

Carbon offsets, Last but not later

A framework for the environmental integrity of offsets
in the property sector.



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Foreword



Mike Zorbas

Australian property companies are recognised as global leaders. Many are targeting net zero emissions by 2030.

Their commitment to ever more sustainable commercial buildings reflects the urgency of avoiding the worst of global warming.

Our industry's global leadership is built on a longstanding foundation of verifiable mitigation efforts targeting deep energy efficiency, the procurement and production of renewable electricity, and fuel switching from fossil fuels. Our sector emits almost a quarter of Australia's emissions and must decarbonise for our economy to reach net zero.

During this period of transition, some emissions are more difficult to abate than others. Where residual emissions exist, offsets can deliver environmental benefits, as a compensatory measure, at the same time as organisations work to eliminate their emissions.

Offsets that satisfy the criteria of additionality and permanence provide an economically sound approach to early carbon mitigation. The development of these offset markets should be encouraged, particularly where co-benefits including biodiversity enhancement can be achieved.

As our understanding of this complex area grows, we must also recognise that the perfect offset probably isn't available, and may never be, so the best path is to identify those offsets with the highest environmental integrity. This offset framework takes a "last, but not later" approach where offsets are applied last in the sequence of carbon mitigation but not delayed because of the complexities in determining offset integrity.

The framework has been developed collaboratively with Property Council members, technical experts and with the support of the Green Building Council of Australia. The framework reflects the unique nature of Australian property, energy and emissions markets and the environments in which they operate.

Applying the framework principles will equip organisations to ensure reliable carbon accounts are maintained. This reliability will underpin credible and high integrity net zero claims.

The Property Council is privileged to work with our members who continue to lead the global journey towards net zero.

We commend this framework to them and to our industry as a practical toolkit that supports measurable progress.

¹ <https://www.cleanenergyregulator.gov.au/DocumentAssets/Pages/Information-Paper-on-the-Offsets-Integrity-Standards.aspx>

² <https://www.accc.gov.au/media-release/businesses-told-to-be-prepared-to-back-up-their-environmental-claims>

³ Low carbon Living CRC, Best Practice Policy and Regulations for Low Carbon Outcomes in the Built Environment, 2017

Foreword



Davina Rooney

Low-upfront carbon, highly efficient, fossil-fuel free buildings fully powered by renewables and offset with nature – that is our formula for delivering a climate positive built environment.

The Intergovernmental Panel on Climate Change (IPCC) report highlighted the importance of carbon storage mechanisms, such as nature-based solutions, for achieving the ambitious target of limiting global warming to 1.5°C. These approaches offer valuable means to mitigate carbon emissions while delivering broader environmental and social benefits. But as many have noted, the offset market is fraught with complexity, making it difficult to navigate, and there are real questions about its effectiveness.

This framework presents a robust process to evaluate and verify the authenticity and effectiveness of carbon offsets, tailored to real estate owners' needs. It supports informed decision-making and maximises the positive impact of carbon offset investments. Guided by the Oxford Taxonomy of Carbon Offsets, the framework emphasises transparency, additionality, and long-term climate benefits. By using high-integrity, high-quality carbon removal offsets, particularly those that are nature-based, real estate owners can combat climate change and create long-term value for their properties and communities.

Davina Rooney

At the time of writing, markets for emissions offsets are in a state of flux with considerable work being undertaken to develop offset mechanisms that conform with Paris article 6 guidelines. Furthermore, the Australian Government is currently considering the outcomes of an Independent Review of Australian Carbon Credit Units.

Global initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM) combined with local programs of the Carbon Market Institute's Code of Conduct are providing frameworks that will enhance the integrity of carbon markets and the environmental integrity of offsets.

ASIC and the ACCC have both provided guidance in relation to the risks of greenwashing that should be consulted when developing corporate statements on environmental outcomes.

As the carbon market continues to develop it will allow the most cost-effective methods of ensuring environmental integrity of offsets to be explored and to mature. The "first principles" approaches proposed in this framework will evolve as regulations, contracts, and methods for creating and monitoring offsets continue to evolve.

Until this market maturity is achieved, users of offsets can form their own strategy to protect organisational reputation using the approaches

Carbon offsets framework

This framework recommends four related strategies to ensure **environmental integrity** of an offset program that delivers reliable and durable emission removal, mitigates the risk of greenwash challenges and avoids reputational damage.

Four key components:

1. **Demonstrate the role of offsets in a science aligned net zero plan**
2. **Document the offset strategy**
3. **Show how a program of due diligence ensures offsets meet the quality criteria in the offset strategy**
4. **Maintain a Natural Capital Balance sheet; a register of offsets maintained over time recording the results of ongoing stewardship checks and measurements of stored carbon**

The principles in this framework are designed to:

- **provide a template for consistent and transparent communication of net zero emissions strategies that:**
 - o outlines an organisation's approach to procurement of offsets
 - o allows business customers of commercial property to have confidence in net zero emission certifications, making carbon neutral a selection criterion when they are looking for space to lease and accelerating progress toward a net zero economy, and
 - o defends net zero claims against "greenwash" challenges.
- **enable companies to document and communicate an Offset Strategy that:**
 - o articulates the company's "houseview" of the features that make a credible offset, aligned to this framework
 - o promotes and preferences investment in nature-based GHG removals and carbon storage
 - o promotes use of offsets in the value chain only where elimination is unavoidable and where efficient use of the offset can be made, and
 - o encourages the cost of offsets be used in business cases to influence lower emission outcomes (ie: similar to a shadow price on carbon).
- **encourage well-functioning carbon markets with deep and liquid trade in offsets that:**
 - o promote the development and deployment of the technologies, techniques and equipment needed for emissions reductions and sequestration by channeling investment to activities that might otherwise not occur, and
 - o encourages protection of offset supply for those sections of the economy with the hardest to abate emissions.
- **provide a platform of advocacy to government to ensure policies and regulations support the earliest adoption of net zero buildings.**

Definitions & acronyms

ACRONYMS	DEFINITIONS
ACCU	Australian carbon credit unit, 1 ACCU = 1 tonne CO ₂ e
Carbon neutral	Condition in which human caused residual emissions are balanced by human-led removals over a specified period and within specified boundaries (Note: typically applied to a product or service level)
Emission reduction	Quantified decrease in greenhouse gas emissions specifically related to or arising from an activity between two points in time or relative to a baseline*
GHG	Greenhouse gases
Net zero	Net zero greenhouse gas emissions, condition in which human caused residual emissions are balanced by human-led removals over a specified period and within specified boundaries*(Note: typically applied as a whole of country, region, organisation, whole of portfolio target)
Offset	Emissions reduction or removal resulting from an action outside the organisation's boundaries used to counterbalance the organisation's residual emissions*
Removal	GHG removal, withdrawal of a greenhouse gas from the atmosphere as a result of deliberate human activities*
Residual emission	Greenhouse gas emissions that remain after taking all possible actions to implement emissions reductions*

*Marked definitions are extracts from "ISO Net Zero Guidelines IWA 42 2022-11"



The role of offsets in net zero

In the commercial property sector greenhouse gas (GHG) emissions are created through all phases of a building lifecycle with emissions produced during manufacture of building products, during construction, throughout operations and even during demolition.

Some of these emissions can be eliminated using strategies like energy efficiency, electrification and refrigerant replacement, while others are avoided by switching to renewable energy. Where residual emissions are difficult to eliminate or require a transition period, the use of offsets may be justified to bring forward the achievement of net zero or carbon neutrality.

Net zero and carbon neutral commitments are both integral parts of the value creation strategy of leading organisations.

While net zero and carbon neutral sound like they might describe the same thing, there is a distinction in practice where net zero targets are applied at the portfolio or whole of organisation level offering investors, and other stakeholders, information relevant to their assessments and decisions in decarbonising their investment portfolios. Net zero targets can be aligned with the World Green Building Council Advancing Net Zero program or with the Science Based Targets Initiative.

Carbon neutral certification, applied at a building, product, or service level is a key enabler in the decarbonisation of supply chains. Carbon neutral tenants can demand and occupy carbon neutral buildings and in turn owners of carbon neutral buildings can create demand for carbon neutral building products and services.

Buildings make up part of the supply chain for many organisations, and their selective preference for carbon neutral certification creates effective market signals for the ongoing decarbonisation of the property sector. Climate Active, administered by NABERS and the Green Building Council of Australia for buildings, is a carbon neutral certification program with an established "Buildings Standard".

Aligning net zero with climate science

In summary, an organisation's net zero plan should include:

- aligning the net zero target with the latest international consensus on climate science
- documenting the relatively minor and declining role expected of offsets to increase the credibility of the plan, and
- the organisation's advocacy position supporting early net zero targets and urgent responses to climate change to enhance the credibility of the net zero strategy and application of offsets.

Demonstrating that offsets are used in support of an emissions target that is aligned with climate science is an important first step in establishing the context for use of offsets.

The latest IPCC report, *Climate Change 2021 The Physical Science Basis – 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*, released August 2021, notes that we are currently at 1.1°C over pre-industrial levels and that we are on-track to exceed 1.5°C in 10 to 12 years. The report serves as a warning that action is urgently required and that carbon removals are a necessary element of the solution.

The report recommends strong, rapid, and sustained emissions reduction to net zero by 2050. It also recognises that we must compensate for existing and unabated emissions with nature-based carbon removal activities. In fact, in all scenarios outlined in the report, capturing, and storing carbon, in addition to deep and sustained cuts, is needed to achieve a 1.5°C trajectory.

What this means for the built environment is all emissions that can be eliminated should be eliminated as quickly as possible. Any that cannot be, residual emissions, must be addressed by solutions that remove GHG from the atmosphere. Organisations that have joined Advancing Net Zero with the World Green Building Council have committed to net zero programs aligned with the science as described in the IPCC reports.

Offsets come last, but needn't be delayed

Building owners can typically act most rapidly to mitigate emissions under their control, whereas influencing others up or down the value chain can take more time. In an operational building the simplified chart below is an example of the relative contributions of renewable electricity and offsets in a portfolio of buildings that have targeted net zero by 2020.

Declining role of offsets in net zero operational emissions

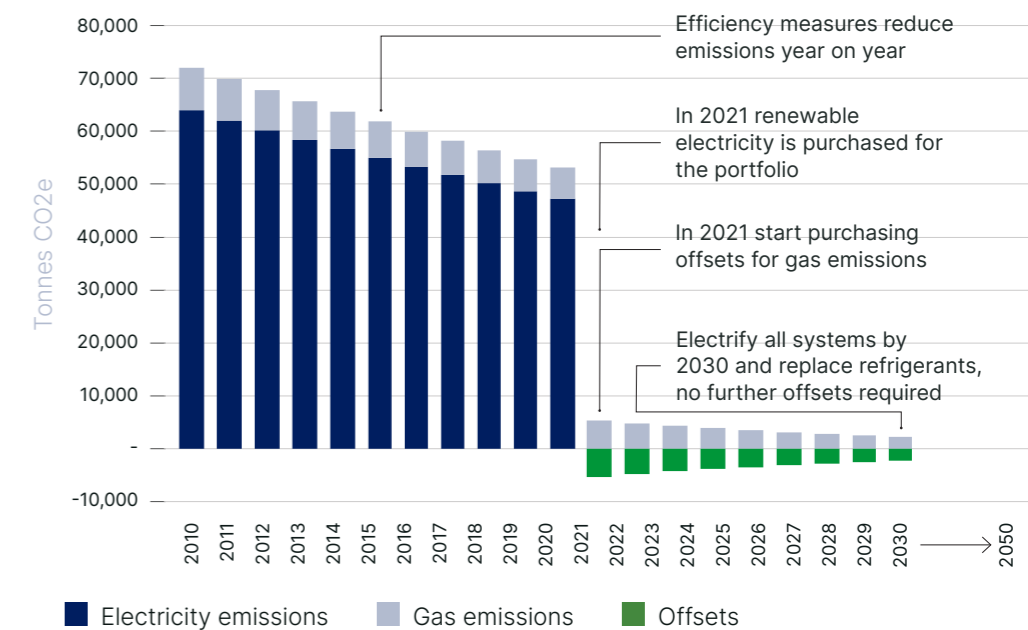


Figure 1 This simplified representation of operational scope 1 and 2 emissions from a portfolio of buildings shows how offsets may only be required in the near term for a small proportion of operational emissions. Demonstrating how offsets are used for a small proportion of baseline emissions, for a limited time, makes net zero claims more credible.

The figure demonstrates that purchasing renewable electricity typically has a much more significant impact on reducing emissions than other fuel sources and that purchasing offsets can be a short-term measure to mitigate emissions while gas systems are converted across to electrical energy and refrigeration systems are converted to low/zero global warming potential gases.

Leadership through action and advocacy

In communicating alignment with climate science, it is increasingly common for stakeholders to ask about an organisation's advocacy on climate change and emissions. Descriptions of your net zero plan are enhanced with the inclusion of advocacy positions taken individually or through membership organisations.

Boundaries and strategies

Net zero and carbon neutral plans have evolved to cover four different areas of a property organisation's emissions: **corporation** or **portfolio**, **operational**, **embodied**, and **organisational**.

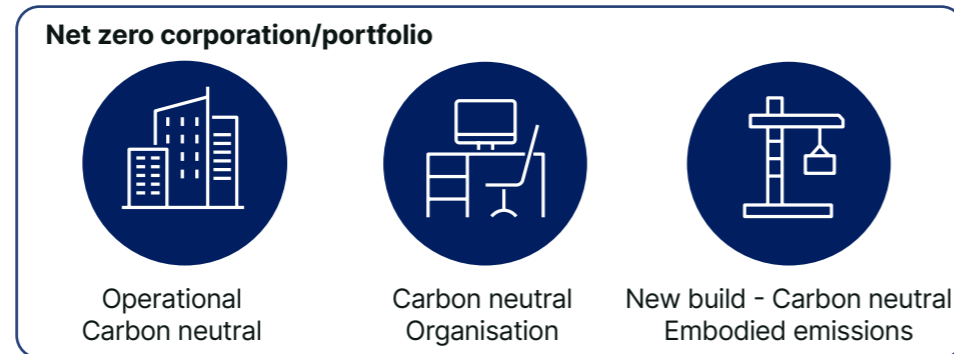


Figure 2 Boundaries between net zero and carbon neutral targets often overlap

Carbon neutral plans for **operational** property emissions typically rely on contributions from six key strategies:

1. Managing energy for optimal efficiency
2. Sourcing power from renewable electricity generated on or off-site
3. Transitioning fossil fuel systems to renewable electricity alternatives
4. Moving to zero global warming potential refrigerants
5. Eliminating waste to landfill, especially organics
6. Promoting elimination of emissions in value chains
7. Purchasing and retiring carbon offsets to counter emissions that can't be immediately abated

Carbon neutral plans for **embodied** emissions rely on similar, but different, strategies:

- Dematerialisation in design, reducing material use
- Low carbon materials, focusing on materials with a low carbon footprint
- Encouraging construction material suppliers to measure and eliminate carbon and consider offsetting in the meantime.
- Adopting low/no carbon transport and construction energy

Carbon neutral plans for **organisational** emissions capture the emissions of "head office", emissions arising from electricity consumed by offices, business travel and other supply chain goods and services.

A real estate **corporation** targeting net zero will typically include operational, organisational and embodied emissions within the boundary. Key to any net zero target is transparency of what is included within the commitment boundary.

Some leading organisations recognise that the environmental impact of carbon emissions is not a problem focused on annual flows, but one of atmospheric carbon stocks accumulated over time. The **lifetime corporate** emissions approach requires an estimate of emissions since an organisation's inception and is aligned with a "balance sheet" approach to managing environmental impacts analogous to the "natural capital balance sheet" introduced in [section 4](#).

GHG scopes 1, 2 and 3

Scope 3 emissions - value chain emissions - are divided between those emissions that occur because of activities upstream in the supply chain and downstream, when customers or others use buildings. The GHG Protocol nominates 15 categories of value chain emissions that may be relevant to an organisation's emission inventory.

In summary, offsets:

- may be used to mitigate **scope 1** emissions in the short term, until they can be eliminated
- are not recommended to be used to mitigate **scope 2** emissions. This is reinforced by their lack of recognition in NABERS and Green Star. Instead, install renewable electricity systems and/or procure renewable electricity
- can be used to mitigate **scope 3 upstream** emissions, accompanied by supply chain action to eliminate emissions, and
- can be used to mitigate **scope 3 downstream** emissions where support is provided to customers to either eliminate or offset their own scope 1 emissions and move to renewable electricity, avoiding their own scope 2 emissions.

A net zero goal requires that emissions are mitigated across all three scopes of emissions:

SCOPE	SOURCES	NET ZERO RESPONSE
SCOPE 1	Refrigerants Fossil fuel combustion on site	Elimination preferred, alternatively plans for elimination are disclosed and offsets used as a strategy to compensate for residual emissions in the short term
SCOPE 2	Electricity	Renewable electricity generated onsite and/or purchased via the grid. Note that applying offsets against electricity use does not result in a credible net zero position and does not lead to a sustainable outcome
SCOPE 3	Upstream value chain (supply chain)	Elimination preferred, alternatively plans for elimination are disclosed and offsets used to mitigate residual emissions until the supply chain is able to fully decarbonise. Procurement practice favors low carbon and Climate Active suppliers or other international carbon neutral schemes.
-	Downstream value chain (tenant/customer emissions)	Elimination as tenants move all services to renewable electricity with offsets used to mitigate residual emissions in the short term

¹<https://blog.google/outreach-initiatives/sustainability/our-third-decade-climate-action-realizing-carbon-free-future/>

²<https://blogs.microsoft.com/blog/2020/01/16/microsoft-will-be-carbon-negative-by-2030/>

Appendix C provides a summary table including a sample scoring of the seven relevance categories proposed by the protocol to determine if a category should be included in an organisation's emissions inventory. Organisations should conduct and disclose their own relevance assessment for scope 3 emissions

Table 1 The GHG Protocol defines 15 categories of scope 3 emissions that contribute to the value chain emissions of an organisation - this table includes upstream or supply chain emissions

CATEGORY	APPROACH	USE OF OFFSETS
1 Purchased goods and services	Most relevant to developments, goods and services incorporated into new build. Through procurement, express a preference for low carbon/ carbon neutral goods and services. Segment expenditure and identify low carbon options	Yes, neutralising residual emissions while transforming to eliminate emissions
2 Capital goods	Most relevant to operational assets purchasing buildings or assets for buildings. Through procurement, express a preference for low carbon/ carbon neutral capital equipment. Nominate projects that will track embodied carbon	
3 Fuel and energy related	Most relevant to operational assets. Transmission and distribution losses, linked with energy source information, reduce through efficiency and transition to renewable energy	
4 Upstream transportation and distribution	Most relevant to developments, transition to electric transport. Typically, low relevance to operational assets.	
5 Waste generated in operations	Most relevant to operational assets. Waste management practices reduce organics to landfill and increases recycling resulting in lower emissions from tenant generated waste	
6 Business travel	Most relevant to organisational carbon accounts, reduced through avoided business travel and choice of travel mode. Low relevance to operational assets	
7 Employee commuting	May be included in organisational carbon accounts, limited to employee travel for carbon neutral certification. Low relevance to operational assets.	
8 Upstream leased assets	May be included in organisational carbon accounts for carbon neutral certification. Low relevance to operational assets.	

Appendix C provides a summary table including a sample scoring of the seven relevance categories proposed by the protocol to determine if a category should be included in an organisation's emissions inventory. Organisations should conduct and disclose their own relevance assessment for scope 3 emissions.

Table 2 details the categories of downstream emissions, those emissions that arise because of use of an organisation's product. For the property sector the most relevant downstream emissions are downstream leased assets (category 13) where emissions arise from tenant activities such as burning natural gas in retail kitchens and using electricity to power office tenancies.

Property development companies that build homes/buildings for the purpose of selling to future owners may also find category 11- Use of sold product, relevant.

In both categories, the property company can ensure that tenants and future owners have the ability to use energy efficiently and use renewable energy. The application of offsets in these cases can mask emissions and is unlikely to lead to a sustainable market transformation. The relevance assessment matrix is a useful tool to explain the inclusion or exclusion of the downstream emission categories.

Table 2 Scope 3 downstream emissions showing that the application of offsets for these emissions require careful consideration

CATEGORY	APPROACH	USE OF OFFSETS
9 Downstream transportation	Generally not applicable	NA
10 Processing of sold product	Generally not applicable	NA
11 Use of sold products	Most relevant to developments, encourages energy efficiency and renewable energy systems be installed early.	Yes, to neutralise residual emissions while transforming to eliminate emissions and where future emissions can be reasonably estimated
12 End of life	Most relevant to developments. Embodied carbon in demolition materials is retained through high grade recycling. Demolition equipment moves to electric and renewable electricity	Yes, to neutralise residual emissions while transforming to eliminate emissions if end of life emissions can be reasonably estimated
13 Downstream leased assets	Most relevant to operational assets. Emissions associated with tenant use of leased space. Collaboration for energy efficiency and access to renewable energy	Yes, to neutralise residual emissions. Renewable energy certificates (LGCs) are preferred for mitigation of electricity related emissions as a sustainable solution. For either offset or REC approach there should be a price signal reflected back to the consumer to inform behaviours and management of energy
14 Franchises	Generally not applicable	NA
15 Investments	Where investment is made in operational property the preference is to have an efficient asset powered by renewable energy.	Yes, to neutralise residual emissions where the scope 1 & 2 emissions from these assets have not been mitigated

In all cases, the application of offsets can be best supported by demonstrating how the cost of the offset feeds into decision making in relation to elimination of emissions.

Offsets in the supply chain

In summary:

- include net zero or low carbon requirements in all supplier guidelines and requests for proposal.
- request Environmental Product Disclosures (EPD's) for products, which allows for a fair comparison in procurement decision making and for a more accurate scope 3 inventory
- demonstrate how the net zero requirement is influential in the purchasing decision, and
- become a carbon neutral organisation and encourage your suppliers how to become carbon neutral suppliers.

Carbon emissions become embedded in supply chains as the many organisations involved in the delivery of products and services rely on activities that create their own scope 1 and scope 2 emissions. An important point, scope 3 emissions are another organisation's scope 1 and scope 2 emissions.

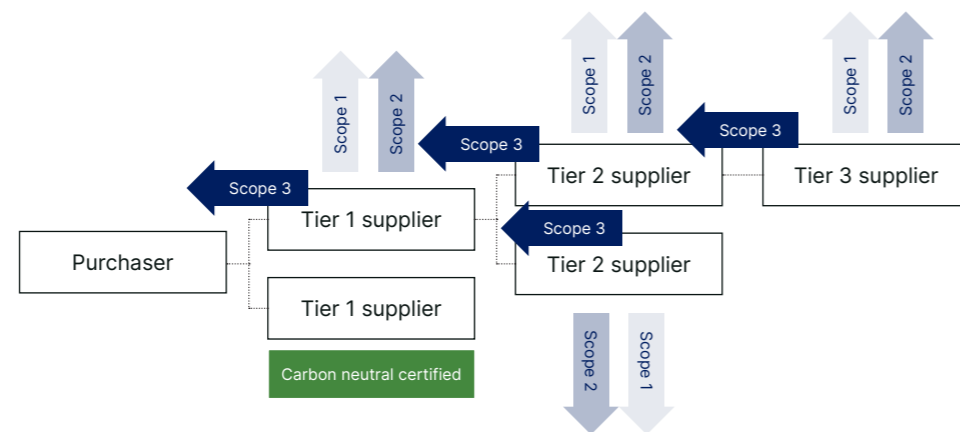


Figure 3 Emissions in the supply chain accumulate from all tiers of suppliers. The least cost transition to net zero requires each supplier to mitigate their own scope 1, 2 and 3 emissions as shown by the carbon neutral tier 1 supplier

Offsets in the supply chain

Tier one suppliers

As shown in Figure 3, tier one suppliers have scope 1 & 2 emissions, their suppliers, tier two suppliers, have scope 1 & 2 emissions, and so on. The goal of net zero procurement is to have every supplier, at every tier, eliminate their scope 1 emissions and transition to renewable electricity thereby avoiding scope 2 emissions. Successfully deploying this strategy will ultimately avoid the use of offsets in relation to purchased goods and services.

Following this thinking, offsets are applied most efficiently, and most effectively, by the suppliers responsible for scope 1 emissions, however far back in the tiers of the supply chain. Forcing decisions to abate emissions up the supply chain allows those supplier businesses to transition across to renewable energy and to make their own business case decisions for eliminating or offsetting emissions. Using these market dynamics should see emissions abated at the lowest overall cost.

In the meantime, all consumers can use their purchasing choice to preference low emission, carbon neutral or zero emission products and services thereby helping to drive the net zero market transformation.

Information provided by suppliers should include:

- product disclosures, such as Environmental Product Disclosures (EPDs) showing carbon intensity of products
- net zero target/status
- Climate Active, carbon neutral certification with the Public Disclosure Statement including:
 - Products/services covered
 - Proportion of renewable energy used
 - Proportion of offsets purchased
 - Type of offsets purchased

Giving Suppliers choice in the way they approach net zero allows them to optimise energy efficiency + renewable energy + offsets as well as influence their own supply chain pushing net zero deeper into the tiers of the supply chain.



Developing an offset strategy

In summary: creating an Offset Strategy helps stakeholders understand the steps being applied to ensure the environmental integrity of offsets and should include:

- the preference for the type and source of offset (reduction or removal)
- the criteria set by the organisation to ensure the environmental integrity of offsets (using the list in [Appendix A](#) as a guide)
- any portfolio approach that may include a variety of types of offsets that from different sources and locations providing overall higher reliability of carbon mitigation
- any approach to investment in emerging technology offsets to assist in establishing a market
- a description of the approach to building a risk pool of offsets that can be accumulated and applied if some offsets are compromised (Noting that some offset methodologies already include the use of a contingency amount), and
- expert opinion and guidance: suitably qualified offsets consultants will hold an Australian Financial Services Licence (AFSL) and will have committed to the Australian Carbon Industry Code of Conduct.³

Documenting and disclosing the offset strategy allows organisations to be strategic in the procurement of offsets, diminishing the risk of purchasing offsets with low integrity and enabling stakeholders to understand the preference for particular offsets and the actions planned should any not deliver the expected carbon removal.

Offset selection criteria can include the type of offsets preferred and the risk strategies that will be applied to boost the integrity of offset claims. For example, creating a portfolio of offsets, spread across different forms of removal and across different geographic areas, different suppliers mitigates risks of bushfire, reforestation failure, or organisational failure.

Similarly, creating a pool of reserve offsets is one way to ensure that there are offsets available to top up if some offsets are demonstrated to under deliver emission drawdown.

There are a wide variety of carbon offsets created through two primary mechanisms: **reducing** carbon emissions or through carbon **removal** from the atmosphere.

Emission reduction offsets have been linked to energy efficiency projects, avoided chemical emissions and renewable energy projects in the past but it is increasingly difficult to demonstrate how these reduction projects meet additionality, permanence and avoidance of double counting criteria. As an example, renewable electricity generation is now among the most cost-effective forms of generation available meaning it is very likely to happen anyway in a functional market. (see [Additionality](#))

The ISO Net Zero Guidelines requires that only **removals** offsets are used to counterbalance residual emissions to achieve net zero.⁴

³<https://carbonmarketinstitute.org/code/the-code/>

⁴ISO Net Zero Guidelines IWA 42:2022

Offset creation and certification

Offsets can be created under rules set by compliance bodies, such as the Clean Energy Regulator in the case of ACCU's or independent bodies that certify voluntary offsets.

Voluntary schemes recognised by Climate Active include:

- [Gold Standard](#): Verified Emission Reductions (VERs)
- [Verra](#): Verified Carbon Units (VCUs)
- [Certified Emissions Reductions](#) (CERs)

These organisations provide rules for the creation of offsets, methodologies for measuring, verification, certificate issuance and a registry for tracking offset certificates.

Offset users can decide to either accept that the certification body provides the level of certainty required of an offset or can make further enquiries of their own to ensure they will be able to satisfy stakeholders own requirements for fitness for purpose, reliability, and performance in carbon abatement.

Types of offsets

The Oxford Taxonomy of carbon offsets clarifies the distinction between offsets that are created through emissions reductions and those resulting from carbon removals. Carbon removed, or drawn down from the atmosphere, can be stored in biological material, trees and plants, or geological materials and structures.

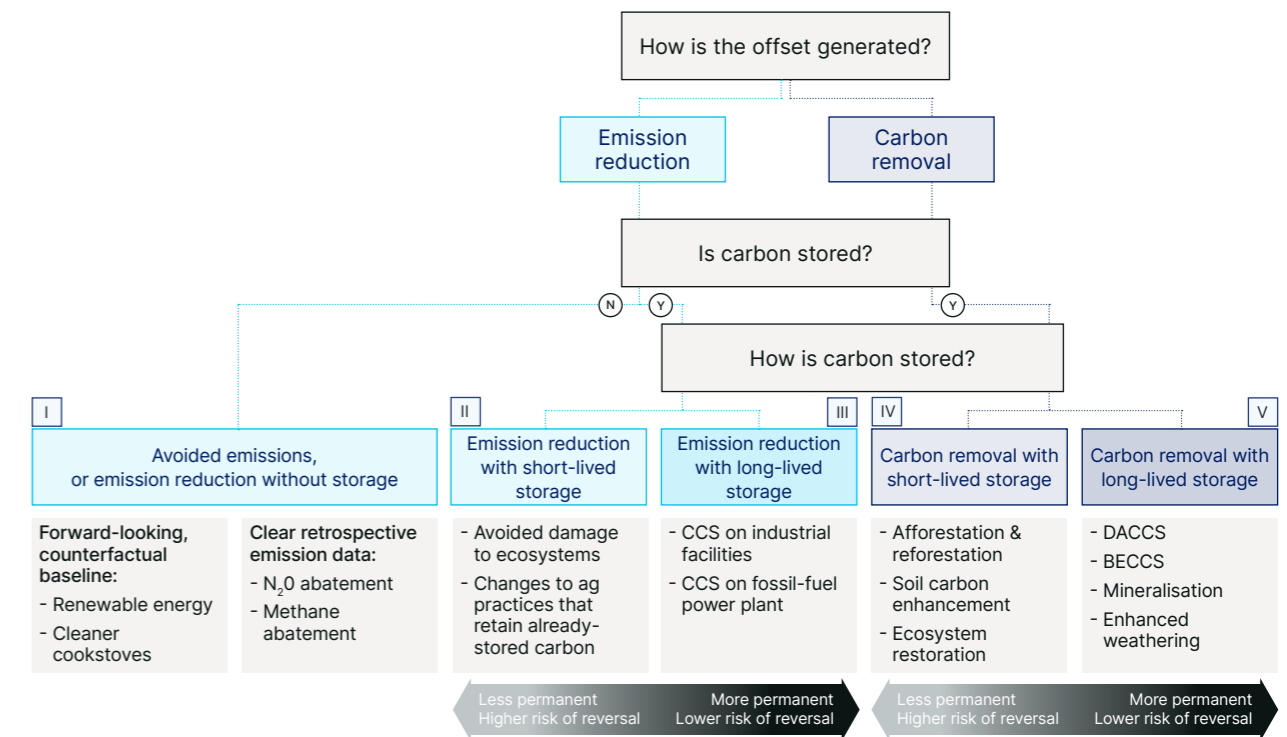


Figure 4 The Oxford Taxonomy of Carbon Offsets illustrates the various type of carbon offsets emphasising the future role for carbon removal achieved through natural systems or mechanical/chemical systems

Emission reductions offsets are often seen as being less reliable in relation to offset quality criteria but there may be a case to include some reduction offsets in a well-designed portfolio of offsets. Savanna burning projects are a unique case of nature-based emissions reduction where early season, cool fires release less methane and other GHG's than late season, hot fires (Figure 4, category I).

There are few (if any) geological removal offsets available at the time of publication, so the focus of this framework is on nature-based (biological) carbon removal (Figure 4, category IV) due to their high quality and associated co-benefits to nature.

⁵Correct at the time of writing, check for up to date information at <https://www.climateactive.org.au/>

Nature-based offsets

Nature-based carbon removal occurs through photosynthesis capturing CO₂ from the air and storing it in the biosphere, either above ground, as vegetation, or below ground - bound into the roots and surrounding soil.

Nature-based offsets can provide significant environmental co-benefits such as enhanced biodiversity, soil stabilization, and waterway protection as well as social benefits through jobs in land management and support of indigenous connection with land. Australia has significant opportunities to restore and maintain natural environments that store carbon.

Carbon emissions can be reduced or carbon can be removed from the atmosphere through several nature-based approaches⁶:

- **reforestation/human induced regeneration:** allowing a forest to grow on land that has previously been used for agricultural or other purposes where natural growth has been suppressed [Figure 4, category IV]
- **avoided deforestation/avoided clearing:** where land clearing is permitted but has subsequently been avoided. This method should be considered with some caution as it carries associated risk related to overclaiming of expected clearing.⁷ [Figure 4, category II]
- **native forest from managed regrowth:** changing land management practices to allow regrowth of native forests [Figure 4, category IV]
- **forestry plantation:** recognises the carbon captured in plantation forests [Figure 4, category IV]
- **tidal restoration of blue carbon ecosystems:** projects that remove or modify tidal restriction mechanisms and allow tidal flow to be introduced to an area of land that results in soil carbon sequestration and carbon sequestered in above and below ground biomass [Figure 4, category IV]
- **soil carbon:** plants absorb CO₂ via photosynthesis and transfer some of this carbon into the soil. Land management practices can be applied to improve how carbon is stored and maintained in soils. [Figure 4, category IV], and
- **savanna fire management:** carbon emissions may be avoided by activities that reduce GHG emissions from fire in savannas. Management activities including annual early season burning to reduce the frequency and intensity of late dry season fires [Figure 4, category I].

Note: While these methods are all nature-based they do not necessarily provide the same levels of offset quality especially in relation to additionality and permanence. Further due diligence is required to establish the integrity of the carbon reduction or removal.

Sources of nature-based offsets

Nature-based offsets and Green Star

The most recent revision to Green Star, which started in 2020, recognised the use of offsets for the first time, in a limited manner. Specifically, the rating tool introduced two credits: 'Other carbon emissions' and 'Nature Stewardship'. The 'Other carbon emissions' credit supports procuring offsets once all other outcomes have been exhausted to compensate for remaining emissions. The 'Nature stewardship' credit recognises investments in offsite biodiversity restoration. Nature-based offsets achieve both goals, providing an opportunity to drive change at scale.

⁶Descriptions are largely from the Clean Energy Regulator

⁷<https://australianinstitute.org.au/post/serious-integrity-concerns-around-australias-junk-carbon-credits/>

Quality of offsets

The environmental quality of an offset is critical in maintaining credibility in an offset program and related net zero or carbon neutral claims. High quality offsets will avoid reputational risks associated with "greenwash" challenges. The integrity attributes described below draw heavily from the 10 core carbon principles of the ICVCM.⁸

All the traditional offset quality criteria apply to nature-based offsets and it's important to remember that there isn't always a binary pass/fail assessment available, the degree of, for example, additionality, is important and useful for comparative purposes.

Nature-based offsets can be created under Australia's Carbon Credits Act 2011 using determinations and rules governed by the Clean Energy Regulator. Australian Carbon Credit Units (ACCUs) are tracked in the Australian National Registry of Emissions Units (ANREU).

As offset quality is not easily defined and sits on a continuum it is important to identify to stakeholders the quality of offsets that are acceptable to an organisation and, ideally, to have this as a topic of discussion with stakeholders. They will eventually decide if the net zero claims (and offset criteria) meet their own ambitions.

Appendix A: Offset Due Diligence Checklist provides an example of how the selection of offsets can be communicated to interested stakeholders. Each of the criteria in the checklist is briefly explained below.

Additionality

Additionality requires that the carbon removal project would not have happened without the contribution of the offset. "GHG reductions are additional if they would not have occurred in the absence of a market for offset credits"⁹

Testing for additionality rarely provides an absolute or binary result. There are many subjective decisions that determine the degree of additionality. Set the evidence bar too high and nothing can be called additional, set it too low and everything qualifies as additional.

A common criterion is financial additionality, i.e. the carbon reduction/removal would not have occurred without the financial incentive of the offset trade, but even this criterion is difficult, if not impossible to prove.

ACCU's, as an example, must meet the following additionality criteria:

"Emission reductions or removal must:

- *be new projects*
- *not be required to meet government regulations, or*
- *not be part of another government program."*

⁸<https://icvcm.org/the-core-carbon-principles/>

⁹<https://www.offsetguide.org/high-quality-offsets/additionality/>

Permanence

To be effective as an offset, carbon removals need to last for a period similar to the period carbon emission influence the environment. The range of greenhouse gases (CO₂, CH₄ etc) experience differing decay periods in the atmosphere with CO₂ having an impact for 300 to beyond 1,000 years.¹⁰

In effect, a nature-based offset is a service of nature facilitated by a project manager. The services of nature are in two parts, the capture of carbon and the storage of carbon for the medium to long term. Nature-based offsets may be considered as only short to medium term carbon removal because of the uncertainties inherent in the natural environment and related to socio/economic actions. Even a 100-year time frame creates unique challenges for contracting, measurement and monitoring.

Some offsets are credited based on a 25-year lifetime of carbon storage. The environmental merit of these offsets is difficult to determine. As such, any strategy should consider strongly why these are being procured when compared against longer term lifetimes. A 25-year lifetime offset is unlikely to meet permanence criteria and may need to be replaced, with more offsets, at the end of the 25-year period.

Contracting for services that occur over 100+ years presents unique challenges but also the opportunity to adapt to time scales relevant to nature's capacity to balance ecological systems (see Nature-based Balance Sheet below).

Strategies to reduce risks of impermanence include taking a portfolio approach, diversifying the locations and types of nature-based offsets along with purchasing a safety buffer of emissions.

Avoiding leakage

Carbon leakage can occur with any carbon reduction or removal project. Leakage refers to increases or reductions in removals that occur outside the project boundary as a consequence of the project activity¹¹ Direct leakage occurs when an emissions activity is moved to another location, outside the project boundary, while indirect leakage occurs when the benefits of an emissions removal project are negated by emissions increases outside the project boundary.

For example, fossil fuels used in tractors and other management vehicle trips required to support a forestry regeneration project create indirect leakage emissions that dilute the impact of the offset project. Another form of leakage occurs when an area of land previously used for agriculture is allowed to regenerate forest while another area is cleared for agricultural to continue.

Steps to avoiding impacts of leakage:

- analyse each offset project to determine where leakage could occur and document the findings in the offset due diligence checklist (Appendix A)
 - query if emissions created in the conduct of the project have been netted out
 - query if there's a risk that emissions have been transferred to another location
- purchase a portfolio of offsets, reducing the impact of leakage in any one project, and
- purchase and retire a contingency quantity of offsets (eg, an additional 20%).

¹⁰<https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/#:~:text=Carbon%20dioxide%20is%20a%20different,between%20300%20to%201%2C000%20years.>

¹¹Emissions Reduction Assurance Committee Information Paper March 2021

Measurable

Methods for measuring carbon removal must be accurate and not generate overestimates of carbon removal. Overcrediting can easily occur when calculating the scale of offsets. Most projects must compare actual emissions (or removals) to a counterfactual case, quantifying what would have occurred under business as usual. Overcrediting occurs when the counterfactual estimate allows for more generous attribution of carbon reductions.

Measurement is most accurate when it relies on field measurements post the carbon removal although some projects are “forward crediting” allowing investment to occur at project origination. There needs to be a balance struck between additionality, measurement, and any certification requirements that the creator of a nature-based offset is required to comply with. Forward crediting offsets may best demonstrate additionality but with a lower confidence in measurement of future carbon stored.

Measurement needs to consider leakage (as described earlier) and needs to be repeated through the lifetime of a carbon removal project.

ACCUs can only be created using measurement methods approved by the Clean Energy Regulator with the regulations requiring that sequestration projects (including carbon removal) have a risk of reversal buffer of 5% when the project is subject to a 100-year permanence period. The buffer is designed to allow for carbon losses related to bushfire (that haven't been reversed within the permanence period) or other loss of carbon.¹²

Uniquely identified

The ability to make a unique claim or have an exclusive right to an offset is critical to offset credibility and avoids the potential for double counting. A certificate and registry system where offsets can be retired for a specific purpose provides a high degree of transparency and allows for a visible market of tradeable offsets.

An alternative to the registry model are contracts over specific carbon capture projects where offset purchases include an obligation that offsets are sold to only one customer/project.

¹²<http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/Risk-of-reversal-buffer>

¹³Briefing report on the article 6 rules agreed at COP 26 – Gilbert and Tobin

Avoiding double counting

Some offsets are more susceptible to double counting than others. Internationally traded offsets are open to double counting until Paris Agreement compliant systems are agreed that adjust host countries emissions reduction baselines to compensate for the transaction. This is particularly the case where offsets are used as part of compliance schemes. (e.g. Australia's Safeguard Mechanism)

In the voluntary market, an emission reduction created in one country and transferred to an organisation in another country may not be double counted if it is reflected in the originating nations emissions but not in the national inventory of the organisation's country.¹³ As an example, the Australian Government doesn't have a mechanism to record use of voluntary offsets by Australian businesses for them to be included in Australia's national inventory.

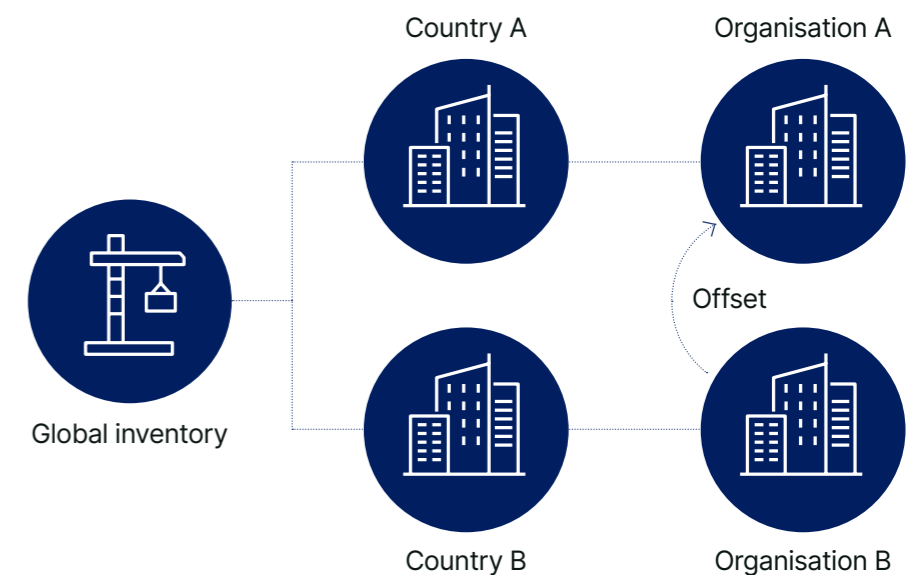


Figure 5 Offsets traded between countries may avoid double counting if they are not included in both national inventories

Even domestic emissions reduction offsets created as part of an energy efficiency project could be double counted unless the host organisation makes an adjustment to their own carbon account.

Double counting can occur at both ends of an offset transaction unless controls are implemented. An offset generation project can sell a carbon removal to more than one customer, while an offset customer can apply an offset against multiple projects. Ensuring the certificate registry contains sufficient detail to identify the precise purpose of an offset when retired helps to remove opportunities for double claiming.

Local, nature-based, offsets are less susceptible to double counting. The strongest controls are to have offsets registered on a publicly accessible registry that uniquely identifies each offset, where and when it was generated, the current owner and the specific project it has been retired against. The more specific the information in the registry the lower the chance of double counting.

¹⁴Seeking free, prior and informed consent from Indigenous communities for carbon projects

A best practice guide for carbon project developers - February 2020

Avoiding social or environmental harms

For a project to produce high quality offsets it should not create other harms, social or environmental. Compliance with laws is a baseline measure and not an indicator of offset quality.

In Australia, and in relation to nature-based offsets, it is an important condition of offset project development that free, prior and informed consent from Indigenous communities has been obtained.

Environmental and social co-benefits

Investing in nature-based carbon offsets can result in a range of associated benefits such as providing habitat supporting biodiversity, providing indigenous employment, maintaining connection with land and even helping to protect soil and waterways.

If these co-benefits are going to be included in the disclosures of an organisation, they should be described in the net zero strategy with targets and the system of monitoring detailed as shown in the Natural Capital Balance Sheet in Appendix B.

Offset co-benefits can be linked to the [UN Sustainable Development Goals](#).

Monitoring plan

As described elsewhere, nature-based offsets are a long-term commitment relying on nature to provide a specific service. A system of audits over the permanence period is required to ensure that the carbon is stored and maintained as expected. These obligations can be contracted to a supplier and maximum confidence is achieved when periodic reports, using a recognised method of measurement and audit, are provided back to the offset user.

Monitoring and reporting can also be applied to the expected co-benefits.

Offset market development

Leaders in net zero have an opportunity to assist in the development of markets for offset products. Markets that enjoy the benefits of diversity in offset project development and techniques can be more effective and more efficient in abating emissions. Allocating a percentage of offset spend to novel and emerging offset types can assist in developing new opportunities.

¹²<http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/Risk-of-reversal-buffer>

¹³Briefing report on the article 6 rules agreed at COP 26 – Gilbert and Tobin

Vintage

The vintage of an offset, the year that it was created, can be an indicator of offset quality. Older offsets in the market may fail contemporary quality criteria and may have been certified under older schemes or scheme rules.

Climate Active requires offsets to have a vintage date after 2012¹⁵ and Green Star requires offsets to have a vintage date after 2016. Programs such as SBTi could introduce more stringent vintage requirements therefore it is important to keep up to date with the program rules before committing to an offset purchase.

Caution is required where offsets may be purchased and retired upfront as part of a commitment for carbon neutrality of a development project. These offsets may be years old once the construction phase of the project is complete and the final embodied carbon account can be completed and offsets applied for carbon neutral certification.

Offset portfolio

Creating a portfolio of offsets provides several valuable functions, including diversifying the risks of particular projects achieving/maintaining the expected carbon abatement. For instance, a portfolio comprising nature-based reforestation projects, geographically spread, and a small proportion of direct air capture offsets can achieve a target “average” price while supporting an emerging technology.

Another consideration for the portfolio is whether a reserve pool of offsets is intended to accumulate to replace any offsets that are found to have failed. The pool could accumulate over time to a predefined % of total offsets retired.

¹⁵Climate Active: Technical Guidance Manual, p58

Offset rating systems

There are emerging rating schemes for offsets that offer an assessment of offset quality against defined criteria. BeZero carbon ratings compare projects using six critical risk factors affecting the quality offsets: additionality, over-crediting, non-permanence, leakage, perverse incentives, and policy and political environment.

The CDR Database (carbon dioxide removal) provides assessments of offset projects using the measures of mechanism, volume, negativity, permanence, additionality and specificity. A sample extract from the CDR Database is shown. Although maintenance of this database has been discontinued it serves as a useful reference for rating criteria.

CDR Database TOTAL 219 FILTERED 004 VOLUME 32M

These are reports on public Carbon Dioxide Removal project proposals. Built for transparency. Download as a [JSON](#) or [CSV](#) (licensed as [CC-BY](#)). Read our [methods](#).

SEARCH enter search term

CATEGORY ALL FORESTS SOIL BIOMASS OCEAN MINERALIZATION DAC

SOURCE STRIPE MICROSOFT

YEAR 2020 2021

MECHANISM REMOVAL AVOIDED

RATING ✓ ✓ ✓ ✓ ✓

FILTER BY METRICS

+ VOLUME tCO₂e

+ PERMANENCE years

Droneseed ×

FORESTS REFORESTATION

Reforestation using heavy-lift drone swarms and seed enablement.

Microsoft 2021 / Washington, USA

✓ ✓ ✓ ✓ ✓ Rating

RMV ↓ Mechanism ✓ +

7M Volume ✓ +

0.99 Negativity ✓ +

80 Permanence ✓ +

N/A Price

Additionality +

Specificity +

Proposal Website Share Embed

¹⁶<https://bezerocarbon.com/ratings/>

¹⁷<https://carbonplan.org/research/cdr-database>

Documenting the offset strategy

To mitigate claims of greenwashing it's important to demonstrate that offsets are genuinely the emissions mitigation method of last resort and that plans are in place to eliminate residual emissions in a reasonable time. Thereafter, it's all about defining and communicating the quality criteria and how risks of quality failure are approached. Appendix A provides a sample due diligence checklist that can be used to evaluate and communicate the attributes of offsets.

In addition to the quality of specific offsets, organisations can apply other risk management measures that increase the probability of a portfolio delivering the desired outcomes.

Additionality and permanence risk mitigation strategies include:

- purchasing a portfolio of offsets from different removal mechanisms and sources reducing the risk that all offsets fail to maintain quality
- establishing a process of always buying and retiring a fixed % more offsets than emissions helps to reduce the risk of underperforming offsets (example: for every tonne of offset required, purchase 1.25 tonnes of offsets)
- creating an insurance pool of offsets to apply in case of underperformance, and
- make good commitment: where an offset is shown to underperform in any of the quality criteria commit to replacing the offset with another that is more effective.

Use the Offset Due Diligence Checklist in Appendix A to document the attributes and reasons for selecting preferred offsets.

Accounting for offsets

Carbon accounting is most often conducted on an annual basis, allowing an inventory to be aggregated and year on year change to be demonstrated in both compliance (NGERS) and voluntary reports. The annual accounting process leads to offsets being treated as an annual transaction cancelled out against an emission to achieve the net zero status.

The description of nature-based offsets in this paper demonstrates that nature is providing a service for 100+ years and like any other service provider good management practice demands that there is a process to check that the contracted services are being provided. Stored carbon and any co-benefits are ongoing Natural Capital Assets whether they are “owned” or “leased”, as is the typical case of an offset. It makes sense to manage them like any other asset of the business that has enduring features.

The commercial property sector is familiar with managing long lasting assets on balance sheet and this process is instructive and can be applied to long-term management of nature-based offsets.

The Natural Capital Balance Sheet can act as a cumulative register of offsets that an organisation has applied in net zero accounts with the register maintained over time with up-to-date management reports from offset project administrators. This process gives greater confidence of the permanence of offsets.

An example of a Natural Capital Balance Sheet is shown in Appendix B.

Organisations that intend or could build up a bank of offsets should work with their finance team to understand the implications of holding an asset of this type that has a commercial value until it has been retired against a specific project. Buying offsets upfront results in the organisation holding a tradeable asset.

Financial accounting for offsets

Measuring and valuing associated benefits

Projects that include reforestation and restoration of natural environments are also a means of providing other nature-based services including:

- nursery population and habitat maintenance
- soil and sediment retention
- water purification
- waterflow regulation, and
- coastal protection.

These co-benefits to the carbon offset generally enhance biodiversity and are restorative to the environment and can be measured and managed over time to ensure planned outcomes are achieved.

Case Study – Accounting for Nature®

Accounting for Nature (AfN) is an Australian not-for-profit organisation who implement the Accounting for Nature® Framework. Accounting for Nature® is a global outcomes-based environmental condition accounting framework for measuring, monitoring, certifying and reporting the condition of environmental over time. Environmental Assets include the following categories:



The Framework relies on summarising complex scientific information (i.e. multiple indicators of condition) into a single metric – the Econd® to describe the condition of each asset as a score from 0-100 (100 being reference/undegraded condition), so that condition can be easily understood by anyone and more easily be incorporated into decision making. An Environmental Condition Account is generated in accordance with a fit-for-purpose and scientifically rigorous AfN Accredited Method.

¹⁸<https://www.accountingfornature.org/>

Measuring and valuing associated benefits *cont.*

Environmental Condition Accounts can be used for many different reasons including, but not limited to: supporting green claims (such as “nature positive”), identify nature-risk, and underpin nature-related disclosures and reporting (e.g. under the TNFD, or ESG reporting), underpin environmental markets e.g. nature-based solutions for climate change through measuring environmental co-benefits associated with carbon offset projects.

In particular, landholders developing nature-based offsets would monitor the performance of the project over time using an AfN Accredited Method and achieve certification of the outcomes.

ASSET CLASS	ECOND® 2020	ECOND® TREND 2010-2020	CONFIDENCE LEVEL®	STATUS
 SOIL	76			
 FRESH WATER	52			
 NATIVE VEGETATION	24			

Procuring offsets

Procurement of offsets will often be through a market intermediary that specialises in offset transactions. Ensure that they are AFSL licensed, can demonstrate a track record in the type of transaction you need and understand your requirements for the type and integrity of offsets.

Membership of the Carbon Market Institute is a good sign that they are well acquainted with the Australian offset market.²⁰

Banking and retiring

The Natural Capital Balance Sheet approach to accumulating a record of investment in offsets allows for full traceability of offsets and the emissions they are compensating for.

The Balance Sheet is like an asset register and should be managed in a similar way with a process for ongoing evaluation of nature-based offsets to ensure the expected carbon removal is achieved and maintained over time. Maintenance processes could be documented in an organisations Environmental Management System for ongoing management and continuous improvement.

Some organisations may elect to purchase bundles of offsets that can be identified in the register while not being retired or allocated against a project, creating an offset “bank”. The Balance Sheet allows transparency to this process.

Similarly, any allocation of offsets to create a safety buffer or contingency pool can be clearly identified. Vintage of certificates remains important from a relevance perspective. Older certificates may have been generated using different rules and potentially with less rigor than offsets with a more recent creation date.

²⁰<https://carbonmarketinstitute.org/membership/>



3

Conducting offset due diligence

In summary:

- use the Due Diligence Checklist in Appendix A to document how offsets meet the quality criteria.

Having developed a set of criteria defining the organisation's expectations of an acceptable offset it is important to demonstrate how particular offsets, applied as part of a net zero inventory, have met them.

The Due Diligence Checklist in Appendix A is an example of a simple form that could be used to demonstrate the primary and critical features of a sequestration project. This information could also be included in a net zero or carbon neutral "Public Disclosure Statement" as used in the Climate Active program.

The Checklist is also a useful communication tool when procuring offsets focusing the attention market intermediaries to source only offsets that meet the criteria.



Maintaining offset quality

In summary:

- nature-based offsets are a long-term commitment to the stewardship of nature-based services. The Natural Capital Balance Sheet in Appendix B is one way to document the cumulative investment in nature-based offsets and to track their performance over time.

Nature-based offsets can provide a unique service in relation to the capture and storage of carbon for the long term. To ensure the reliability of the carbon sequestration over 100+ years presents a challenge, not only of recalling the offsets that were applied in previous years, but also understanding where information is available to satisfy anyone of the ongoing integrity of the carbon stored.

To provide the highest certainty that offsets are maintained, organisations may choose to monitor the performance of sequestration projects through time but could also contract out this responsibility, potentially to the sequestration project manager, or preferably through the offset certifiers and the registry system.

Ideally, the offset registry will provide ongoing access to audit reports that detail the success, or otherwise, of projects. The offset would still need to be in an organisation's register so that routine testing of the offset integrity can be completed.

The Natural Capital Balance Sheet in Appendix B is proposed as an example of a register where offsets can accumulate over time. It not only provides a simple reference to offsets used historically it also demonstrates the accumulated investment in nature contributing to nature positive outcomes.

Where an offset is found to not have delivered the carbon sequestration expected remediation steps might be required. For environmental integrity a failed offset must be remediated or "made good". The sequestration project manager may offer to replace it from their risk pool, or an organisation could choose to apply offsets from a risk pool they hold.



Future of offsets

As the target date for many net zero commitments approaches, the global demand for quality offsets can be expected to increase while supply remains limited.

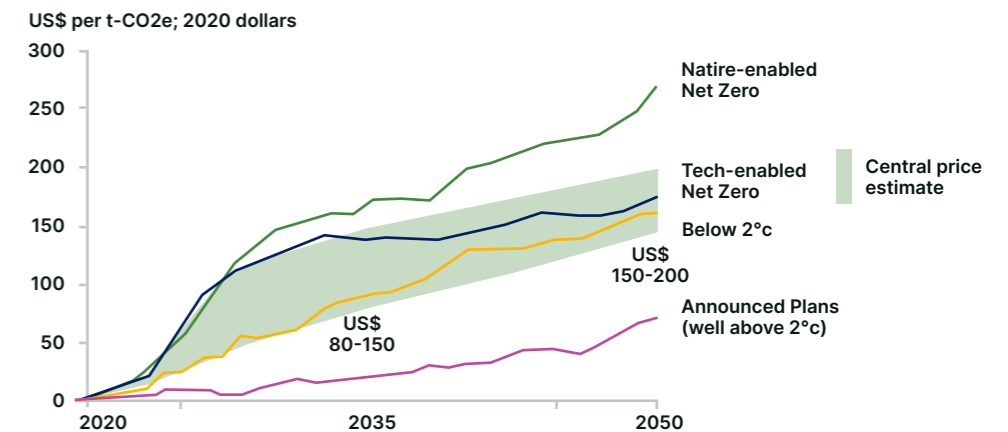
While it isn't the role of this framework to provide advice on the future cost of offsets, the supply demand imbalance and the cost of creating highest quality offsets are likely to lead to an increase in prices. Nature-based offsets, with their accompanying co-benefits and low input costs are constrained by land availability and competition with agriculture for land area. Climate change may also challenge how carbon can be stored using nature-based systems.

Negative emission technologies (NETs) that capture and store CO₂ are predicted to play a large role in future mitigation of global warming. They include Direct Air Carbon Capture and Storage (DACCS) and Bioenergy with Carbon Capture and Storage (BECCS). Each with significant input costs, such as energy in the case of DACCS.

EY provide this estimate of future offset prices:

Increasing demand, expectations of quality, and unit supply cost will make carbon credits scarce and expensive

Carbon credit price outlook, 2020-2050



Commercial property companies will increasingly find it most cost effective to eliminate operational emissions avoiding the need for offsets.

²¹https://assets.ey.com/content/dam/ey-sites/ey-com/en_au/topics/sustainability/ey-net-zero-centre-carbon-offset-publication-20220530.pdf

Appendix A:

Offset due diligence checklist

Carbon offset - quality evaluation

Offset type:	Emissions removal through environmental plantings	e.g. Emissions reduction Emissions removal
Permanence:	ACCU	e.g. Gold Standard Verra ACCU Other

QUALITY CRITERIA	EVALUATION NOTES	SCORE (0 - 10, WHERE 10 = FULLY MEETS CRITERIA)	GUIDANCE
Additionality:	Meets primary ACCU requirements, ex grazing lands recovered with environmental plantings since 2010	10	New project, not required by regulation, not part of a government program
Permanence:	100 year + permanence through on-title protection	7	25 years <=100 years > 100 years Mineralised into stable geological formations
Leakage:	Leakage is mitigated where the displaced form of grazing is no longer conducted in the region	6	Describe potential for leakage pathways and how avoided
Measurable:	Measured as per ACCU methods	9	Is carbon storage measured or planned ?
Unique identified:	Certificate numbers provided on purchase with allocation to project noted in registry	10	Link to registry, type of certificate, or form of contract
Double counting:	The creator of offsets provides a declaration that the emission removal is not accounted for by any other entity	10	Traceability from generation to retirement against specific emissions
Social or environmental harm	The project is supported by the Regional indigenous Land Council and Regional LGA	10	The project has been reviewed for other social or environmental harm
Environmental benefits:	Environmental plantings provide habitat for endangered parrots. Accounting for Nature (AfN) methods are used to measure habitat quality at 5 yearly intervals Watercourse protection is provided throughout the planting areas with improved water quality and mitigation of erosion. Measured using AfN methods	10	Goals for environmental benefits and how they'll be measured
Social benefits:	The project provides traineeships for indigenous students to study the ecology and biodiversity welfare. Reported to offset users each 2 years.	8	Goals for social benefits and how they'll be measured
Monitoring plan:	ACCU methods	8	How will stored carbon be monitored ? What frequency of reporting ?

Carbon offset - quality evaluation *cont.*

QUALITY CRITERIA	EVALUATION NOTES	SCORE (0 - 10, WHERE 10 = FULLY MEETS CRITERIA)	GUIDANCE
Market development:		8	How these offsets contribute to creating investment in natural capital and general development of the offset market
Vintage:	Original environmental plantings occurred in 2010, measurement and certificate creation has occurred in 2015, 2020. Only 2020 certificates are used in this case	10	Is the date of offset creation within x years of the planned retirement date, does the vintage year meet the requirements of programs such as Climate Active, Green Star, SBTi
Offset portfolio/ Buffer reserve	ACCU risk reversal buffer of 5% is applied. Proposed to purchase a further 5% buffer in an accumulating account	7	Is the offset intended to be part of a portfolio, if yes, how are the other offsets differentiated? Is there an intention to hold a reserve buffer pool of offsets that can be applied should some fail to deliver expected carbon abatement?
Offset evaluation score		8.69	Total averaged score

Appendix B:

Example natural capital balance sheet

YEAR OF PURCHASE	SOURCE OF SERVICES	REGISTRY	CERTIFICATE NUMBERS	DUE DILIGENCE CHECKLIST
2018	ACME Offsets	CER	xxx-yyy	(link)
2019	ZEUS Offsets	CER	xxx-yyy	(link)
	Forestry Offsets	ACCU	xxx-yyy	(link)
Total Natural Capital				

NATURE BASED SERVICES*					
GLOBAL CLIMATE REGULATION	NURSERY POPULATION AND HABITAT MAINTENANCE	SOIL AND SEDIMENT RETENTION	WATER PURIFICATION SERVICES	WATERFLOW REGULATION	COASTAL PROTECTION
tones CO2e	units	units	units	units	units
3,600					
3,200	1,800		2,100		
3,600					
10,400	1,800	-	2,100	-	-

SUSTAINABLE DEVELOPMENT GOAL LINK	ECOSYSTEM ACCOUNTING AREA	OFFSET RETIREMENT RETIREMENT	RETIREMENT YEAR	LATEST CONDITION REPORT	CONFIDENCE
SDG#	heactares				
	1,000	Head office travel	2017	2018	High
	890	120 Dampier St, Gas	2020	2021	High
	900				
	2,790				

*Services are as described in: United Nations et al. (2021). System of Environmental-Economic Accounting - Ecosystem Accounting (SEEA EA). White cover publication, pre-edited text subject to official editing. Available at: <https://seea.un.org/ecosystem-accounting>.

Appendix C:

Scope 3 relevance and offsetting

The scope 3 relevance table following provides a generalised ranking of relevance criteria, each organisation is encouraged to conduct their own, tailored, review and to publish the resulting table for comprehensive transparency.

CATEGORY	RELEVANCE CRITERIA FROM GHG PROTOCOL (SCORED 0 TO 5, WHERE 5 IS HIGH INTEREST)							TOTAL
	SIZE	INFLUENCE	RISK	STAKEHOLDERS	OUTSOURCING	SECTOR GUIDANCE	OTHER	
1. Purchased goods and services	5	5	2	5	0	5	0	22
2. Capital goods	5	5	2	5	0	5	0	22
3. Fuel and energy related	1	5	0	0	0	4	0	10
4. Upstream transportation and distribution	1	3	0	0	0	4	0	8
5. Waste generated in operations	3	5	2	5	0	5	0	20
6. Business travel	1	5	0	1	0	1	0	8
7. Employee commuting	1	2	0	0	0	0	0	3
8. Upstream leased assets	1	5	0	0	0	0	0	6
9. Downstream transportation	0	0	0	0	0	0	0	0
10. Processing of sold product	0	0	0	0	0	0	0	0
11. Use of sold products	4	4	2	4	0	0	0	14
12. End of life	0	0	0	0	0	0	0	0
13. Downstream leased assets	5	2	0	4	0	5	0	16
14. Franchises	0	0	0	0	0	0	0	0
15. Investments	5	3	0	4	0	5	0	17

APPROACH	VOLUNTARY USE OF OFFSETS
Most relevant to developments , goods and services incorporated into new build. Through procurement, express a preference for low carbon/carbon neutral goods and services. Segment expenditure and identify low carbon options	Yes, to compensate for residual emissions while transforming to eliminate emissions
Most relevant to operational assets purchasing buildings or assets for buildings. Through procurement, express a preference for low carbon/carbon neutral capital equipment. Nominate projects that will track embodied carbon	Yes, to compensate for residual emissions while transforming to eliminate emissions
Most relevant to operational assets. Transmission and distribution losses, linked with energy source information, reduce through efficiency and transition to renewable energy	Yes, to compensate for residual emissions while transforming to eliminate emissions
Most relevant to developments , transition to electric transport. Typically, low relevance to operational assets	Yes, to compensate for residual emissions while transforming to eliminate emissions
Most relevant to operational assets. Waste management practices reduce organics to landfill and increases recycling resulting in lower emissions from tenant generated waste	Yes, to compensate for residual emissions while transforming to eliminate emissions
Most relevant to organisational carbon accounts, reduced through avoided business travel and choice of travel mode. Low relevance to operational assets	Yes, to compensate for residual emissions while transforming to eliminate emissions
May be included in organisational carbon accounts, limited to employee travel for carbon neutral certification. Low relevance to operational assets.	Yes, to compensate for residual emissions while transforming to eliminate emissions
May be included in organisational carbon accounts for carbon neutral certification. Low relevance to operational assets.	Yes, to compensate for residual emissions while transforming to eliminate emissions
Generally not applicable	NA
Generally not applicable	NA
Most relevant to developments , encourages energy efficiency and renewable energy systems be installed early.	Yes, to compensate for residual emissions while transforming to eliminate emissions and where future emissions can be reasonably estimated
Most relevant to developments . Embodied carbon in demolition materials is retained through high grade recycling. Demolition equipment moves to electric and renewable electricity	Yes, to compensate for residual emissions while transforming to eliminate emissions if end of life emissions can be reasonably estimated
Most relevant to operational assets. Emissions associated with tenant use of leased space. Collaboration for energy efficiency and access to renewable energy	Yes, to compensate for residual emissions. Renewable energy certificates (LGCs) are preferred for mitigation of electricity related emissions as a sustainable solution. For either offset or REC approach there should be a price signal reflected back to the consumer to inform behaviours and management of energy
Generally not applicable	NA
Where investment is made in operational property the preference is to have an efficient asset powered by renewable energy.	Yes, to compensate for residual emissions where the scope 1 & 2 emissions from these assets have not been mitigated

The GHG Protocol provides guidance on the relevance criteria to be considered when creating a carbon inventory including scope 3 emissions. These definitions support the development of inventories that meet the Protocol principles of relevance, completeness, transparency, and accuracy.

Defining the relevance criteria:²³

Size	They contribute to the company's total anticipated scope 3 emissions
Influence	There are potential emissions reductions that could be undertaken or influenced by the company
Risk	They contribute to the company's risk exposure (e.g., climate change related risks such as financial, regulatory, supply chain, product and customer, litigation, and reputational risks)
Stakeholders	They are deemed critical by stakeholders (e.g., customers, suppliers, investors, or civil society)
Outsourcing	They are outsourced activities previously performed in-house or activities outsourced by the reporting company that are typically performed in-house by other companies in the reporting company's sector
Sector guidance	They have been identified as significant by sector-specific guidance
Other	They meet any additional criteria for determining relevance developed by the company or industry sector

²³Corporate Value Chain (Scope 3) Accounting and Reporting Standard – GHG Protocol





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