In depth

A look at current financial reporting issues

March 2023

IFRS Financial Reporting considerations for entities participating in the voluntary carbon market

Foreword

Carbon markets are trading systems in which carbon credits are sold and bought. One tradable carbon credit equals one tonne of carbon dioxide or the equivalent amount of a different greenhouse gas reduced, sequestered or avoided.

There are two broad types of carbon markets in Aotearoa New Zealand: compliance emission trading markets and voluntary carbon markets (VCM).

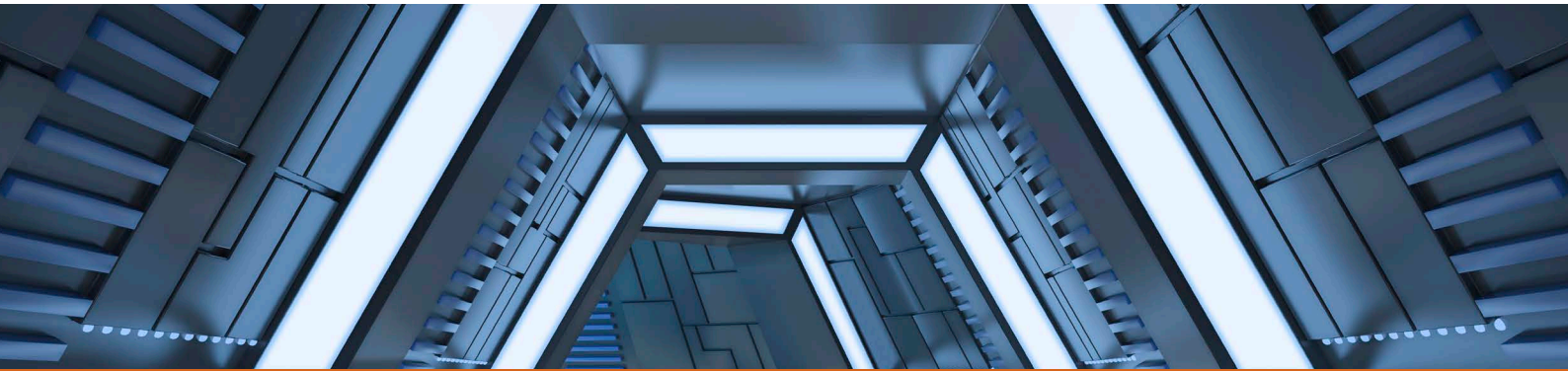
In compliance markets, such as the New Zealand Emissions Trading Scheme (NZ ETS), emitters within the participating sectors are required to pay for the right to emit carbon dioxide or other greenhouse gases. These participants receive carbon emission allowances/credits from the government and/or purchase them to meet their compliance requirements.

Voluntary carbon markets are not regulated and as the name suggests, participation is voluntary.

Voluntary carbon markets (VCM) are growing as companies and industries aim to deliver on ambitious climate and net zero targets. This creates the need for consistent accounting practices for carbon offsets by companies that use carbon offsets to achieve their emission reduction targets, companies who develop carbon offsets and companies who trade or invest in carbon offsets.

There are no accounting standards or IFRS interpretations that directly address the accounting for carbon offsets and related projects. This article considers how the accounting for carbon offset arrangements by the various counterparties can be addressed using current accounting standards and interpretations as at the date of publication. Note that interpretations are subject to change as the markets, standards and practices evolve.

There are common issues between compliance and voluntary carbon markets in accounting for transferrable or tradable carbon credits. However, companies who receive carbon emission allowances or credits from the government in the compliance market (e.g. Participants in the NZ ETS) also need to consider the accounting for the government grant of credits and their obligations to surrender credits to offset their emissions. This publication only considers the accounting for carbon offsets in the voluntary carbon market. See PwC's publication Emissions trading systems: the opportunities ahead for further details on implications of and accounting for compliance emission trading systems.



1. Background

With the increasing focus on climate change and carbon emissions, companies are starting to take steps to reduce or absorb their carbon emissions. Complete elimination of carbon emissions from operations through mitigation methods is not always possible. This drives demand for carbon offsets to offset all, or part of the remaining emissions generated by an entity's operations or in its value chain.

1.1 What is a carbon credit?

Carbon credits typically represent an emission reduction or removal of one metric tonne of CO2, or an equivalent warming potential of other greenhouse gases. They are uniquely serialised, issued, tracked and cancelled by means of an electronic registry.

Certified carbon credits typically take the form of transferable or tradable instruments and are certified by governments or independent certification bodies.

1.2 Carbon credits vs carbon offsets

Carbon credits are generally used by companies to meet compliance requirements, such as the requirements of the NZ ETS and are generally transacted in the compliance market.

Carbon offsets are used by organisations to achieve voluntary emission targets. Carbon offsets are generally transacted in the voluntary carbon market or VCM.

Carbon credits used to offset emissions voluntarily are often referred to as 'carbon offset credits' or 'carbon offsets'. In this publication they will be referred to as carbon offsets.

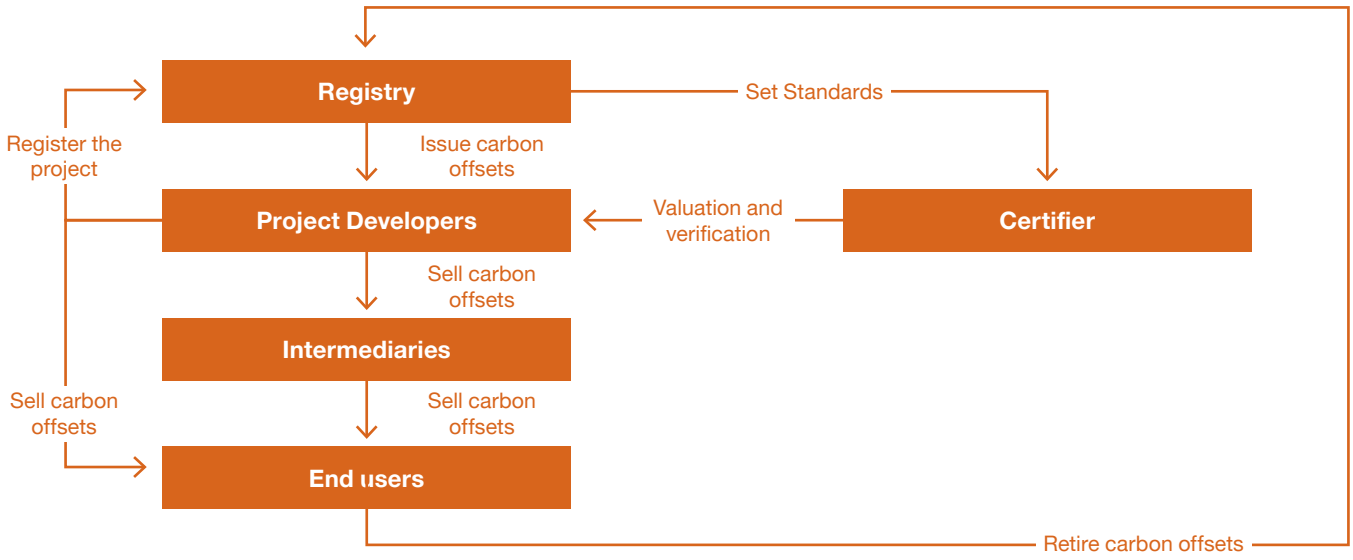
1.3 Life cycle of a carbon offset in the voluntary carbon market

The life cycle of a carbon offset in the VCM can be summarised as:

1. *Generation of carbon offsets:* A carbon offset project developer (project developer) registers an offset project with a carbon offset registry under a carbon offset program. The emissions reduction will be measured using a specified methodology. The project developer will implement the project and maintain records quantifying the emission reductions achieved. These are often validated and verified by government or independent certification bodies in order for the carbon offsets to be certified. Certified carbon offsets are issued by a carbon offset registry to the registry account of the project developer.
2. *Transfer of carbon offsets:* The carbon offsets are tradable or transferable between accounts with the same registry. The ownership of the carbon offsets can be transferred from project developers to intermediaries and ultimate end users. These transactions are usually facilitated by carbon brokers, private carbon trading platforms and carbon exchanges.
3. *Retirement of carbon offsets:* The end user is required to instruct the registry to 'retire' the carbon offsets when they report them as a reduction of their emissions. This stops the carbon offsets from being used again by another entity.

The following diagram shows the VCM and the parties involved in a simple form.

The structure of the voluntary carbon market



2. Carbon offsets – Accounting principles

2.1. Definition of an intangible asset

Although relatively new, the carbon offset markets are growing. A certified carbon offset delivered in a transferable or tradable format to the entity's registry account can typically be resold for cash. A unit of certified carbon offset will meet the definition of an intangible asset under NZ IAS 38, 'Intangible Assets', as "an identifiable non-monetary asset without physical substance", if it is transferable or tradable. The reasons are:

- it is a resource controlled by an entity (that is, the entity has the power to obtain the economic benefits that the asset will generate and to restrict the access of others to those benefits) as a result of past events and from which future economic benefits are expected to flow to the entity;
- it is identifiable as it can be sold, exchanged or transferred individually;
- it is not cash or a monetary asset; and
- it has no physical form.

2.2. Classification, recognition and measurement

Although carbon offsets meet the definition of an intangible asset under NZ IAS 38, the accounting requirements of NZ IAS 38 are only applicable to intangible assets that are not within the scope of another standard. Some carbon offsets may satisfy the definition of inventory and be within the scope of NZ IAS 2, 'Inventories' and instead have to be accounted for under that standard.

Section 2 considers the accounting implications of falling within the scope of either NZ IAS 2 or NZ IAS 38 along with certain other classification and measurement issues.

2.2.1. Inventory accounting

Certified carbon offsets would meet the definition of inventories in NZ IAS 2 under the following circumstances:

1. they are assets held for sale in the ordinary course of business; or
2. they are assets in the form of materials or supplies to be consumed in the production process or in the rendering of services.

Inventories are generally measured at the lower of cost and net realisable value in accordance with the measurement requirements of NZ IAS 2. They cannot generally be revalued to fair value.

However, an entity might purchase carbon offsets principally with the purpose of selling in the near future to generate a profit from fluctuations in the price or traders' margin. In this instance, the entity might want to consider whether the guidance in paragraph 3(b) of NZ IAS 2 for commodity broker-traders applies to the carbon offsets they trade, and if so, whether to elect to measure the carbon offsets at fair value less costs to sell with changes in fair value recognised in profit or loss.

The carbon offsets will not meet the definition of inventory if the entity holds carbon offsets only for investment purposes (that is, capital appreciation) over extended periods of time or sells carbon offsets outside of its ordinary course of business.

2.2.2. Intangible assets accounting

Carbon offsets that do not meet the inventory definition should be assessed under NZ IAS 38, 'Intangible Assets'.

Under NZ IAS 38, an intangible asset is recognised "if, and only if:

1. it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and
2. the cost of the asset can be measured reliably."

Purchased carbon offset intangibles that can be resold would meet both criteria. Entities that develop carbon offset intangibles for their own use need to demonstrate that the offsets meet the intangibles definition (see Section 2.1) and recognition criteria above.

Carbon offset intangibles meeting the recognition criteria are initially measured at cost.

For each unit of carbon offset, there is generally no consumption of its economic benefits until it is derecognised. As such, each carbon offset would subsequently be carried at cost less any accumulated impairment losses or, as permitted under NZ IAS 38, measured using the revaluation model if an active market exists for the carbon offsets. Where the quality and prices of certified carbon offsets vary widely, there may be little evidence to support the existence of an active market. See Section 2.3 for the relevant factors to consider.

2.2.3. Other accounting considerations

Entities involved in the VCM need to consider the appropriate accounting before obtaining or generating any carbon offsets. The range of possible classifications, as well as their associated measurement, shows the importance of understanding the entity's business model/purpose for holding the asset. This increases the importance of implementing specific accounting policies, ensuring their consistent application to similar transactions and appropriate disclosures. Where an entity can evidence the existence of clearly distinguished portfolios of similar assets held for different purposes, different treatments might apply within an entity.

For considerations for buyers and project developers refer to sections 3 and 4 respectively.

The role of the entity in the VCM and the intended use of the carbon offsets will also impact the classification of its cash flows in the cash flow statement.

2.3. Fair value

There are further complications for entities that need to reference fair value when they account for carbon offsets. As noted above, this could include carbon offset commodities carried by broker-traders at fair value through profit or loss or carbon offset intangibles measured under the revaluation model.

NZ IFRS 13, 'Fair Value Measurement', defines fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date", and it sets out a framework for determining fair values under NZ IFRS.

Some high level factors to consider are included below:

- *Active market:*

NZ IAS 38 permits application of the revaluation model for carbon offsets classified as an intangible asset if an active market exists for the particular type of carbon offsets.

Appendix A to NZ IFRS 13 defines an active market as one "in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis".

A benchmark for evaluating the depth of a market could include active trading days within a given time period. A metric for volume that could also be considered is the average daily turnover ratio. This is calculated by dividing the average daily trading volume by the total amount of outstanding carbon offsets.

NZ IFRS 13 does not define thresholds for frequency (such as active trading days) and volume (such as turnover ratio) to determine if an active market exists. This means that the conclusion requires professional judgement. In assessing whether an active market exists in a region for a particular type of carbon offsets, an entity should also consider whether reliable trading data is available.

If no active market exists, any carbon offsets held as intangibles should not be fair valued.

- *Valuation techniques:*

In determining an appropriate valuation technique, NZ IFRS 13 indicates that the technique should be appropriate in the circumstances, and it should maximise the use of relevant observable inputs and minimise the use of unobservable inputs.

In many cases, the market approach [NZ IFRS 13 para B5] will be the most appropriate technique for carbon offsets held at fair value, because this would be used by a market participant. However, there might be particular facts and circumstances where an entity could demonstrate that a market participant would use a different approach. The cost approach NZ [NZ IFRS 13 paragraph B8] or the income approach NZ [NZ IFRS 13 paragraph B10] is likely to be rare in practice.

In general, a valuation model should be applied consistently from period to period. The market for carbon offsets is evolving rapidly and valuation techniques used by market participants are likely to evolve. NZ IFRS 13 permits an entity to change valuation techniques (or change weightings amongst multiple valuation techniques) where the change results in a measurement that is equally, or more, representative of fair value, in the circumstances. The development of new markets, availability of new information or changing market conditions might result in changing valuation techniques.

- *Disclosure:*

NZ IFRS 13 contains a number of disclosure requirements. Given that markets for carbon offsets are rapidly evolving, determining the fair value can be complex. NZ IFRS 13 provides advice on the level of detail necessary to satisfy the disclosure requirements, how much aggregation or disaggregation to undertake and whether users of financial statements will need additional information to evaluate the quantitative information disclosed.

2.4. Derecognition

Carbon offsets should be derecognised when they are sold, transferred or retired.

As discussed earlier, when carbon offsets are used to offset a company's own emissions, the company is required to instruct the registry to 'retire' the carbon offsets. In some cases, the carbon offsets are simultaneously purchased and retired.

3. Other accounting considerations for buyers (including end users and intermediaries)

3.1. Contracts to obtain carbon offsets in the future

Section 2 broadly sets out the accounting considerations for carbon offsets. Some entities will enter into contracts to obtain carbon offsets in the future instead of purchasing carbon offsets from the market based on spot price. Accounting treatment for these contracts can vary depending on the arrangement.

Buyers should carefully assess whether the nature of a contract to acquire carbon offsets in the future is financial (equity, loan, a fair value through profit or loss (FVTPL) financial instrument including derivatives), or non-financial (a lease, an executory carbon offsets contract (including a prepayment) or a purchase of an intangible asset).

As part of this assessment, entities will need to consider if the arrangement is in the scope of NZ IFRS 9 'Financial instruments'. Entities that are acquiring carbon offsets to offset their own emissions are likely to meet the 'own use' exemption under paragraph 2.4 of NZ IFRS 9. However, entities engaged in trading carbon offsets need to consider whether the contracts to acquire and sell such carbon offsets are within the scope of NZ IFRS 9. This could be as a result of the contract having a net settlement feature as explained in paragraph 2.6 of NZ IFRS 9. Entities with contracts within the scope of NZ IFRS 9 would need to account for the contracts for future purchases and sales at fair value through profit or loss (FVTPL).

3.2 Accounting considerations for intermediaries

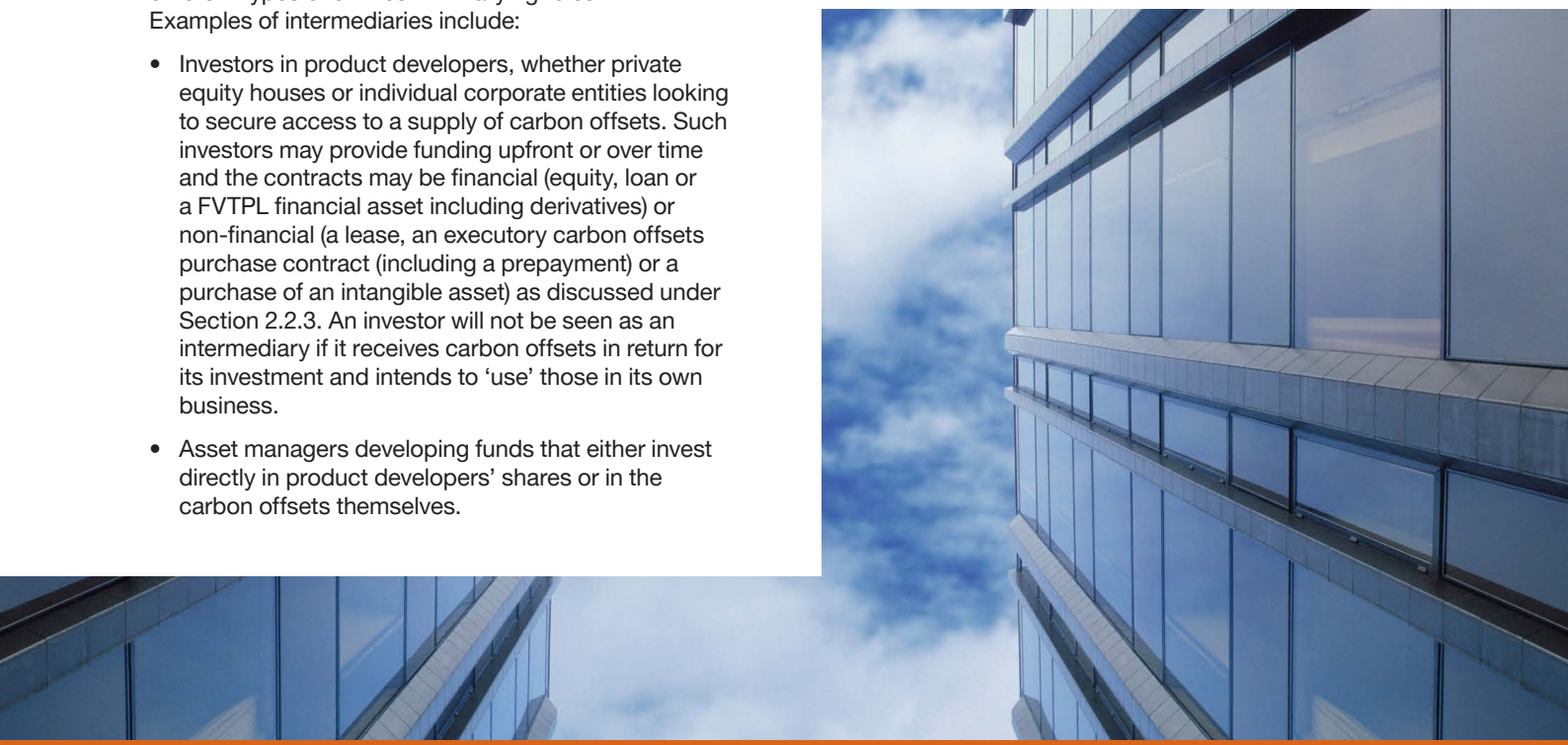
Intermediaries in the carbon market include many different types of entities with varying roles. Examples of intermediaries include:

- Investors in product developers, whether private equity houses or individual corporate entities looking to secure access to a supply of carbon offsets. Such investors may provide funding upfront or over time and the contracts may be financial (equity, loan or a FVTPL financial asset including derivatives) or non-financial (a lease, an executory carbon offsets purchase contract (including a prepayment) or a purchase of an intangible asset) as discussed under Section 2.2.3. An investor will not be seen as an intermediary if it receives carbon offsets in return for its investment and intends to 'use' those in its own business.
- Asset managers developing funds that either invest directly in product developers' shares or in the carbon offsets themselves.
- Broker-traders in carbon offsets. See Section 3.1 for accounting considerations where carbon offsets are forward purchased or sold and Section 2.2.1 for the accounting required for carbon offsets held by broker-traders.
- Other participants which could include carbon offset consultants and the carbon exchanges themselves.

The intermediaries above also need to assess whether they act as principals or agents in the carbon offset transactions in accordance with NZ IFRS 15 'Revenue'.

For entities that act as principals (for example broker-traders and investors who obtain carbon offsets for sale), the carbon offsets they purchased from the market or obtained from investments will be recorded as inventories on acquisition (refer to Section 3.1 for further discussion when carbon offsets are forward purchased or sold (as opposed to purchases at spot price).

Entities that act as agents for the carbon offset transactions, for example carbon offset consultants or carbon exchanges should not report the carbon offset transactions as their own. However, they act as the principal for their relevant services and should account for their service revenue in accordance with NZ IFRS 15. Sometimes such agents may receive a share of the carbon offsets as the consideration for their services provided. These carbon offsets received should be considered as non-monetary consideration and initially measured at their fair values. Subsequently if the carbon offsets are sold for cash, the sale might be reported as other revenue or other income.



3.3. Provisions

An entity participating in the voluntary carbon market needs to consider whether it should recognise a liability or a provision in accordance with NZ IAS 37 'Provisions, contingent liabilities and contingent assets' as a result of its announcement(s) of its commitment to emission reduction targets. This is regardless of whether carbon offsets have been obtained (purchased or accessed otherwise).

NZ IAS 37 defines a liability as "a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits". An obligating event is an event that creates a legal or constructive obligation that results in an entity having no realistic alternative to settling that obligation.

An entity that makes an announcement of its emission reduction targets should consider whether the announcement creates a constructive obligation on it to carry out activities that consume resources to negate the emissions it generates. NZ IAS 37 defines a constructive obligation as an obligation that derives from an entity's actions where:

1. by an established pattern of past practice, published policies or a sufficiently specific current statement, the entity has indicated to other parties that it will accept certain responsibilities; and
2. as a result, the entity has created a valid expectation on the part of those other parties that it will discharge those responsibilities.

However, the existence of only a constructive obligation is not sufficient to recognise a liability. If it is determined the announcement creates a constructive obligation, the entity needs to further assess when the constructive obligation becomes a 'present' obligation without realistic alternatives as a result of past events. Generally the announcement of a commitment to reduce emissions by a future date does not result in a liability prior to the compliance period.

4. Accounting considerations for project developers

Carbon offsets can be produced by a variety of activities that reduce greenhouse gas emissions or increase carbon sequestration. In most cases, these activities are undertaken as discrete 'projects'. A carbon offset project, for example, may involve:

- renewable energy development (displacing fossil-fuel emissions from conventional power plants);
- the capture and destruction of high-potency GHGs like methane, N2O, or HFCs; or
- forestation or restoration of forests (trees planted to absorb carbon).

The project developer should carefully analyse the accounting considerations for the costs incurred for the underlying project that generates carbon offsets and their contracts to deliver carbon offsets in the future.

4.1. Accounting for trees held to generate carbon offsets

Carbon offsets could result from forestry projects where trees are held with the sole purpose of generating and selling carbon offsets. In such situations, the accounting for the offsets would depend on the appropriate accounting for the trees. Entities should determine whether the trees are:

1. biological assets that should be accounted for in accordance with NZ IAS 41 'Agriculture'; or
2. bearer plants that should be accounted for in accordance with NZ IAS 16 'Property, plant and equipment'; or
3. assets not related to agricultural activity.

Trees that relate to agricultural activity (except those that meet the definition of a bearer plant) are accounted for under NZ IAS 41 and measured, both at initial recognition and at each subsequent reporting date, at fair value less costs to sell, except where fair value cannot be reliably measured.

Biological assets that meet the definition of 'bearer plants' are measured either at cost or revalued amounts, less accumulated depreciation and impairment losses under NZ IAS 16.

4.2. Carbon sequestration and other projects

4.2.1 Carbon sequestration – introduction

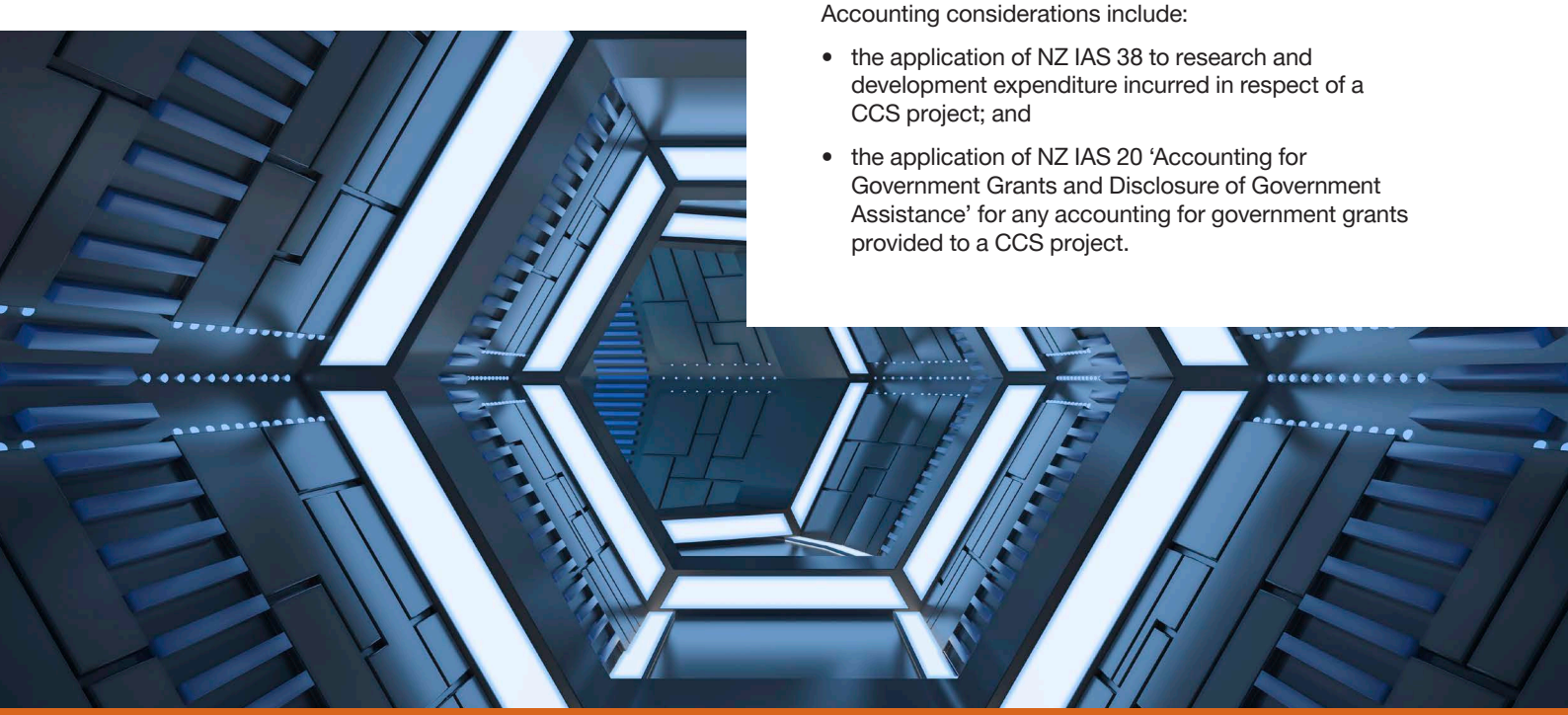
Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is recognised as a key method for reducing the carbon in the earth's atmosphere with the goal of reducing global climate change.

Carbon sequestration can happen in two basic forms: biologically or geologically. Biological carbon sequestration happens when carbon is stored in living plants. Geological carbon sequestration is technological and happens when carbon is stored in underground geological formations or rocks or depleted oil and gas reservoirs, deep unmineable coal beds, retired salt mines and so on.

Globally, an increasing number of entities are investing in developing technologies that would enable carbon capture and storage (CCS) at a massive scale. The majority of these projects are currently in research and development phases. The regulatory policies governing such projects vary between countries and the associated commercial models are still a work in progress in many cases. These factors introduce complexity and involve significant judgement in determining if the research and development costs incurred on such projects meet the capitalisation criteria under NZ IAS 38 and/or NZ IAS 16.

Accounting considerations include:

- the application of NZ IAS 38 to research and development expenditure incurred in respect of a CCS project; and
- the application of NZ IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance' for any accounting for government grants provided to a CCS project.



4.2.2 Research and development expenditure

The process of generating an intangible asset is generally divided into a research phase and a development phase. This pattern also manifests itself in CCS projects where significant costs are incurred before the commencement of the construction of physical infrastructure, on activities such as studies on evaluating suitable technologies, producing conceptual project designs, pigging, seismic surveys, establishing technical, commercial and economic feasibility and evaluating potential locations for development. Whether these costs can be capitalised as intangible assets can sometimes involve significant judgement in determining if the activities amount to development and meet the criteria outlined in NZ IAS 38.

NZ IAS 38 defines the research phase as the "original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding", and stipulates that any expenditure on research or the research phase of an internal project should be expensed as incurred. Examples of research activities provided in NZ IAS 38 include the following:

- Activities aimed at obtaining new knowledge; and
- The search for, evaluation and final selection of, applications of research findings or other knowledge.

In contrast, NZ IAS 38.57 provides that an intangible asset arising from development, or from the development phase of an internal project, which is defined as "the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use", should be recognised provided certain criteria are met.

4.2.3 The application of NZ IAS 20 for accounting for government grants provided to a CCS project

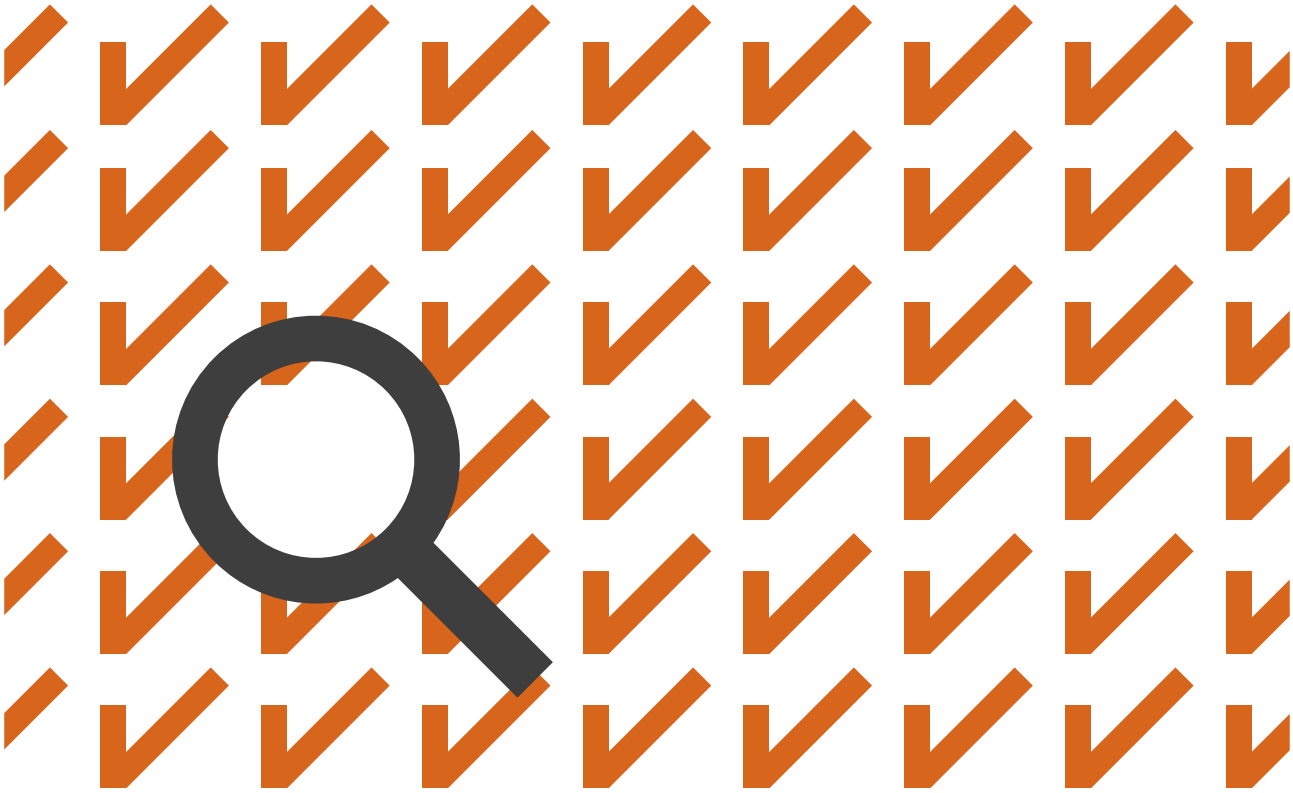
Given the ever-increasing focus on reducing and mitigating carbon emissions, many governments are assisting the development of CCS and other green projects in one form or another. The nature and extent of government support may vary across jurisdictions and projects.

Entities need to assess whether the government support is a government grant or another form of government assistance based on the definition and scope of NZ IAS 20 'Government grants'. The distinction is important because the accounting requirements of NZ IAS 20 only apply to government grants. In particular, the definition of government grants excludes the following forms of government assistance:

- Assistance to which no value can reasonably be assigned.
- Transactions with the government that cannot be distinguished from the normal trading transactions of the entity.

Paragraph 2 of NZ IAS 20 also excludes grants related to income tax, biological assets measured at fair value less costs to sell or government participation in the ownership of an entity from the scope of NZ IAS 20.

The nature of government support in respect of CCS projects varies and a detailed analysis based on specific facts and circumstances will be required to determine the nature of support and, therefore, the applicable accounting standard and appropriate accounting treatment.



4.4. Contracts to deliver carbon offsets in the future

Like the issues discussed under Section 3.1 from the investors' perspective, project developers entering into contracts to deliver carbon offsets in the future should also carefully assess the contract to determine whether the nature of the arrangement is financial (equity, loan, a FVTPL financial instrument including derivatives), or non-financial (a lease, an executory carbon offsets sales contract (including a prepayment) or a sale of an intangible asset).

If the contract falls into NZ IFRS 15 and an initial payment is received from the customer, the project developer will also need to assess whether a significant financing component exists.

Where contracts fall into NZ IFRS 15 and include goods or services other than the carbon offsets (for example renewable electricity), the delivery of the carbon offsets will be considered a separate performance obligation. The PwC In depth on Accounting for Green/Renewable Power Purchase Agreements from the Buyer's Perspective discussed the accounting considerations from the Renewable Energy Credits (REC) purchaser's perspective. Similar considerations apply from a project developer's perspective.

Need more information?

If you wish to discuss this or any other financial reporting related matter, please contact your usual PwC contact or one of the following financial reporting specialists:

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