



Carbon credits: Australia's next big sunrise industry

KPMG Australia

October 2021

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Executive summary

In this report, *Carbon Credits: Australia's Next Big Sunrise Industry*, KPMG explains how Australia enjoys a comparative advantage in the removal of carbon over smaller, more densely populated countries.

As the parties to the Paris Agreement prepare to meet in Glasgow for the 26th UN Climate Change Conference (COP26), the Australian Government raised its level of ambition on emissions reduction having announced its firm intent to achieve a net zero by 2050 target. In making further choices on the pathway towards this target, careful consideration should be given to the benefits to Australia of being part of the emerging system of international carbon credits.

Article 6.2 of the Paris Agreement allows the parties to use “internationally transferred mitigation outcomes” to achieve their targets. That is, countries would be able to trade in carbon credits from carbon storage and other abatement measures. Article 6.2 states that when generating and trading in carbon credits, parties shall ensure environmental integrity and transparency, and apply robust accounting procedures.

If operationalised at Glasgow, Article 6.2 could be a further enabler for Australia to negotiate bilateral and regional agreements to trade in Australian Carbon Credit Units (ACCUs) issued and regulated by the Australian Clean Energy Regulator. Each ACCU issued represents one tonne of carbon dioxide equivalent (tCO₂-e) stored or avoided by a project. ACCUs that have not been surrendered, cancelled or relinquished can be traded. Voluntary demand for ACCUs is increasing, and is one of the factors driving up their prices, which have almost doubled in less than a year.

Article 6.2 recognises the potential gains from trade in carbon credits – just as it was recognised hundreds of years ago that each country should not seek to be fully self-reliant, but rather should specialise in and sell those goods and services in which it has a comparative advantage and buy those in which it has a comparative disadvantage.

Australia's vast tracts of land, extensive coastline and low population density bestow on the continent a natural comparative advantage in carbon removal over smaller, more densely populated countries. KPMG estimates that with current and foreseeable technologies Australia could have long-term carbon removal, capture and sequestration opportunities of up to 100 million tonnes per annum by 2050, which is around one fifth of current Australian emissions.

Further, Australia's relatively well-developed institutional framework administered by the Clean Energy Regulator offers a level of integrity in its carbon reduction projects, which will be a competitive advantage in this emerging market. Of course, there will always be room for improvement in methodologies and measurement associated with ACCUs and this will remain an ongoing project.

KPMG has found that up to three-quarters of global companies have committed to carbon targets. Many of these companies, including KPMG Australia, will be interested in purchasing ACCUs or other carbon units, offering further opportunities for Australia in carbon reduction. This prospectively huge private sector market for carbon credits would supplement or even exceed the value of government-to-government markets.

Properly regulated ACCUs can be expected to command a price premium over low-integrity alternatives, whose purchase by companies committing to zero net emissions can give rise to accusations of greenwashing their own carbon emissions.

Indeed, the private sector is demonstrating a willingness to pay a further premium for carbon reduction activities, with associated co-benefits, that also contribute to their other ESG goals such as positive biodiversity and socio-economic outcomes. A good example is the generation of ACCUs

through savanna fire management by Indigenous rangers in northern and central Australia, which command a premium price.

Carbon removal activities earning ACCUs, such as forest regeneration, plantation development and the storage of carbon in soil, offer new income-earning opportunities for Australian farmers, Indigenous communities and country towns, supplementing their incomes from more conventional activities. Our opportunities for geological sequestration and 'blue carbon offsets' (marine carbon sequestration) are also adjacent to many of Australia's regional and Indigenous communities. Some of these are in the midst of the energy transition, and these sunrise opportunities offer valuable long-term job opportunities.

However, the generation of carbon credits should not be used as an easy way out for Australia to reduce its direct emissions. Carbon credits should be seen as a complement to strong decarbonisation efforts and as a way to help meet science-based climate objectives at least cost.

Businesses, particularly those in sectors where certain emissions abatement is difficult to achieve, need to understand and strategically position within this rapidly growing market.

The Australian Government has an unsurpassed opportunity to create a sunrise industry for regional Australia in carbon credit generation, just as those areas have prospered from wool, wheat, clean, green agricultural produce and resources.

This industry will only meet its full potential if Australia engages fully in global efforts to address the challenge of climate change.

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Background

KPMG is a global network of professional firms providing a full range of services to organisations across a wide range of industries, governments and not-for-profit sectors. We operate in 147 countries and territories and have more than 219,000 people working in member firms around the world. In Australia, KPMG has a long tradition of professionalism and integrity combined with our dynamic approach to advising clients in the digital-driven world.

KPMG's commitment to Climate Action

KPMG supports scientific consensus that human activity is the primary cause of climate change and acknowledges our responsibility in limiting warming to less than 1.5° above pre-industrial levels.

Under our Climate Action Plan to 2022, we have committed to be a net zero emissions business, an enabler of the circular economy, and to transparently managing our climate risk and ongoing contribution to the UN Sustainable Development Goals.

KPMG is certified carbon neutral through Climate Active. On our journey to net zero, we are also committed to driving continuous operational improvement and minimising our impact on the planet through energy and waste efficiency, the sourcing of 100 per cent renewable energy, by reducing non-essential business travel and working with suppliers to minimise supply chain emissions.

Climate Change & Sustainability

KPMG's Climate Change & Sustainability team works with organisations to help them manage the risks and opportunities associated with climate change and sustainability issues, and to enhance all aspects of reporting and communication. We also provide assurance services over all non-financial disclosures to enhance the credibility of reported information.

Introduction – pathway to zero net emissions

Already 137 countries have committed to zero net emissions by 2050. China, responsible for an estimated 25 per cent of global emissions, has set a date of 2060 for zero net emissions.

Of the 191 parties to the Paris Agreement, more than 110 parties have so far submitted new or updated nationally determined contributions (NDCs), as required by the Agreement. According to the UN, their planned combined emission reduction by 2030 still falls far short of the level of ambition needed to achieve the goal of limiting global temperature rise to 1.5°C above pre-industrial levels.

While some countries have passed their commitments into law, most of the commitments at this stage have not been accompanied by the domestic changes needed to achieve the stated policy goals.

Following the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) released in August 2021, leaders will not want to return home from Glasgow declaring COP26 a failure. The IPCC report states that unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even to 2°C will be beyond reach.

Acknowledging the impracticality of achieving no greenhouse gas emissions by 2050, the IPCC and member countries express the goal in terms of net emissions. The IPCC recognises that in working towards achieving net zero emissions, carbon offset activities will play an important role in emission reduction alongside direct decarbonisation activities. Carbon credits created from such projects can also provide important social and environmental benefits and can be an enabler of essential technological developments.

Much of the momentum towards zero net emissions is being driven by the private sector. Since 2017, the number of companies disclosing carbon reduction targets has risen sharply. KPMG has found that two-thirds of the largest 100 companies in 41 countries (N100 companies) and three-quarters of the top 250 companies listed in the Fortune Global 500 ranking for 2014 (G250 companies) now have carbon reduction targets (KPMG 2021).

Section 1: Carbon credits and direct emission reduction

While carbon credits generated from removal projects can play a valuable role in reducing the amount of carbon in the atmosphere, they cannot and should not be used as a substitute for overall emission reduction. Carbon credits should not be considered an easy way out for countries to reduce their direct emissions. Rather, carbon credits should be seen as a complement to the emission-reduction task in those circumstances where direct emission reduction is exceedingly difficult, and eventually to drive a net carbon-negative outcome, which the IPCC scenarios see as necessary to avoiding more damaging climate change.

Methods of carbon removal and storage

Already there is an array of commercial ways to remove carbon. More are sure to follow. Examples of existing methods are:

- Storage in vegetation;
- Storage in soil;
- Storage in oceans;
- Carbon capture and storage (CCS);
- Technological removal (carbon extraction from the atmosphere); and
- Controlled burning of vegetation to prevent hot wildfires.

Storage in vegetation

Carbon can be stored in vegetation through the planting of trees and shrubs and allowing the revegetation of land that has been cleared for grazing, crop growing and other human-related purposes.

Tree planting can take the form of plantations, natural or accelerated reforestation of cleared areas, and the planting of hardy native species such as, in Australia's case, mulga and brigalow.

Storage in soil

The amount of carbon held in the top two metres of the earth's soils is around 1,500 billion tonnes, almost double the 820 billion tonnes held in the atmosphere (Garnaut 2021, p. 222). New and improved soil management practices can be highly effective in storing carbon.

In Australia, a soil carbon project involves removing carbon from the atmosphere and storing it in soil by increasing the amount of decomposing plant material and microbes in the soil. Carbon is stored in the soil from the breakdown of root, stem and leaf material of pasture grasses and crops (Clean Energy Regulator 2021).

Some project activities add extra carbon to the soil through increased growth – and consequently a greater volume of pasture and other plant-based matter, called 'biomass' – in paddocks. Further, projects that retain stubble can reduce the rate at which carbon is removed from an area, and consequently the rate at which soil carbon is depleted.

Storage in oceans

Mangroves are extremely efficient in storing carbon compared with forests on land. They can also store carbon for longer periods. Preventing the destruction of mangroves and rehabilitating mangroves degraded by human activity have the potential to contribute substantially to global carbon storage and at the same time protecting a vital natural habitat. See, for example, Chapman (2018) and Erickson-Davis (2018). Australia has the third largest area of mangroves globally. They're recognised as one of the most productive habitats on Earth with most located in the tropical north. There are also promising options for 'blue carbon' credits from ocean-based sequestration.

Carbon capture and storage (CCS)

CCS is a process that captures carbon dioxide emissions from sources such as energy-intensive industries and gas fields, storing it deep underground to prevent it permanently from entering the atmosphere. A typical storage facility is a depleted underground geological reservoir from which oil or gas had been extracted.

CCS has been identified as a priority low-emissions technology in several countries to reduce the impact of emissions-intensive industries. While the technology has not been without its challenges, it has the potential to contribute to the global emission-reduction task and, according to the International Energy Agency (IEA), without CCS, zero net emissions by 2050 will be almost impossible to achieve.

Carbon extraction from the atmosphere

Various direct air capture technologies are being developed to extract carbon dioxide from the atmosphere, allowing it to be then stored underground via CCS. In Australia, the CSIRO is developing what it calls an Ambient CO₂ Harvester. It has the potential to capture large amounts of carbon dioxide from the atmosphere annually.

Controlled burning of vegetation

Although not strictly a removal activity, more an emissions-avoidance approach, savanna burning is an increasingly used method of generating ACCUs. Burning vegetation might seem a strange way to reduce emissions, but Australian flora and fauna depend on fire for regeneration and regrowth of vegetation. As the Nature Conservancy Australia (2021) points out:

"For tens of thousands of years, Australian flora and fauna evolved in the presence of fire, indeed they depend on it for regrowth and regeneration. Much of this fire was lit by Indigenous Australians who – for at least 50,000 years – lit small fires as they moved around the landscape. This helped them hunt for food, clear pathways and regenerate the bush.

With European settlement came a change to the traditional Indigenous way of life, and burning was interrupted ...

Without regular people-lit fires in the cooler months, dry grass builds up and provides fuel for much bigger bushfires caused by lightning at other times of the year. These hotter, larger fires have a devastating effect on vegetation and animals in their path, and they release huge volumes of greenhouse gases into our atmosphere. This is a very bad outcome for climate change."

Under various programs, Indigenous rangers in northern and central Australia light smaller fires at cooler times of year. This re-creates the mosaic pattern of burning that occurred prior to European settlement, supporting wildlife, suppressing invasive weeds and preventing raging wildfires in the late dry season that emit vastly larger amounts of carbon into the atmosphere.

Section 2: Australia's comparative advantage in carbon removal and storage

Australia's large land mass, extensive coastline and small population density give it a natural comparative advantage in the removal and storage of carbon over smaller, more densely populated countries.

Moreover, while the amount of carbon stored per hectare of Australian prime agricultural land is greater than that from more marginal cropping and rangelands, the opportunity cost is greater on prime land. For example, planting blue gum in the Hunter Valley or the Coonawarra or Margaret River districts could be expected to result in more carbon storage per hectare, but this would forego using that land for vineyards to produce premium-quality wine.

It makes good economic sense in the storage of carbon, therefore, to use more marginal land for the planting of hardy trees and shrubs and the revegetation of cleared land. Mallee shrublands and brigalow woodlands are good examples of ecosystems that are suitable for carbon storage.

A second source of comparative advantage for Australia in carbon removal is its geology, including the prevalence of depleted petroleum reservoirs. These can be secure places into which carbon can be reinjected through CCS, especially where infrastructure such as pipelines remains intact and in good condition.

Australia's institutional framework

In 2012, the Australian Government introduced carbon pricing, whereby large emitters were obliged to purchase carbon permits for each tonne of carbon emitted above a transitional level of free permits. In the same year the Australian Government established the Clean Energy Regulator as an independent statutory authority to implement carbon pricing and trading. The Clean Energy Regulator issued carbon permits at a fixed price of A\$23 per tonne of carbon.

Under the Carbon Farming Initiative, also established in 2012, farmers and graziers were to be able to plant vegetation to generate Australian Carbon Credit Units (ACCUs) for on-selling to emitters to offset some of their liability for the carbon price.

Having abolished the emissions trading system of mandatory carbon pricing in 2014, the new Australian Government nevertheless retained ACCUs, which are mainly purchased by the Government under the Emissions Reduction Fund. ACCUs can also be used by large emitters to comply with their obligations under the Safeguard Mechanism, which was also established in 2014. This specifies that these emitters are not permitted to exceed their approved baseline emission levels without purchasing ACCUs to offset the extra emissions. Baselines were set at fairly generous levels, so that Safeguard Mechanism demand has been relatively smaller.

At present, most ACCUs are generated across three of the Emission Reduction Fund's methodologies: Vegetation Management; Landfill and Waste; and Agriculture. Examples of projects are avoided deforestation and human-induced revegetation, sequestration of carbon in soil, landfill gas, and savanna burning.

As from 1 October 2021, ACCUs will also be able to be created by CCS. Potential hubs for CCS identified by the Australian Government are Moomba (South Australia), Gladstone (Queensland), the Darling Basin (New South Wales), Darwin (Northern Territory), and the North West Shelf, Bonaparte Basin and south western regions of Western Australia.

The Clean Energy Regulator remains a significant purchaser of ACCUs. More recently, ACCUs have formed a growing part of companies' voluntary efforts to meet their own emission reduction targets. These new entrants are one of the contributory factors to the increasing price of ACCUs. For most of 2020 the spot price of ACCUs was below \$17, but in 2021 it has risen sharply to more than \$30.

As more buyers enter the market to achieve their voluntary emission-reduction targets, ACCU prices are expected to rise further. Some purchasers may also be anticipating the reintroduction of mandatory carbon pricing and are strategically positioning themselves in advance.

Additional benefits from Australian carbon projects

As explained by the Clean Energy Regulator, co-benefits (associated with carbon projects) can include environmental, economic, social and cultural benefits for farmers, businesses, landholders, Indigenous Australians and communities. Examples of co-benefits are: improving water quality; reducing soil erosion; and reducing salinity through revegetation activities.

Savanna projects use traditional knowledge and provide on-country economic opportunities for Indigenous communities. Controlled burns improve pastoral productivity by stimulating grass regrowth and inhibiting woody weeds. Reduced wildfire intensity reduces threats to property, livestock and infrastructure.

An example of fire management in West Arnhem Land generating benefits additional to carbon reduction is underway by Warddeken Land Management Ltd. The Traditional Owners of the Warddeken Indigenous Protected Area formed Warddeken Land Management Ltd as an Aboriginal-owned, not-for-profit company combining traditional ecological knowledge with Western science to manage and protect one of Australia's most unique environments. The Indigenous rangers work on a variety of projects including fire management and carbon abatement, weed and feral animal control, rock art conservation, education and cultural heritage management.

These additional benefits can be of value to purchasers of ACCUs, since they help achieve their ESG goals. For example, businesses are willing to pay a premium price for ACCUs generated by Indigenous fire management practices as accredited by the Clean Energy Regulator.

The Australian Government has announced an agricultural climate policy to deliver a scheme that enables farmers to earn credits for environmental gains as well as for carbon abatement. The Biodiversity Stewardship Program will feature a certification system where environmental improvements are officially recognised, enabling farmers to take their earned certificates to financial institutions as testament to improved land value, which can increase the landowner's access to capital.

Section 3: International carbon trading

Article 6.2 of the Paris Agreement, which hopefully will be operationalised at the COP26 meeting, provides for the establishment of carbon trading between countries.

Article 6.2 allows a country that has overachieved its climate targets under its nationally determined contribution to sell its surplus achievements – called mitigation outcomes (MOs) – to a country that is not achieving its targets. The purchasing country can then count this carbon abatement towards its nationally determined contribution.

With the integrity of ACCUs provided by the Clean Energy Regulator, agreements could be negotiated by the Australian Government with regional neighbours such as Japan, Korea and Singapore. Carbon credits such as ACCUs could be traded directly to reduce the cost of emission reduction. In addition, gains from carbon trade could be facilitated by trading zero emissions fuels, with Australia's domestic regulatory settings being used to underpin their carbon-neutral claims.

In addition, businesses in those and other countries that have made net-zero commitments could purchase ACCUs as part of meeting those commitments.

If carbon trading pursuant to Article 6.2 of the Paris Agreement is implemented, the potential market for ACCUs could be massively expanded. Combined with increased ambition in country and corporate emission reduction targets, this could greatly increase the returns to Australian producers of ACCUs, making more carbon projects economically viable.

ACCUs would be priced at a premium over similar but lower-integrity carbon units. These might seem an inexpensive way to meet company commitment to zero net emissions, but they carry with them big risks. Just as high-quality products attract a price premium over low-quality alternatives, so would ACCUs backed by the Clean Energy Regulator attract a premium over lower-quality units.

Of course, this premium requires diligence on the part of the Clean Energy Regulator to develop and enforce mechanisms in order to ensure that for each ACCU one tonne of carbon has truly been avoided or removed. Critiques of the Clean Energy Regulator's methodologies, monitoring and enforcement of carbon reduction projects will be made from time to time. Vigilance on the part of the Clean Energy Regulator will be essential to the maintenance of the value of ACCUs.

Establishing international markets for ACCUs

Agreements pursuant to Article 6.2 could be negotiated with regional neighbours such as Japan, Korea and Singapore. This could be done through standalone agreements or through new chapters of the existing bilateral free-trade agreements with these and other countries.

A further possibility is to regionalise agreements through APEC. This could start with APEC members most willing to negotiate agreements, expanding later to other interested APEC members.

Of course, other regional neighbours wishing to develop tradeable carbon credit units consistent with Article 6.2 would be encouraged to do so. Eligible projects could include rainforest restoration, controlled burning, storage of soil carbon through more sustainable agricultural practices, mangrove rehabilitation and CCS.

The Clean Energy Regulator is already developing a carbon market exchange – the Australian Carbon Exchange. It will operate in a similar way to online stock exchanges, but in the purchase, clearing and settlement of ACCUs. According to the Clean Energy Regulator, development of the Australian Carbon Exchange will support Australian industry by increasing market transparency. It will also

accelerate emission reduction and provide a boost to Australia's economy. The exchange will make the trading of ACCUs simpler, supporting the rapidly increasing demand from the corporate sector.

Australia will need to lift its ambition for emission reduction

While international carbon trading, through the generation and sale of ACCUs, can be a new opportunity for Australia, its potential will depend on Australia's own ambition. The development of the Australian Carbon Exchange is a step in the right direction to create a mechanism that could be used for the trading of credits with other markets.

The important balance to be achieved at both a country and company level is a strong and focused commitment to direct decarbonisation actions, with carbon credits being complementary to this global agenda.

Climate action has often been regarded as costly to Australia and to its regions. Australia has a new sunrise industry in prospect, one that can bring enormous benefits to regional Australia, including many regions that are already in the midst of an energy transition.

This industry will only meet its full potential if Australia engages fully in global efforts to address the challenge of climate change.

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