GLOBAL CCS INSTITUTE

Brief

Inclusion of a carbon capture and storage method under the Emissions Reduction Fund

Global CCS Institute

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August, 2021

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Overview

The Australian Government's Low Emissions Technology Statement, released in 2020, identified carbon capture and storage (CCS) as one of several priority low emissions technologies. In late 2020, against the backdrop of emerging and progressing projects, and at the request of the Federal Government, the Clean Energy Regulator began developing a CCS method under the Emissions Reduction Fund (ERF). Inclusion under the ERF will allow CCS projects to generate Australian Carbon Credit Units (ACCUs) and thereby generate income.

Why CCS?

CCS is a proven and safe technology that prevents carbon dioxide (CO_2) from being released into the atmosphere. The technology involves capturing CO_2 produced by large industrial plants such as steel mills, cement plants, coal and natural gas fired-power plants, and refineries, compressing it for transportation and then injecting it deep underground – at least 800m below the surface – into a carefully selected and safe geological storage site, where it is permanently stored through being trapped in porous rock.

Carbon capture and storage (CCS) will be pivotal in the global responses to climate change. As highlighted by the recent Intergovernmental Panel on Climate Change (Sixth Assessment Report – Working Group I, The Physical Science Basis)[1], reducing greenhouse gas emissions to zero and keeping it at zero is an urgent and immense task.

The Intergovernmental Panel on Climate Change (IPCC) and numerous other institutions and studies have highlighted the crucial role of CCS in economically achieving a global net-zero emissions economy. The International Energy Agency's Sustainable Development Scenario (IEA-SDS), one model of how the goals of the Paris Agreement to keep global warming below 1.5 degrees may be realised, requires 15% of the world's emissions reductions to be achieved using CCS. This will require a one-hundred fold increase in the installed capacity of CCS facilities by mid-century.

In Australia, the opportunities for CCS range from applications in the oil and gas industry to hard-to-abate sectors like cement, steel, iron and chemicals. In the latter, which are high temperature heat-reliant or require fossil fuels in the chemical input and have no commercial alternative, CCS will be pivotal to achieving deep decarbonisation.

CCS is also key to the deployment of negative emissions technologies which will be needed to compensate for residual emissions in hard-to-abate sectors if net-zero emissions targets are to be met. CCS provides the foundation for technology-based carbon dioxide removal (CDR) solutions including bioenergy with CCS (BECCS) and direct air capture (DAC). While CDR is not a silver bullet, with every year that passes without significant reductions in CO2 emissions, the need to use negative emissions technologies increases.

The Value of CCS

CCS is more than a cost imposition in mitigating climate change. Rather, the technology suite can add tangible social and economic value where it is deployed.

CCS can create and sustain jobs. A key challenge in facilitating a just transition to net-zero is the disconnect between the geographic spread of jobs lost and created in the transition and timing of these changes. CCS allows existing industries to make a sustained contribution to local economies while they transition. In the deployment outlined in the IEA-SDS, new CCS facilities will require 100,000 ongoing employees. Further, new jobs will also be created in the supply of materials, equipment and professional services.

In Australia, CCS will be significant in the production of low carbon hydrogen at a globally competitive price, giving hydrogen good potential as part of local decarbonisation and for export. In anticipation of 530 Mtpa in global demand for hydrogen by 2050, CCS may be important in allowing Australia to emerge as a global competitor in the nascent hydrogen market.

CCS deployment also enables the re-use and deferral of decommissioning costs for infrastructure. As discussed in the Global CCS Institute report, The Value of CCS, "where oil or gas production fields are at the end of their lives, there may be opportunities to re-use existing oil and gas infrastructure by repurposing it for CO2 transport and storage." This may reduce the costs associated with building new transport and storage infrastructure and could defer the costs and environmental impacts of decommissioning.

What is the Emissions Reduction Fund (ERF)?

The Emissions Reduction Fund is the carbon crediting scheme in Australia through which the Federal Government purchases lowest cost carbon abatement from a range of sources. Established under the *Carbon Credits (Carbon Farming Initiative) Act 2011,* the ERF is a voluntary scheme that seeks to incentivise the adoption of technologies or systems which lower business emissions below what they otherwise would have been. The fund looks to provide a market-based mechanism that encourages the pursuit of general emissions reductions within the broader context of climate mitigation. As of 30 June 2021, the total number of projects registered under the ERF was 998, covering over 97 million Australian Carbon Credit Units. The Clean Energy Regulator states that the registration of ERF projects doubled in the first six months of 2021 compared to the same time last year.

How does the ERF work?

There are three key pathways for participation in the ERF: crediting, purchasing and safeguarding. Crediting comprises the determination of how much carbon will be abated in delivering an emissions reduction project. Projects registered under the ERF must deliver 'additional' emissions reductions – in other words, reductions that go beyond business-as-

usual activities. The Clean Energy Regulator (CER), which oversees the ERF, issues one Australian Carbon Credit Unit or ACCU for every tonne of CO_2 abated or stored.

Purchasing consists of a reverse auction, run by the CER, in which ACCUs are sold to generate income. Carbon abatement can be sold to either the government under contract or through the secondary market to organisations trying to offset their emissions. Project operators are paid for the ACCUs they deliver at the price proposed through the auction, allowing the CER to select the lowest cost abatement.

The final major component of the ERF scheme is the safeguard mechanism, which operates under the National Greenhouse and Energy Reporting scheme. To make sure that emissions reductions are additional and not displaced by increased emissions from other areas of the organisation, the safeguard mechanism establishes baseline levels of emissions. The safeguard mechanism requires facilities with 'direct scope 1' emissions of more than 100,000 tonnes of CO_2 equivalent per annum to maintain or reduce emissions at or below the determined baseline.

Developing a project under the ERF

As part of assessing the eligibility of a project, the CER asks developers to answer a relatively short, interactive questionnaire available on the regulator's website. Broadly, there are three qualification criteria. First, a project must be registered with the ERF prior to starting, otherwise referred to as the 'newness requirement'. A project can only commence once written notification from the CER has been received.

Second, a project must meet the aforementioned 'additionality requirement' and must not be required to be carried out by or under a Commonwealth, State or Territory law. Third, the project must not be likely to be carried out under another Commonwealth, State or Territory government program in the absence of registration under the ERF. Project developers will also have eligibility assessed under wider criteria, which includes the commercial readiness of the project, the legal right to undertake the project and a 'Fit and Proper Person' test for project developers to ensure the integrity of administered schemes.

Central to the planning stage is methodology (or method) selection. Approved methodologies outline the rules and requirements for estimating emissions reductions from project activities and monitoring, record keeping and reporting. The current methods for projects under the ERF include:

- a generic method for emissions reductions at facilities reporting under the National Greenhouse and Energy Reporting Scheme
- capture and destruction of coal mine fugitive emissions
- reductions in emissions-intensity of transport
- commercial, industrial and aggregated energy efficiency

- capture and combustion of landfill gas and agricultural waste
- alternative treatment of organic waste
- capture and combustion of biogas from wastewater, and
- methods for the land sector, including increasing soil carbon, reducing livestock emissions, expanding opportunities for environmental and carbon sink plantings, and reforestation.

When a project is operating and generating emissions reduction credits, project operators have several options that cover holding or selling their Australian Carbon Credit Units. Project operators can enter into a carbon abatement contract with the Clean Energy Regulator to sell their ACCUs through an auction process. Alternatively, operators can choose to register a project, commence operation and earn ACCUS, all prior to going to auction and entering into an abatement contract. An operator may also enter into a contract with the CER following registration but before carrying out the project.

At present a suitable method for carbon capture and storage does not exist, meaning CCS projects are excluded from the ERF. However, the Clean Energy Regulator has prioritised CCS as one of five methods for development. Formal inclusion within the ERF is anticipated before the end of the 2021 calendar year.

Why should CCS be included under the ERF?

A key barrier to investment in CCS is the lack of a clear price signal that places a sufficient value on CO_2. Absent a financial reward for storing CO_2 (or financial penalty for emissions), the necessary investment will not otherwise be made.

A Global CCS Institute thought leadership report estimates that, to reach a 100-fold increase in CCS capacity by 2050, the total capital requirement will be between US$655 bn and US$1,280 bn. Although most operational CCS projects have been financed on the books of large corporations or through government grants, private capital will be key to deploy CCS at necessary scale within such a short timeframe. By including CCS in the Emissions Reduction Fund (ERF), project developers have a clear financial incentive to progress projects, which is crucial in attracting private sector investment.

In other jurisdictions, notably the United States, tax credits have been recognised as enabling six large-scale CCS facilities since 2011. Enhanced oil recovery has also provided an important incentive through a long-term revenue source for earlier projects, again emphasising that where a business case exists for CCS, investment will be made.

Importantly, inclusion in the ERF will recognise the relevance of CCS among other low emissions technologies to achieve least cost emission reductions. Including CCS in the ERF is an important step in deriving the full emissions abatement, social and economic value from the technology suite.

What does the Draft CCS Method under the ERF include?

The Draft CCS method can be found here.

Several elements of the draft are particularly notable:

- New capture points are defined as new projects under the method, allowing for and promoting the development of CCS hubs. This takes advantage of the fact that many emissions intensive facilities are geographically concentrated, hubs and clusters significantly reduce the unit cost of CO_2 storage through economies of scale and offer commercial synergies that reduce investment risk.
- The crediting period for CCS projects has been extended to 25 years (whereas most methods under the ERF have a crediting period of 7 years), more adequately reflecting the long lifetime of a CCS project and capital investment required.
- The start date, from when the project can earn ACCUs, is up to five years after the Clean Energy Regulator declares a project to be successfully registered.
- The method excludes carbon capture and utilisation (CCUS) and direct air capture (DACCS) projects. However, the Government is in an ongoing process of seeking consultation on future methods which should be prioritised.

Timeline for adoption

Following planning and scoping and co-design drafting and development, the draft CCS method recently went out for public consultation. The draft method is in the process of refinement with ERAC (the Emissions Reduction Assurance Committee)[2] and Ministerial approval anticipated quarter three, 2021.

[1] IPCC Sixth Assessment Report from Working Group I – The Physical Science Basis https://www.ipcc.ch/report/ar6/wg1

[2] The Emissions Reduction Assurance Committee (ERAC) advises the relevant Minister as to whether a method should be made or varied based on whether it meets the offsets integrity standards found in the *Carbon Credits (Carbon Farming Initiative) Act 2011*