • Electric vehicle charging equipment • Induction cooktops • Rooftop solar and batteries Appliances with the top 15% of the best energy label index under the GEMS Act at the time of manufacture that do not contain HFCs refrigerants or blends.

The requirements for not using HFC apply without a sunset provision, as manufacturers, importers and distributors are unimpeded by current market limitations.

Eligible GEMS energy label indexes can be found in Table 22 in Appendix 3.3.

7. Infrastructure supporting low-emissions precincts

Supporting detail can be found in Appendix 3.4.

Sector	Construction and the Built Environment
Activity	Infrastructure supporting low-emissions precincts
Associated ANZSIC codes	E32 Construction Services E3109 Other Heavy and Civil Engineering Construction E2619 Other Electricity Generation E263 Electricity Distribution
Objective	Climate change mitigation

TECHNICAL SCREENING CRITERIA

Green	The following infrastructure is installed to provide physical delivery of low emissions and efficient energy sources to buildings with a precinct, community of district: • Embedded electricity networks providing 100% renewable energy through on-generation and long term-voluntary retirement of Renewable Energy Certificates and without reliance on electricity retailing contracts with the building owners and occupiers. • Central thermal energy, including hot water and chiller water provisions that do not use fossil fuels or HFCs. Site works associated with the decommissioning of fossil fuel infrastructure in support of precinct electrification.

The requirements for not using HFC apply without a sunset provision, as manufacturers, importers and distributors are unimpeded by current market limitations.

Acknowledgements

ASFI sincerely thanks the individuals on the Taxonomy Technical Expert Group for their feedback, guidance, input into and endorsement of the taxonomy products.

We also thank the Technical Advisory Groups for their advice, input and feedback on initial draft taxonomy products.

Lastly ASFI thanks the many organisations that have contributed to the development of the Australian sustainable finance taxonomy to date, including its technical partners the Climate Bonds Initiative (CBI), Flux Consultants and Ambire Global, as well Climateworks Centre and Skarn Associates for providing key data inputs to inform the technical criteria.

Taxonomy Technical Expert Group Members

Alix Pearce
Anna Skarbek
Bronwyn Kitchen
Charles Davis
Daniela Jaramillo
Emma Garlett
Emma Herd, *(TTEG co-chair)*
Emma Penzo
Guy Debelle, *(TTEG co-chair)*
James Tilbury
Karin Kobelentz
Kate Griffiths
Kim Farrant
Lauren Zanetti
Libby Pinkard
Nadia Humphreys
Richard Lovell
Rick Walters
Robert White
Dr Saphira Rekker
Sarah Barker
Steven Wright
Tennant Reed
Zachary May

Taxonomy Advisory Group Members

Aaron Levine
Amandine Denis-Ryan
Andrew Rudyy
Anirudha Nagar
Anna Hancock
Carlos Flores
Casey Thompson
Chris McCombe
Crystal Fleming
Dani Siew
Elaine Yong
Fiona Fernandes
Grace Tam
Heather Bolt
Irene Lai
Johanna Bower
Jon Pooley
Jorge Chapa
Kate Ashburner
Ken Baldwin
Magali Wardle
Margarita Escartin
Matthew Coghlan
Matthew Denyer
Megan Pepper
Merric Foley
Michael Cornish
Mukund Bhagwat
Patience Mpofu
Philippa Sjoquist
Phoebe Wynn-Pope
Rebecca Wigglesworth
Renee Grogan
Rob Fowler
Rob Koh
Roger Swinbourne
Rory Martin
Rosemary Bissett
Ruben Langbroek
Sandra Qian
Sarah McGrath
Serena De Kretser
Sway Kadey
Tania Smith
Tessa Dann
Komal Jalan
Kuldeep Yadav
Linda Romanovska
Louise Brian
Lydia Kilcullen
Vera Ko

ASFI Secretariat

Nicole Yazbek-Martin, *Head of Taxonomy and Natural Capital*
Grace Soutter, *Senior Project Manager*
Michael Dolan, *Taxonomy Technical Manager*
Rena Hasimi, *Project Officer*

Consortium of Technical Experts

Matteo Bigoni, *Climate Bonds Initiative*
Bridget Boulle, *Climate Bonds Initiative*
Zofia Wetmańska, *Climate Bonds Initiative*
Che Wall, *Flux Consultants*
Prateek Kumar, *Ambire Global*

Appendix 1: Energy Generation and Supply - Background for the classification of activities in line with the endorsed transition methodology

	Economic activity	Rationale: Global (IEA NZE) and National (Climateworks 1.5°C) perspectives
Renewables	Energy from solar PV and CSP (including electricity, heat, cool)	
	Wind power generation	
	Energy generation from ocean energy	
	Energy generation from hydropower	
	Geothermal energy generation (including electricity, heat, cool)	
	Modern bioenergy power generation (including electricity, heat, cool)7	

Global

The first of four key milestones for the electricity sector in the IEA NZE Scenario is the tripling of global renewables capacity by 2030. By 2050 in the NZE Scenario, the total installed capacity of renewables is eight times the level in 2022, and it generates nearly 90 per cent of global electricity supply.

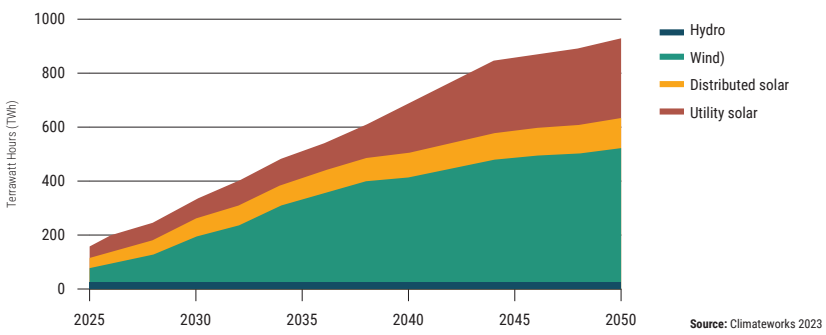
TABLE 16:
Net Zero Emissions by 2050 Scenario (TWh)[77]
N.B. Modern bioenergy: According to the IEA's NZE increases in all forms of modern bioenergy more than offset the decline in the traditional use of solid biomass, with production rising from less than 40 EJ in 2020 to around 100 EJ in 2050.

	Net Zero Emissions by 2050 Scenario (TWh)						
	2010	2021	2022	2030	2035	2040	2050
Total generation	21 533	28 346	29 033	38 207	47 427	59 111	76 838
Renewables	4 209	7 964	8 599	22 532	36 739	50 459	68 430
Solar PV	32	1 023	1 291	8 177	15 439	22 241	31 237
Wind	342	1 865	2 125	7 070	11 923	16 826	23 442
Hydro	3 456	4 299	4 378	5 507	6 530	7 435	8 225
Bioenergy	309	666	687	1 313	1 885	2 396	3 056
of which BECCS	-	-	-	65	300	471	644
CSP	2	15	16	139	414	831	1 486
Geothermal	68	96	101	306	508	662	862
Marine	1	1	1	19	39	67	123

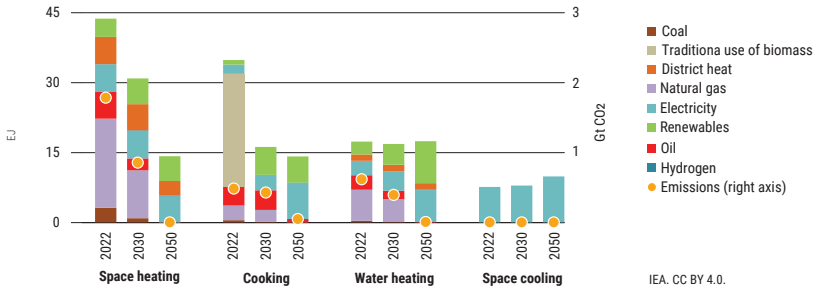
National

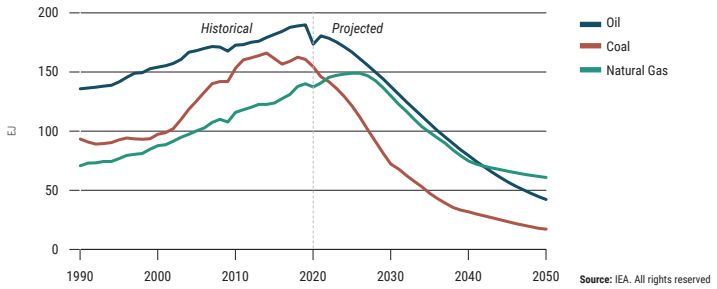
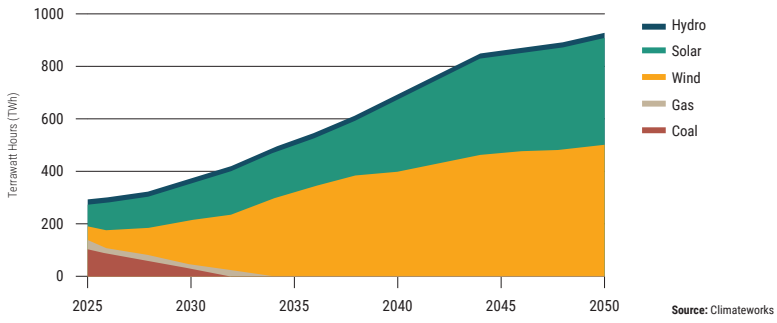
A similar trend is forecasted by the Climateworks Centre model for 1.5°C scenario, with even slightly sharper increase than predicted at a global scale by IEA – already by 2030 renewable electricity generation is responsible for even as much as 90 per cent of total generation, reaching 100 per cent in 2050.

FIGURE 32:
Renewable electricity generation for an Australian 1.5°C scenario[78]



Source: Climateworks 2023

Storage	Storage of energy	*Global* Stationary utility-scale battery storage is a relatively new source of flexibility, and it expands 36-fold in the NZE Scenario by 2030. Batteries are well suited to provide power system flexibility on the scale of seconds, minutes or hours, and can bolster the stability and reliability of electricity networks by providing fast frequency response. By 2030, global utility-scale battery capacity reaches 1 000 GW in the NZE Scenario and accounts for about 15 per cent of all dispatchable power capacity. Pumped hydro is already well established as an important form of storage; other forms of storage, including thermal and gravity-based systems, are now under development. Long-duration hydrogen storage all play a part in the delivery of longer term and seasonal flexibility. *National* Renewable energy is backed by around 10–15 GW of battery storage by 2030 and 44–55 GW by 2050.
District heating/ cooling	District heating and cooling systems	*Global* The use of fossil fuels in buildings sector is rapidly reduced in the NZE Scenario in favour of electricity and clean energy alternatives. District heating is virtually fully decarbonised by 2050. **FIGURE 33:** **Final energy consumption in the buildings sector by selected end-use, 2022-2050**[79]  *National* Gas use phases out of buildings in the 2030s.
Waste heat	Production of heat/ cool using waste heat	

Transmission and distribution	Transmission and distribution of electricity	*Global* One of the four key milestones for the electricity sector identified by IEA is the doubling of grid investments by 2030. In the NZE Scenario, electricity transmission and distribution grids expand to meet the growing demands of electrification, connect thousands of new renewable energy projects, and reinforce systems that need to adapt to changing system dynamics.
	Transmission and distribution of renewable and low-carbon gases, including but not limited to low-carbon hydrogen and its derivatives such as ammonia	
Fossil fuels	Power generation from unabated fossil gaseous fuels (incl. electricity, heat, cool)	**FIGURE 34:** **Coal, oil and gas production in the IEA's NZE2050 scenario**[80] Source: IEA 2023  *Global* The third key milestone for the electricity sector in the IEA's NZE Scenario is a 95 per cent reduction by 2040 in the unabated use of fossil fuels to generate electricity which includes the complete phase out of unabated coal. Projected production of fossil fuels in the NZE falls below 60 EJ by 2050. *National* Coal-powered electricity generation disappears before 2035 in 1.5°C scenario. Around the same time period, gas-powered electricity generation is greatly reduced. By 2050, gas-fired power stations contribute less than 1 per cent of total generation, and would be used for what is known as 'firming'. This gas is not used day-to-day – it switches on infrequently, on the rare occasions that demand exceeds supply, to secure electricity supply to the grid. **FIGURE 35:** **Electricity generation mix for Australia in a 1.5°C scenario**[81] 
	Energy generation from coal (including electricity, heat, cool)	
	Energy generation from oil (including electricity, heat, cool)	

Appendix 2: Construction and Built Environment - Supporting Detail for Direct Activities

2.1. New Construction Activities

A. Energy efficiency requirements of the National Construction Code

Non-residential buildings are to meet the minimum requirements of NCC 2022 BCA Volume One Section J, or later.

Class 2 and 4 residential buildings are to meet the relevant requirements of NCC 2022 BCA Volume One Section J, or later.

Class 1 residential buildings are to meet the relevant requirements of NCC 2022 BCA Volume Two Section H6, or later.

State-based variations are permitted where the underlying standards are maintained.

The following methods can demonstrate compliance with the requirements of ***NCC 2022 BCA Volume One Section J*** for Non-residential buildings:

- J1P1 energy use
- Deemed-to-satisfy provisions
- J1V1 verification method, without accounting for renewable energy generation*
- J1V2 verification method, without accounting for renewable energy generation*
- J1V3 verification method, without accounting for renewable energy generation*

* Renewable energy generation is to be excluded from the verification method on the NCC Section J requirements to ensure that the renewable energy is additional and the amount of renewable energy generated is not used to proportionally reduce the thermal performance of the building envelope or the energy efficiency of the installed plant and equipment.

The following methods can demonstrate compliance with ***NCC 2022 BCA Volume Two Section H6*** for class 1 residential buildings:

- H6P1 and H6P2
- H6D2 Deemed-to-satisfy Energy Rating provisions (1)(a) +(2)(a)
- H6D2 Deemed-to-satisfy Elemental Provision (1)(b) + (2)(b)
- H6V2 Verification using a reference building and H6D2 (2)(b)

The following methods can demonstrate compliance with ***NCC 2022 BCA Volume One Section J*** for class 2 and 4 residential buildings:

- J1P2 Thermal performance
- J1P3 Energy usage
- J1V5 Verification using a reference building for a Class 2 sole-occupancy unit
- J3D1 (1) Deemed-to-Satisfy Provisions

Per the NSW amendment to the NCC, residential dwellings in NSW can confirm the adequacy for Criteria A with a ***BASIX certification*** after 1 October 2023 as regulated by the NSW State Environment Planning Policy (SEPP) Sustainable Buildings 2022.

B. Future emissions from the onsite combustion of fossil fuels

The building must not require the combustion of fossil fuels on-site for *normal operations*.

On-site fossil fuel combustion for standby power is permissible. However, standby power generators shall not be used for peak load lopping or any purpose other than standby power (and associated testing).

The satisfaction of all-electric servicing can be demonstrated by the compliance certification of the building's construction.

Buildings with a 6-star ***Green Star Buildings rating*** or 5-star registrations from 2023 onwards will be deemed to satisfy the all-electric requirement.

Residential buildings with a ***NatHERS Whole-of-home certificate*** showing electricity or solar as the only fuel type in the Predicted Whole-of-home annual impact by Appliance section. The certificate must be produced by a NatHERS accredited assessor. If the certificate contains a pool or a spa, separate confirmation of using only electricity or solar energy is also required.

Residential buildings in NSW with a ***BASIX certification*** showing only electricity or solar thermal to serve all loads and appliances satisfy the requirement.

C. Global Warming Potential of installed refrigerant inventory

The maximum global warming potential (GWP) of refrigerants used in chillers and heat pumps is less than the maximum allowances scheduled in Table 17.

The installed GWP for commercial buildings may be averaged across installed equipment on a mass-weighted basis.

This sunrise provision will come into effect on 1 January 2027 for all new construction.

TABLE 17:
Maximum GWP100 thresholds for new construction activities

Use / Year	2027	2028	2029	2030	2031	2032	2033	2034	2035+
Commercial	90	70	50	30	10	10	10	10	10
Residential Hot Water	10	10	10	10	10	10	10	10	10
Residential A/C	700	700	700	700	528	355	183	10	10

D. Greenhouse gas emissions resulting from the materials used and the process or construction

A maximum allowance for embodied greenhouse gas emission will be established and applied for buildings above 5,000 m2.

Embodied carbon emissions considered are Stage A1-A5, for:

- Facilitating works, including demolition
- Substructure
- Superstructure
- Envelope

This sunrise provision will come into effect on 1 January 2027 for all new construction.

> The targets, reporting requirements, and assessment methods for construction-related greenhouse gas emissions will be confirmed twelve months before the activation date of this sunrise provision.

E. On-site renewable energy generation

New construction should contribute to rooftop solar generation.

All non-residential buildings and residential buildings of four storeys above ground and greater should include the installation of a solar PV system of no less capacity than:

i. A coverage area of solar panels of not less than 60 per cent of the roof area not occupied by cooling towers or communal open space, or;
ii. Sized to provide no less than 45 w/m2 of total site area in year one AC maximum peak power delivery, after allowances for inverters and system losses.

Residential development of three storeys or less above ground will include the installation of a solar PV system of no less capacity than:

iii. A coverage area of solar panels or not less than 25 per cent of the roof area, or;
iv. Sized to provide no less than 25 w/m2 of total site area in year one AC maximum peak power.

This requirement does not apply to new buildings where the rooftop solar panels will be overshadowed to the extent that the generation efficiency of solar panels would be reduced by more than 50 per cent.

Design specifications or stamped plans can demonstrate the adequacy of installed rooftop solar.

Residential buildings with a ***NatHERS Whole-of-Home rating*** can determine the installed capacity of rooftop PV from the Appliance Schedule on the certificate. Whole-of-home ratings of 100 will be deemed to satisfy criteria E.

NSW residential buildings can confirm rooftop PV capacity installed from the alternative energy sources listed on the ***BASIX certificate***.

Apartment buildings can confirm rooftop PV capacity as documented in J3D14 reporting for ***NCC 2022 BCA Volume One Section J***

Commercial buildings can confirm rooftop PV capacity in J1V3 reporting for ***NCC 2022 BCA Volume One Section J***.

2.2. Acquisition and Ownership Activities

A. Operating emissions and energy intensity

Annual operating emissions or energy must be less than each building use type's relevant emissions intensity target.

Emissions intensity must be used for transition screening criteria. Before the sunset date, emissions intensity may also be used for the green screening criteria. Energy intensity may only be used for the green screening criteria.

Emissions or energy intensity must be measured consistently with the boundaries established for the relevant building target. The basis of measurement for each building type is described below.

Emission factors for the building's energy use are to be taken from the relevant location-based emissions factors published in the government's National Greenhouse Accounts Factors and applied to all energy consumed within the defined boundary.

Emissions factors derived from power purchase agreements, green power purchases and the like are not to be used.

Where any building use type represents less than 90 per cent of the building's floor area, the building must be assessed as mixed-use. Mixed-use buildings can demonstrate qualification by comparing the total emissions or energy intensity to a target for all building uses derived by area-weighting the targets for each component of building use.

The emissions or energy intensity to be compared to the required target can be calculated from annual energy use and the floor area. The scope of energy uses and area measurement should be consistent with those described for the required targets for each building use type.

The following methods are also able to confirm emissions intensity for qualification against criteria A:

- Where office uses comprise more than 90 per cent of the building's uses, a ***Building Energy Efficiency Certificate*** issued under the Building Energy Efficiency Disclosure Act 2010 can be used. The value for 'Annual Emission Intensity' on page 2 of the certificate or the column titled 'CRT_Nabers_AnnualEmissionsIntensity' in the downloadable dataset must be used to compare to the required target for full fuel cycle emissions.
- ***NABERS Energy ratings*** issued by the NABERS administrator can be used for most non-residential building types:
  - For Offices, the value for 'Greenhouse gas emissions without Renewable Electricity per m^2' found in the NABERS web portal (https://www.nabers.gov.au/ratings/find-a-current-rating) is to be compared to the required target for full fuel cycle emissions.

- For Hotels, the value for 'Greenhouse gas emissions without Renewable Electricity per room' found in the NABERS web portal (https://www.nabers.gov.au/ratings/find-a-current-rating) is to be compared to the required target for full fuel cycle emissions.
- For Shopping Centres, the value for 'Greenhouse gas emissions without Renewable Electricity per m^2' found in the NABERS web portal (https://www.nabers.gov.au/ratings/find-a-current-rating) is to be compared to the required target for full fuel cycle emissions.
- For Data Centres, the value for 'PUE' found in the NABERS web portal (https://www.nabers.gov.au/ratings/find-a-current-rating) is to be compared to the required energy intensity.

Residential buildings constructed in accordance with ***NCC 2022 BCA Volume Two Section H6***, or a ***BASIX certification*** after 1 October 2023 as regulated by the NSW State Environment Planning Policy (SEPP) Sustainable Buildings 2022 are deemed to comply with Criteria A.

Basis of Measurement

When screening acquisition and ownership criteria, the basis for measure and emissions boundaries are varied to suit each building type. The following table summarises the activities and building use types with acquisition and ownership screening criteria and the boundary and basis of measurement for each.

TABLE 18:
Bounding and basis of measurement by building type – Acquisition and ownership

ANSZIC code	Activity	Building Use Type	Boundary	Basis of measurement	Notes
L6712 Non-Residential Property Operators	Office space renting or leasing	Office	Landlord Scope 1+2 emissions	/m2 of Net Lettable Area/ annum	Where landlord Scope 1+2 emission are not separately metered, a whole building target, that includes the scope 1 + 2 emissions of the building tenants can be used.
	Commercial or industrial property renting or leasing	Co-located Data Centre	Landlord Scope 1+2 emissions	/MWh of billed utilisation/ annum	The energy intensity used is consistent with the industry standard PUE measure.
	Shopping Centre rental and leasing	Shopping Centre	Landlord Scope 1+2 emissions	/m2 of Gross Lettable Area Retail/annum	Where the landlords provides HVAC services to the retail tenants the target is adjusted to in proportion to the percentage of lettable area served.
4400 Accommodation	Hotel operation	Hotel	Operator Scope 1+2 emissions	/guest room/ annum	Seperate targets are provided for each hotel service grade star rating. Operator Scope 1+2 emissions includes the energy consumed within the guest rooms,
	Serviced apartment	Serviced apartment	Operator Scope 1+2 emissions	/apartment/ annum	Operator Scope 1+2 emissions includes the energy consumed with the apartments.
L6711 Residential Property Operators	Residential property operation	Built to rent	Operator Scope 1+2 emissions	/apartment/ annum	Operator Scope 1+2 emissions includes the energy consumed with the apartments.
	Home ownership	Residential dwelling	Occupier Scope 1+2 emissions	/dwelling/ annum	Seperate targets are provided for single dwelling, terrace and apartment topologies, and the number of bedrooms in each.
Q8601 Aged Care Residential Services	Nursing home operations	Residential aged care	Operator Scope 1+2 emissions	/bed/annum	
G411 Food retailing	Supermarket and Grocery stores	Supermarket	Operator scope 1+2 emissions	/m2 of retail floor area/ annum	The retail floor area is the trading area of the supermarket

B. Onsite combustion of fossil fuels

The building must not require the combustion of fossil fuels on-site for *normal operations*.

On-site fossil fuel combustion for standby power is permissible. However, standby power generators shall not be used for peak load lopping or any purpose other than standby power (and associated testing).

> The satisfaction of all-electric servicing can be demonstrated by the compliance certification of the building's construction.

C. Global warming potential of installed refrigerant gas inventory

The maximum global warming potential (GWP) of refrigerants used in chillers and heat pumps is less than the maximum allowances scheduled in Table 19.

This sunrise provision will come into effect on 1 January 2027 for all new construction.

TABLE 19:
Maximum GWP_{100} thresholds for acquisition and ownership activities

Use / Year	2027	2028	2029	2030	2031	2032	2033	2034	2035+
Commercial	90	70	50	30	10	10	10	10	10
Residential Hot Water	10	10	10	10	10	10	10	10	10
Residential A/C	700	700	700	700	528	355	183	10	10

D. On-site renewable energy generation

Acquired and owned buildings should contribute to rooftop solar generation.

All non-residential buildings and residential buildings of four storeys above ground and greater should include the installation of a solar PV system of no less capacity than:

i. A coverage area of solar panels of not less than 60 per cent of the roof area not occupied by cooling towers or communal open space, or;
ii. Sized to provide no less than 45 w/m2 of total site area in year one AC maximum peak power delivery, after allowances for inverters and system losses.

Residential development of three storeys or less above ground will include the installation of a solar PV system of no less capacity than:

i. A coverage area of solar panels or not less than 25 per cent of the roof area, or;
ii. Sized to provide no less than 25 w/m2 of total site area in year one AC maximum peak power.

This requirement does not apply to new buildings where the rooftop solar panels will be overshadowed to the extent that the generation efficiency of solar panels would be reduced by more than 50 per cent.

> Design specifications or stamped plans can demonstrate the adequacy of installed rooftop solar.
>
> Residential buildings with a ***NatHERS Whole-of-Home rating*** can determine the installed capacity of rooftop PV from the Appliance Schedule on the certificate. Whole-of-home ratings of 100 will be deemed to satisfy criteria E.
>
> NSW residential buildings can confirm rooftop PV capacity installed from the alternative energy sources listed on the ***BASIX certificate***.

2.3. Renovation Activities

A. Meet all relevant Green Screening Criteria provided for Acquisitions and Ownership

The annual operating energy targeted following the renovation must be contracted as part of the works, with post-occupancy measurement and verification requirements.

Where Heritage or similar impediments compromise the renovation works, this must be demonstrated by the building being listed on a State, Federal or International heritage register and a conservation management plan confirming that the constraints over elements that we need to be renovated to reduce emissions to a level required to align with the green criteria for the acquisition and ownership of buildings.

Where heritage of similar impediments allows a percentage reduction in energy of more than 30%, the baseline from which to measure the reduction is to be demonstrated from a third-party verified assessment of the building's current annual operational energy use.

A report from a suitably qualified professional should demonstrate the targeted annual energy requirements. The contract for the delivery of the works should be tied to the performance outcomes and provide post-contraction measurement and verification, including:

- Energy operating energy requirements
- No equipment that combusts fossil fuel for normal operation
- Maximum installed refrigerant inventory

B. Reduce the operational emissions of the building by more than 30 per cent - Transition

A third-party verified assessment of the building's current annual operational emissions from all operating energy use will demonstrate the baseline from which to measure the emissions reduction.

Annual operating emissions targeted following the renovation must be contracted as part of the works, with post-occupancy measurements and verification requirements.

A report from a suitably qualified professional should demonstrate the targeted annual energy requirements.

Targeted operating emissions are to be calculated using the same emission factors for each energy source as used when calculating the baseline when calculating the percentage of emissions reduction to be achieved through the works.

C. Fossil fuel combustion - Transition

The works must not include the installation of any plant or equipment that combusts fossil fuels or the maintenance, refurbishment, or other means of extending the current operating life of an existing fossil fuel combusting plant and equipment.

The contract for the delivery of the works must confirm that no works are related to any fossil fuel combusting plant or equipment.

D. Global warming potential refrigerant gas inventory [Transition]

The works must not include the installation of any plant or equipment that is charged with refrigerants above the published threshold or the maintenance, refurbishment, or other means of extending the current operating life of an existing HFC of HCFC plant and equipment.

> The contract to deliver the works must confirm that no works are related to HFC or HCFC charged plant or equipment.

TABLE 20:
Maximum GWP_{100} thresholds for renovation activities

Use / Year	2027	2028	2029	2030	2031	2032	2033	2034	2035+
Commercial	90	70	50	30	10	10	10	10	10
Residential Hot Water	10	10	10	10	10	10	10	10	10
Residential A/C	700	700	700	700	528	355	183	10	10

Appendix 3: Construction and Built Environment - Supporting Detail for Supporting Activities

3.1. Replacement of major plant and equipment

A. Energy efficiency of the replaced services

A third-party verified assessment of the equipment's current annual operating energy use will demonstrate the baseline from which to measure the emissions reduction and the improvement in energy efficiency resulting from the works.

The energy efficiency from replacing plant and equipment is to be contracted as part of the works, with post-completion measurement and verification requirements.

> The requirements should be demonstrated in the contract documents.

B. Global warming potential of refrigerants

The plant and equipment to be replaced by the works can be confirmed as eligible through a condition audit report that identifies fuel sources and refrigerant charges.

The equipment to be installed must have a GWP_{100} <10 and can be demonstrated eligible through manufacturers published data sheets.

The work contract must include recycling redundant components and collecting and safely destroying the existing refrigerant inventory.

> The requirements should be demonstrated in the contract documents.

3.2. Residential and small commercial upgrades

The activity covers the costs associated with supply and installation.

A. Heat Pumps

Heat pumps that generate chilled or hot water and are below the maximum GWP requirements for renovation activities are eligible.

Air, water and ground source heat pumps are eligible.

> Manufacturers' published data sheets can be used to confirm that the GWP requirements are met.

B. Electric vehicle charging equipment

Electric vehicle charging equipment includes chargers and dedicated infrastructure, including EV distribution boards, load management devices and dedicated distribution (cables, cable trays, conduits, etc).

Charging infrastructure for heavy vehicles, cars, bicycles, and scooters is eligible.

C. Induction cooktops

Domestic and commercial induction cooktops are eligible.

D. Rooftop solar and batteries

The installation of rooftop solar panels with or without batteries is eligible.

E. GEMS appliances

The requirements for not using HFCs are a sunrise provision and will be in effect on 1 January 2027.

The 15th percentile of an appliance's GEMS rating is to be based on a statistical test of the full GEMS equipment database for the relevant product type no more than 18 months before the activity.

> The GEMS star rating may be demonstrated from the manufacturer's published data or the relevant record in the GEMS database.

F. Insulation

The requirements for insulation are found in relevant regulations and schemes. Ceiling insulation in residential buildings in the ACT, in accordance with the requirements of the Residential Tenancies Regulation 1998, is eligible.

TABLE 21:
Minimum star ratings for residential and small commercial upgrade activities (March 2024)

Product type	Minimum GEMS star rating
Clothes Dryer	9
Clothes washer	4.5
Dishwasher	4
Air conditioning (Hot climate)	4.0 cooling & 2.5 heating
Air conditioning (Mixed climate)	3.5 cooling & 3.0 heating
Air conditioning (Cold climate)	4.0 cooling & 3.5 heating

3.3. Supply of Equipment for Buildings

A. Heat Pumps

Heat pumps of compressor used for generation of chilled or hot water. Air, water and ground source heat pumps are eligible.

The requirements for not using HFC apply without a sunrise date trigger, as manufacturers, importers and distributors are unimpeded by current market limitations.

B. Electric vehicle charging equipment

Electric vehicle charging equipment for buildings includes chargers and dedicated infrastructure, including EV distribution boards and load management devices.

C. Induction cooktops

Domestic and commercial induction cooktops are eligible.

D. Rooftop solar and batteries

Small-scale rooftop solar and supporting batteries capable of grid connection for load management are eligible.

E. GEMS appliances

GEMS energy label indexes are to be used to confirm a product in the best 15th of its type. The star rating is not used for manufacturing and supply as it has insufficient granularity.

> The 15th percentile of an appliance's GEMS energy label is to be based on a statistical test of the full GEMS equipment database for the relevant product type no more than six months before the activity is assessed.

TABLE 22:
Minimum GEMS energy label indexes for supply of equipment activities (March 2024)

Product type	Metric	Minimum GEMS star rating
Clothes Dryer	New SRI	9.03
Clothes washer	New SRI	5.73
Dishwasher	New SRI	4.12
Air conditioner	ACOP, and AEER	4.1286, and 3.8121
Chiller	Decl. COP	6.27

3.4. Infrastructure supporting low emissions precincts

A. Embedded electricity networks

The embedded network may comprise all elements from the point of connection to the regulated distribution network through to the consumer meters.

On-site renewable generation is to be under common ownership with the embedded network.

The provision of 100% renewable energy is to be confirmed by a long-term off-take agreement for Renewable Energy Certificates from a generator or generators connected to the same distribution network and a contracted commitment. Renewable Energy Certificates are to be voluntarily retired in sufficient quantity to provide 100 per cent renewable energy attributes to all electricity supplied through the embedded network.

The embedded network is to operate and provide renewable energy attributes without requiring electricity retailing to connected customers.

B. Central thermal energy

Central thermal energy may include all elements, including power feeds and switchgear, heat pumps and chillers, heat rejection equipment, distribution pipework and associated trenching, meters and energy transfer stations.

No HFC refrigerants are to be used, and GWP_{100} must be less than 10.

All elements are to be under common ownership.

C. Enabling works

Site works associated with the decommissioning of fossil fuel infrastructure in support of precinct electrification.

References

1 Commonwealth of Australia, *Annual Climate Change Statement 2023,* Department of Climate Change, Energy, the Environment and Water (2023) <https://www.dcceew.gov.au/sites/default/files/documents/annual-climate-change-statement-2023.pdf>.

2 Commonwealth of Australia, *Sustainable Finance Strategy,* Department of the Treasury (November 2023) <https://treasury.gov.au/sites/default/files/2023-11/c2023-456756.pdf>.

3 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach* (2023) <https://iea.blob.core.windows.net/assets/13dab083-08c3-4dfd-a887-42a3ebe533bc/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf>.

4 International Energy Agency, *Australia 2023,* Energy Policy Review (2023) <https://iea.blob.core.windows.net/assets/02a7a120-564b-4057-ac6d-cf21587a30d9/Australia2023EnergyPolicyReview.pdf>.

5 Ibid.

6 The Hon Chris Bowen MP, Minister for Climate Change and Energy, *Australia supports global renewable and energy efficiency pledge* (3 December 2023) <https://minister.dcceew.gov.au/bowen/media-releases/australia-supports-global-renewable-and-energy-efficiency-pledge-0>.

7 International Energy Agency, *Australia 2023,* Energy Policy Review (2023) <https://iea.blob.core.windows.net/assets/02a7a120-564b-4057-ac6d-cf21587a30d9/Australia2023EnergyPolicyReview.pdf>.

8 *Climateworks Centre decarbonisation scenarios 2023*, Climateworks Centre (November 2023) <https://www.climateworkscentre.org/resource/climateworks-centre-decarbonisation-scenarios-2023-australia-can-still-meet-the-paris-agreement/>.

9 Ibid.

10 *Diverse array of energy-storage technologies may be key to firming the grid,* Commonwealth Scientific and Industrial Research Organisation (2021) <https://www.csiro.au/en/news/all/articles/2021/january/diverse-array-of-energy-storage-technologies-may-be-key-to-firming-the-grid>.

11 *Climateworks Centre decarbonisation scenarios 2023*, Climateworks Centre (November 2023) <https://www.climateworkscentre.org/resource/climateworks-centre-decarbonisation-scenarios-2023-australia-can-still-meet-the-paris-agreement/>.

12 Australian Energy Market Operator, *2022 Integrated System Plan for the National Electricity Market* (June 2022) <https://aemo.com.au/-/media/files/major-publications/isp/2022/2022-documents/2022-integrated-system-plan-isp.pdf?la=en>.

13 Australian Energy Market Operator, *Draft 2024 Integrated System Plan for the National Electricity Market: A roadmap for the energy transition* (2023) <https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/draft-2024-isp-consultation/draft-2024-isp.pdf?la=en>.

14 *Nuclear power for Australia: A potted story*, Australian Energy Council (31 August 2023) <https://www.energycouncil.com.au/analysis/nuclear-power-for-australia-a-potted-history/>.

15 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5°C Goal in Reach* (2023) <https://iea.blob.core.windows.net/assets/13dab083-08c3-4dfd-a887-42a3ebe533bc/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf>.

16 Ibid.

17 Climateworks Centre's Decarbonisation Scenarios 2023 - emissions intensity thresholds aligned with the Australian 1.5C scenario (provided to ASFI for the purposes of the taxonomy project).

18 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5°C Goal in Reach* (2023) <https://iea.blob.core.windows.net/assets/13dab083-08c3-4dfd-a887-42a3ebe533bc/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf>.

19 *Climateworks Centre decarbonisation scenarios 2023*, Climateworks Centre (November 2023) <https://www.climateworkscentre.org/resource/climateworks-centre-decarbonisation-scenarios-2023-australia-can-still-meet-the-paris-agreement/>.

20 National Renewable Energy Laboratory, *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update* (September 2021) <https://www.nrel.gov/docs/fy21osti/80580.pdf>.

21 World Bank, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (2020) <https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>.

22 International Energy Agency, *Sustainable and responsible development of minerals* (2024) <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/sustainable-and-responsible-development-of-minerals>.

23 Wood Mackenzie, *Faster decarbonisation and mining: a crisis of confidence or capital?* (2020) <https://www.woodmac.com/news/opinion/faster-decarbonisation-and-mining-a-crisis-of-confidence-or-capital/>.

24 Ibid.

25 U.S. Geological Survey, *Lithium,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-lithium.pdf>.

26 U.S. Geological Survey, *Iron Ore,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-iron-ore.pdf>.

27 U.S. Geological Survey, *Bauxite and Alumina,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-bauxite-alumina.pdf>.

28 U.S. Geological Survey, *Manganese,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-manganese.pdf>.

29 U.S. Geological Survey, *Zinc,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-zinc.pdf>.

30 U.S. Geological Survey, *Nickel,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-nickel.pdf>.

31 U.S. Geological Survey, *Copper,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-copper.pdf>.

32 U.S. Geological Survey, *Cobalt,* Mineral Commodity Summaries (January 2024) <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-cobalt.pdf>.

33 Commonwealth of Australia, *Critical Minerals Strategy 2023,* Department of Industry, Science and Resources (updated 7 July 2023) <https://www.industry.gov.au/publications/critical-minerals-strategy-2023-2030 >.

34 Commonwealth of Australia, *Resources and energy quarterly: March 2024,* Department of Industry, Science and Resources (28 March 2024) <https://www.industry.gov.au/publications/resources-and-energy-quarterly-march-2024>.

35 Commonwealth of Australia, *Value of Australian Mineral Exports,* Geoscience Australia (2020) <https://www.ga.gov.au/digital-publication/aimr2020/value-of-australian-mineral-exports >.

36 Commonwealth of Australia, *Australia's Critical Minerals List and Strategic Materials List,* Department of Industry, Science and Resources (updated 20 February 2024) <https://www.industry.gov.au/publications/australias-critical-minerals-list-and-strategic-materials-list>.

37 International Finance Corporation, *Net Zero Roadmap For Copper & Nickel Mining Value Chains,* (2023) <https://commdev.org/wp-content/uploads/pdf/publications/IFC_NZR4M_Final_Roadmap_C-suite_FINAL.pdf>.

38 Ibid.

39 World Bank, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (2020) <https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>.

40 Ibid.

41 Minerals Council of Australia, Mining Delivers Record $455 Billion In Export Revenue In FY23 (4 August 2023), https://minerals.org.au/resources/mining-delivers-record-455-billion-in-export-revenue-in-fy23/

42 Commonwealth of Australia, *Critical Minerals Strategy 2023- 2030,* Department of Industry, Science and Resources (2023) <https://www.industry.gov.au/publications/critical-minerals-strategy-2023-2030/our-approach>.

43 The Australian Industry Energy Transitions Initiative (ETI), *Pathways to industrial decarbonisation Positioning Australian industry to prosper in a net zero global economy, Phase 3 Report* (February 2023) <https://energytransitionsinitiative.org/wp-content/uploads/2023/02/Pathways-to-industrial-decarbonisation-phase-3-technical-report-February-2023-Australian-Industry-ETI.pdf>.

44 International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions,* World Energy Outlook Special Report (updated March 2022) < https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf >.

45 *Adamas Intelligence: Amount of nickel in average EV battery up 8% year-over-year,* Green Car Congress (09 October 2023) <https://www.greencarcongress.com/2023/10/202231009-adamas2.html>,

46 International Finance Corporation, *Net Zero Roadmap For Copper & Nickel Mining Value Chains,* (2023) <https://commdev.org/wp-content/uploads/pdf/publications/IFC_NZR4M_Final_Roadmap_C-suite_FINAL.pdf>.

47 Paul Lienert, *When do electric vehicles become cleaner than gasoline cars?,* Reuters (29 June 2021) <https://www.reuters.com/business/autos-transportation/when-do-electric-vehicles-become-cleaner-than-gasoline-cars-2021-06-29/>.

48 Emissions intensity thresholds for copper, lithium, and nickel provided by Skarn Associates for the purposes of the taxonomy project. Skarn Associates provides GHG emission & energy intensity curves for all major mined commodities, built up from detailed asset level data (2024), https://www.skarnassociates.com/

49 Climateworks Centre's Decarbonisation Scenarios 2023 -1.5C aligned scope 1 emissions trajectories for copper, lithium and nickel (provided to ASFI for the purposes of the taxonomy project).

50 Emissions intensity thresholds for copper, lithium, and nickel provided by Skarn Associates for the purposes of the taxonomy project. Skarn Associates provides GHG emission & energy intensity curves for all major mined commodities, built up from detailed asset level data (2024), https://www.skarnassociates.com/

51 Nawshad Haque and Terry Norgate,'20 - Life cycle assessment of iron ore mining and processing' in Liming Lu (Ed.), *Iron Ore: Mineralogy, Processing and Environmental Sustainability* (Woodhead Publishing, 2015) 615-630.

52 The Australian Industry Energy Transitions Initiative (ETI), *Pathways to industrial decarbonisation Positioning Australian industry to prosper in a net zero global economy, Phase 3 Report* (February 2023) <https://energytransitionsinitiative.org/wp-content/uploads/2023/02/Pathways-to-industrial-decarbonisation-phase-3-technical-report-February-2023-Australian-Industry-ETI.pdf>.

53(1) Ibid.

53 (2) Julian Atchison, *Amogy: ammonia-powered semi-truck,* Ammonia Energy Association (26 January 2023) <https://ammoniaenergy.org/articles/amogy-ammonia-powered-semi-truck/>.

54 Nuffied Council on Bioethics, *Biofuels: ethical issues: A guide to the report* (April 2011) < https://www.nuffieldbioethics.org/assets/pdfs/Biofuels_ethical_issues_A5_Guide.pdf >.

55 Ibid.

56 International Finance Corporation, *Net Zero Roadmap For Copper & Nickel Mining Value Chains,* (2023) <https://commdev.org/wp-content/uploads/pdf/publications/IFC_NZR4M_Final_Roadmap_C-suite_FINAL.pdf>.

57 RMI, Steel GHG Emissions Reporting Guidance (June 2023), https://rmi.org/wp-content/uploads/2022/09/steel_emissions_reporting_guidance.pdf

58 David Uren, *The Australian goose that lays the (multi-billiondollar) iron ore eggs,* The Strategist, Australian Strategic Policy Institute (30 November 2023).

59 Alice Li, *CBAM could drive China to cleaner green steel but DRI cost struggles ahead likely,* Fastmarkets MN (9 November 2023) <https://eurometal.net/cbam-could-drive-china-to-cleaner-green-steel-but-dri-cost-struggles-ahead-likely/>,

60 Vadim Kolisnichenko, *China produced 1.019 billion tons of steel in 2023,* GMK Center (17 January 2024) <https://gmk.center/en/news/china-produced-1-19-billion-tons-of-steel-in-2023/>.

61 International Energy Agency , *Tracking Buildings* (2023) <https://www.iea.org/energy-system/buildings>,

62 CSIRO, *Pathways to Net Zero Emissions – An Australian Perspective on Rapid Decarbonisation* (November 2023) <https://www.csiro.au/-/media/Environment/Net-zero/Reports/Technical-Report_Pathways-to-Net-Zero-Emissions.pdf>.

63 Data, analysis and modelling provided by Flux Consultants (2024), https://www.fluxco.co/.

64 Ibid.

65 Commonwealth of Australia, *Australia's emissions projections 2023,* Department of Climate Change, Energy, the Environment and Water (2023) <https://www.dcceew.gov.au/climate-change/publications/australias-emissions-projections-2023>.

66 Commonwealth of Australia, *Commercial Building Baseline Study 2022,* Department of Climate Change, Energy, the Environment and Water, Report (August 2022) <https://www.dcceew.gov.au/sites/default/files/documents/commercial-buildings-energy-consumption-baseline-study-2022.pdf>.

67 Commonwealth of Australia, *Household and Family Projections, Australia,* Australian Bureau of Statistics, Statistics Report (14 March 2019).

68 Commonwealth of Australia, *Cold Hard Facts 2022 - Key developments and emerging trends in the refrigeration and air conditioning industry in Australia,* Department of Climate Change, Energy, the Environment and Water (2022) <https://www.dcceew.gov.au/environment/protection/ozone/publications/cold-hard-facts-2022>.

69 Data, analysis and modelling provided by Flux Consultants (2024), https://www.fluxco.co/.

70 Ibid.

71 Ibid.

72 Ibid.

73 Ibid.

74 Ibid.

75 *Pathways to Net Zero Emissions – An Australian Perspective on Rapid Decarbonisation,* CSIRO (November 2023) <https://www.csiro.au/-/media/Environment/Net-zero/Reports/Technical-Report_Pathways-to-Net-Zero-Emissions.pdf>.

76 *Heat pump hot water systems comparison,* CHOICE (2024) <https://www.choice.com.au/home-improvement/water/hot-water-systems/review-and-compare/heat-pump-hot-water-systems>,

77 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach* , Update (2023) <https://iea.blob.core.windows.net/assets/13dab083-08c3-4dfd-a887-42a3ebe533bc/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf>.

78 C*limateworks Centre decarbonisation scenarios 2023* , Climateworks, Technical Report (November 2023) <https://www.climateworkscentre.org/wp-content/uploads/2023/10/Climateworks-Centre-decarbonisation-scenarios-2023-November-2023>.

79 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach* , Update (2023) <https://iea.blob.core.windows.net/assets/13dab083-08c3-4dfd-a887-42a3ebe533bc/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf>.

80 International Energy Agency, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach* , Update (2023).

81 C*limateworks Centre decarbonisation scenarios 2023* , Climateworks, Technical Report (November 2023) <https://www.climateworkscentre.org/wp-content/uploads/2023/10/Climateworks-Centre-decarbonisation-scenarios-2023-November-2023>.

Australian **Sustainable Finance Institute**