



Applying IFRS

Energy Transition: carbon capture and storage accounting considerations

October 2021

Contents

Introduction to our publication series	2
Overview	3
Research and development costs	4
Plant, property and equipment (PP&E) expenditure	7
Government grants	8

What you need to know

- ▶ Whilst the number of Carbon Capture and Storage (CCS) facilities currently operational is limited, significant growth in the number and scale of CCS facilities is expected if Net Zero targets are to be met.
- ▶ As the number and scale of CCS facilities grow, new accounting considerations and complexities will emerge and rise in significance.
- ▶ Assessment of the accounting consequences of new commercial arrangements will potentially require the involvement of non-financial personnel (e.g., operational and commercial).

Introduction to our publication series

There is little dispute that change is needed to the way in which energy is produced and consumed in order to protect the planet for generations to come.

Although there is no single definition, 'the Energy Transition' refers to the energy sector's shift from the use of fossil fuels – including oil, natural gas and coal – to renewable energy sources such as wind and solar.

As energy suppliers and global policy makers embark on and accelerate efforts with respect to the Energy Transition, new business models will be formed that will give rise to new accounting complexities for consideration.

Our '*Applying IFRS to the Energy Transition*' publication series seeks to explore the accounting implications of emerging business models and arrangements related to the Energy Transition. Each publication will focus on a topic and explore the potential accounting implications.

Overview

This publication is part of our 'Applying IFRS to the Energy Transition' publication series and focuses on certain accounting considerations associated with Carbon Capture and Storage (CCS) projects. Given that the significant portion of global CCS projects are in the design or development stage, this publication focuses on the accounting considerations associated with early-stage CCS projects.

CCS is the process by which carbon is captured at source, compressed and transported to a storage site, most commonly a depleted oil or natural gas reservoir.

Currently, the number and scale of CCS projects is limited and the maturity of the associated commercial frameworks, including government policies, varies across different countries and regions. In its 2020 status report¹, the Global CCS Institute identified 65 commercial CCS facilities across the globe, 36 of which are under construction or in the design phase. However, many industry consultants expect significant growth in the use of CCS. Under the International Energy Agency's (IEA) Sustainable Development Scenario (SDS)², that "maps out a way to meet sustainable energy goals in full", the mass of CO₂ captured using CCS is forecast to rise from approximately 40 million metric tonnes (Mt) per annum today to around 5.6 gigatonnes (Gt) by 2050; an increase of more than one hundred times.

A significant portion of CCS projects involve companies operating in the oil and gas industry. This is not unexpected given their operations generate carbon and provide access to infrastructure relevant to the design and build of a CCS facility.

This publication includes discussion on the following topics:

- ▶ The application of IAS 38 *Intangible Assets* to research and development expenditure incurred in respect of a CCS project
- ▶ To the extent that a commercial CCS facility is being constructed, considerations relating to development expenditure, in accordance with the requirements of IAS 16 *Property, Plant and Equipment* as well as subsequent depreciation
- ▶ The accounting treatment of government grants relating to a CCS project

¹ Global CCS Institute. 2020. Global Status of CCS Report.

² International Energy Agency, *Energy Technology Perspectives 2020*, Special Report on Carbon Capture Utilisation and Storage.

Research and development costs

Given CCS projects involve the use of relatively new and/or evolving technology, consideration will be required as to the appropriate accounting for early stage research and development costs.

IAS 38 defines research as "original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding"³. Examples of research activities provided in IAS 38 include the following:

- ▶ Activities aimed at obtaining new knowledge
- ▶ The search for, evaluation and final selection of, applications of research findings or other knowledge⁴

In contrast, IAS 38 defines development 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"⁵. Examples of development activities provided in IAS 38 include the following:

- ▶ The design, construction and testing of pre-production or pre-use prototypes and models
- ▶ The design, construction and operation of a pilot plant that is not of a scale economically feasible for commercial production
- ▶ The design, construction and testing of a chosen alternative for new or improved materials, devices, products, processes, systems or services⁶

IAS 38 stipulates that any expenditure on research or the research phase of an internal project should be expensed as incurred, because the entity cannot demonstrate that there is an intangible asset that will generate probable future economic benefits.

An intangible asset arising from development, or from the development phase of an internal project, should be recognised if, and only if, an entity can demonstrate all of the following:

- ▶ The technical feasibility of completing the intangible asset so that it will be available for use or sale
- ▶ The intention to complete the intangible asset and use or sell it
- ▶ The ability to use or sell the intangible asset
- ▶ How the intangible asset will generate probable future economic benefits. Among other things, the entity can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset
- ▶ The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset

³ IAS 38.8.

⁴ IAS 38.56.

⁵ IAS 38.8.

⁶ IAS 38.59.

- The ability to measure reliably the expenditure attributable to the intangible asset during its development⁷

Whilst a number of the specified criteria could be met through the use of existing or established technologies and based on management's intention to complete the required activities, assessing whether other criteria have been met will involve judgement and require the input of different business functions, including commercial, engineering and operational teams.

In particular, the criteria relating to the generation of probable future economic benefits is more restrictive than is immediately apparent, as IAS 38 requires an entity to assess the probable future economic benefits using the principles in IAS 36 *Impairment of Assets*, i.e., using a discounted cash flow model to assess the net present value of the future economic benefits of the project.⁸ Where the design of the commercial and technical aspects of a project are not significantly progressed, the development of a reliable discounted cash flow assessment and, therefore, the demonstration of probable future economic benefit, will be challenging.

Depending on which entities are involved in a CCS project, the treatment of early project costs may differ from traditional practices. In particular, entities operating in the extractives sector are accustomed to applying IFRS 6 *Exploration for and the Evaluation of Mineral Resources* in accounting for costs incurred in respect to exploration and evaluation activities. IFRS 6 allows an entity to determine an accounting policy specifying which expenditures are recognised as exploration and evaluation assets, and which costs are expensed. However, CCS projects do not involve exploring for or evaluating mineral resources. Therefore, IFRS 6 is not the applicable standard in determining the treatment of research and development costs associated with a CCS project. Rather, IAS 38 is the appropriate accounting standard to apply as it applies more broadly to research and development activities across any industry that is not specifically covered by another accounting standard.

⁷ IAS 38.57.

⁸ IAS 38.60.

Illustrative example – research and development expenditure

Scenario

A company aiming to develop a CCS facility is in the development phase and is performing certain early-stage activities, including the development of a pilot plant that is not of a scale that is economically viable for commercial production. Whilst the technology adopted is relatively advanced and the company has the capabilities and intent to complete the development, the company aims to develop the CCS project in a region where, currently, there is no formal legislation that stipulates the extent and nature of government support. In this industry and jurisdiction, regulatory approval is considered vital to commercial success of a CCS project, whereas its absence indicates significant uncertainty around the possible future economic benefits. As a result, at present, the company does not have sufficient basis upon which to produce a discounted cash flow model to assess the net present value of the project.

Accounting analysis

Whilst the project is in its development phase, the entity is unable to demonstrate that it will generate probable future economic benefits in the absence of regulatory approval. As a result, development costs incurred should be expensed in accordance with IAS 38.

Regulatory approval is not one of the criteria for recognition under IAS 38 and the standard does not prohibit an entity from capitalising its development costs in advance of approval. However, in some industries, regulatory approval is vital to commercial success and its absence indicates significant uncertainty around the possible future economic benefits.

How we see it

- IAS 38 applies in determining the appropriate treatment of early stage research and development costs associated with a CCS project.
- Whilst a number of the criteria that are required to be met in order to allow for the capitalisation of development costs could be met through the use of existing or established technologies and based on management's intent to complete the required activities, meeting other criteria may be more challenging.
- In some industries, in the absence of regulatory approval, significant uncertainty exists in respect of the possible future economic benefits of a project. Accordingly, in such industries, it is common practice for costs to be expensed until such approval is obtained. Similar considerations will be applied in respect of CCS projects based on the significance and maturity of governmental policy to a particular project.

Plant, property and equipment (PP&E) expenditure

As a CCS facility progresses to its development stage, judgement will be required to determine the costs that are appropriate to be capitalised, as well as the subsequent timing and method under which such amounts are depreciated.

To the extent that a project progresses beyond the research and development phase, the construction of a commercial CCS project will involve the use of PP&E, potentially including both pre-existing assets that can be repurposed (e.g., pipeline networks and assets relating to depleted reservoirs), and new PP&E (e.g., new gas processing and compression facilities and re-injection equipment).

Existing CCS projects vary in terms of their commercial motivations and the associated business model, including:

- ▶ Projects designed to generate economic benefit on a stand-alone basis, charging external customers for the processing and storage of carbon emitted from their respective operations
- ▶ Projects designed by a generator of emissions, to operate as part of a broader cash generating unit (CGU) to mitigate the emissions of the associated producing facility. For example, CCS infrastructure may be added to an oil and gas producing facility to comply with certain legal or constructive obligations with respect to emissions associated with upstream oil and gas activities.

Where costs are incurred in constructing PP&E associated with a CCS project that is operating on a stand-alone basis, and it is probable that future economic benefits will flow to the entity, amounts incurred should be capitalised and recognised at cost.

Where CCS infrastructure is not designed to generate economic benefit as a stand-alone asset, but instead to comply with certain legal or constructive obligations in respect of emissions produced by an associated asset, certain provisions of IAS 16 may apply. That is, IAS 16 acknowledges there may be expenditure forced upon an entity by legislation that requires it to buy 'assets' that do not meet the recognition criteria, because the expenditure does not directly increase the future economic benefits expected to flow from the asset. The standard⁹ explains that such expenditures qualify for recognition as they allow an entity to derive future economic benefits from related assets, in excess of those that would flow if such expenditure had not been made.

Depreciation of an asset begins when it is available for use, which is defined by the standard as occurring when the asset is in the location and condition necessary for it to be capable of operating in the manner intended by management. This is usually the point at which capitalisation of costs relating to the asset ceases as the physical asset is operational or ready for its intended use. An entity does not stop depreciating an asset merely because it has become idle or has been retired from active use unless the asset is fully depreciated. However, if the entity is using a usage method of depreciation (e.g., the units-of-production method), the charge can be zero while there is no production. A prolonged period in which there is no production may indicate that an asset has become idle, which is a specific example of an indication of impairment in IAS 36.

⁹ IAS 16.11.

In depreciating its PP&E, an entity must adopt a depreciation method that reflects the pattern in which it expects to consume the asset's future economic benefits. Consideration will be required in determining the appropriate depreciation method in respect to different assets or asset components. A CCS project will involve assets and asset components of a differing nature and, therefore, potentially will require different depreciation methods or bases to be applied. For certain assets (i.e., those associated with the injection of carbon into a specific reservoir or underground structure), it may be appropriate to adopt a depreciation method that relates depreciation to the proportionate usage of field-specific storage capacity (i.e., akin to the Unit of Production approach adopted in the upstream oil and gas industry).

In other cases (i.e., a processing facility that is designed to process and compress carbon prior to being stored in a number of different reservoirs, including those yet to commence injection), a straight-line depreciation method may be appropriate.

In certain instances, CCS projects may utilise existing infrastructure that is partially or fully depreciated (i.e., pipelines or offshore facilities linked to producing or decommissioned oil and gas fields). In such a scenario, as the CCS project and the degree of certainty surrounding the future use of such assets increases, an entity should assess whether changes are required to the method and/or period over which existing facilities are being depreciated. That is, the useful life of existing infrastructure could be extended by a CCS project.

Illustrative example - plant, property and equipment

Scenario

An oil and gas producer develops a CCS facility to manage emissions produced from an upstream oil and gas asset in order to obtain government approval for the development of the oil and gas asset.

Accounting analysis

IAS 16 acknowledges there may be expenditure forced upon an entity by legislation that requires it to buy 'assets' that do not meet the recognition criteria, because the expenditure does not directly increase the future economic benefits expected to flow from the asset. The standard explains that such expenditures qualify for recognition as they allow an entity to derive future economic benefits from related assets, in excess of those that would flow if such expenditure had not been made.

In this scenario, related CCS expenditure is recognised as an asset because, without such costs, the entity is unable to produce and sell the associated petroleum products.

Government grants

Given the increasing focus of governments on managing and mitigating carbon emissions, CCS projects may receive government support, in one form or another. To date, the nature and extent of government support in respect of CCS projects has varied significantly across jurisdictions and projects.

IAS 20 *Accounting for Government Grants and Disclosure of Government Assistance* applies to the accounting for, and disclosure of, government grants and also to the disclosure of other forms of government assistance. The distinction between government grants and other forms of government assistance is important because the requirements of IAS 20 only apply to the former.

IAS 20 defines government assistance as "action by government designed to provide an economic benefit specific to an entity or range of entities qualifying under certain criteria". Government grants are defined as "assistance by government in the form of transfers of resources to an entity in return for past or future compliance with certain conditions relating to the operating activities of the entity".¹⁰

The standard identifies the following types of government grants:¹¹

- ▶ Grants related to assets are government grants whose primary condition is that an entity qualifying for them should purchase, construct or otherwise acquire long-term assets. Subsidiary conditions may also be attached restricting the type or location of the assets or the periods during which they are to be acquired or held
- ▶ Grants related to income are government grants other than those related to assets

In particular, government grants exclude the following:

- ▶ Assistance to which no value can reasonably be assigned
- ▶ Transactions with government that cannot be distinguished from the normal trading transactions of the entity, e.g., where the entity is being favoured by a government's procurement policy

Government assistance in the form of benefits that are available in determining taxable profit or loss or are determined or limited on the basis of income tax liability (e.g., income tax holidays, investment tax credits, accelerated depreciation allowances and reduced income tax rates) do not fall within the scope of IAS 20. In addition, government grants related to agricultural activity are covered by IAS 41.

Illustrative example - government grants

Scenario

A government has recently enacted legislation that enforces a high carbon tax for emitters. This legislation has the effect of providing sufficient security over the future demand for, and price of, carbon storage such that a particular CCS project developer is able to secure the required financing to proceed with its development.

Accounting analysis

Whilst the enacted legislation has indirectly supported the development of the CCS project, the support would fall outside the scope of IAS 20 on the basis that the standard states that "government assistance for the purpose of this Standard does not include benefits provided only indirectly through actions affecting general trading conditions, such as the provision of infrastructure in development areas or the imposition of trading constraints on competitors".¹²

¹⁰ IAS 20.3.

¹¹ IAS 20.3.

¹² IAS 20.3.

To the extent that government support is considered to represent a government grant, such support should be recognised when there is reasonable assurance that: (a) the entity will comply with the conditions attaching to them; and (b) the grants will be received.¹³

The standard does not define 'reasonable assurance', which raises the question of whether or not it means the same as 'probable' or 'more likely than not' as defined in other standards.¹⁴ The phrase 'reasonable assurance' is generally interpreted as being a high threshold, which we would suggest implies a significantly higher probability than 'more likely than not'. Therefore, we would not expect an entity to recognise government grants before it was significantly more likely than probable that the entity would comply with the conditions attached to them and that the grants would be received.

Grants should be recognised in the income statement on a systematic basis that matches them with the related costs that they are intended to compensate. Grants related to depreciable assets are recognised as income over the periods, and in the proportions, in which depreciation on those assets is charged. IAS 20 acknowledges that grants may be received as part of a package of financial or fiscal aid to which a number of conditions are attached. In such cases, the standard indicates that care is needed to identify the conditions that give rise to the costs and expenses which determine the periods over which the grant will be recognised as income. It may also be appropriate to allocate part of the grant on one basis and part on another.

Grants that are related to assets (i.e., those whose primary condition is that an entity qualifying for them should purchase, construct, or otherwise acquire long-term assets) should be presented in the statement of financial position either:

- ▶ By setting up the grant as deferred income, which is recognised as income on a systematic basis over the useful life of the asset
Or
- ▶ By deducting the grant in arriving at the carrying amount of the asset, in which case, the grant is recognised in profit or loss as a reduction of depreciation

Grants related to income should be presented either as:

- ▶ A credit in the income statement, either separately or under a general heading such as 'other income'
Or
- ▶ A deduction in reporting the related expense

Whilst an entity has a choice when presenting grants, such choice must be applied consistently to similar grants.

In certain instances, government grants can become repayable. In accordance with the standard, a government grant that becomes repayable after recognition should be accounted for as a revision of an accounting estimate.¹⁵

¹³ IAS 20.7.

¹⁴ Including IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*.

¹⁵ IAS 20.32.

After an entity has recognised a government grant, any related contingent liability or contingent asset should be accounted for under IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*.

How we see it

- ▶ As the nature of government support in respect of CCS projects varies significantly, detailed analysis will be required to determine the nature of any support and, therefore, the applicable accounting standard and appropriate accounting treatment.
- ▶ A government grant is recognised when there is reasonable assurance that: (a) the entity will comply with the conditions attaching to them; and (b) the grants will be received. As the standard does not define 'reasonable assurance', judgement will be required in determining whether such threshold is met.

EY exists to build a better working world, helping to create long-term value for clients, people and society and build trust in the capital markets.

Enabled by data and technology, diverse EY teams in over 150 countries provide trust through assurance and help clients grow, transform and operate.

Working across assurance, consulting, law, strategy, tax and transactions, EY teams ask better questions to find new answers for the complex issues facing our world today.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. Information about how EY collects and uses personal data and a description of the rights individuals have under data protection legislation are available via ey.com/privacy. EY member firms do not practice law where prohibited by local laws. For more information about our organization, please visit ey.com.

About EY's International Financial Reporting Standards Group

A global set of accounting standards provides the global economy with one measure to assess and compare the performance of companies. For companies applying or transitioning to International Financial Reporting Standards (IFRS), authoritative and timely guidance is essential as the standards continue to change. The impact stretches beyond accounting and reporting to the key business decisions you make. We have developed extensive global resources – people and knowledge – to support our clients applying IFRS and to help our client teams. Because we understand that you need a tailored service as much as consistent methodologies, we work to give you the benefit of our deep subject matter knowledge, our broad sector experience and the latest insights from our work worldwide.

© 2021 EYGM Limited.
All Rights Reserved.

EYG No. 008622-21Gb1
ED None

EYUK-000141613.indd (UK) 10/21.
Artwork by Creative London.



In line with EY's commitment to minimize its impact on the environment, this document has been printed on paper with a high recycled content.

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, legal or other professional advice. Please refer to your advisors for specific advice.

This publication contains copyright material of the IFRS® Foundation in respect of which all rights are reserved. Reproduced by EY with the permission of the IFRS Foundation. No permission granted to third parties to reproduce or distribute. For full access to IFRS Standards and the work of the IFRS Foundation please visit <http://eifrs.ifrs.org>

ey.com