Blue Carbon: A step too far? **Robert Hill & Daisy Moore**

The Australian Government has just approved a method allowing 'blue carbon' projects to earn Australian Carbon Credit Units. In a world of rapidly expanding carbon offset opportunities, some are asking: is this a step too far?

With Member States to the United Nations Climate Change Convention increasingly pledging to net zero carbon, there is rising attention not only on actions to directly reduce emissions by source, but also to remove carbon by utilising 'carbon sinks,' which are forests and other ecosystems that absorb carbon. Both are legitimate mitigation actions endorsed by Article 4 of the Paris Agreement. Member States report their mitigation outcomes taking into account reductions and removals.

Within their respective jurisdictions, Member States regulate individual emitters to varying degrees. Many bind business entities to mitigate their emissions and dictate rules to which they must comply and report. These rules include the extent and terms upon which a business entity is enabled to offset its emissions. Carbon offsets are basically a reduction of emissions of carbon dioxide or other greenhouse gases to compensate for emissions generated elsewhere.

The Australian Government facilitates investment in carbon sinks through issuing Australian Carbon Credit Units (ACCUs). ACCUS are issued by the Clean Energy Regulator with each ACCU representing one tonne of carbon dioxide equivalent stored or avoided by a project. Projects must meet a number of requirements. In particular there must be an approved methodology for the type of project and projects must meet additionality requirements. The number of ACCUs issued for a project will reflect the number of tonnes net abatement to be achieved by the project over the reporting period.

Through the Emissions Reduction Fund, the Government purchases back ACCUs on the basis of lowest cost abatement, thus providing an incentive for investment in carbon sinks. Furthermore, some emitters in Australia, such as large facilities covered by the Safeguard Mechanism, are obliged to reduce their emissions. They can alternatively purchase ACCUs to meet the difference between their actual and allowable emissions, again providing a funding source for sinks. Most emitters in Australia are not obliged to reduce emissions, but many are now voluntarily acting to reduce their net emissions within the spirit of the Paris Agreement, including offsetting emissions through the purchase of ACCUs, or in response to pressure from shareholders. This has created a vibrant market with rising prices – currently at around A$54/t – supporting growth in projects.

Since the program for creating and granting ACCUs commenced in 2011, the opportunities to earn credits in both the land and industry sectors have expanded substantially. Early approved methods included:

- Alternative waste – diverting legacy waste for fuel manufacture, or to alternative waste treatment or composting facilities,
- Landfill-capture and combustion of methane,
- Livestock-capturing methane from piggeries,
- Savanna burning, and
- Vegetation-avoided deforestation, and environmental plantings.

Other methods have followed including soil carbon in 2018, which was modified last year to allow for measurement utilising accounting models to estimate soil organic carbon

sequestration. This trend toward model-based measurement has facilitated cost effective uptake of these investment opportunities.

But the government needs more projects and more sequestration. Former Managing Director of Origin Energy, Grant King, had in 2019 been commissioned to give advice to the Government on expanding the scheme, and in October last year Minister Angus Taylor announced that the Government had developed a methodology for carbon capture and storage projects. This he said was a world first.

Minister Taylor then announced priorities for a suite of new methods covering:

- Transport, including emissions reductions created by electric vehicle charging and hydrogen refuelling infrastructure;
- Hydrogen, including injection of clean hydrogen into the gas network, and the use of hydrogen in electricity generation or other uses, such as low carbon steel;
- 'Method stacking,' or the integrated farm method, allowing separate land-based activities to be combined or stacked on the same land;
- Carbon Capture Use and Storage including utilising captured carbon in the production of industrial and building materials; and
- Savanna fire management by expanding the carbon pools and vegetations covered under the existing methodology.

Minister Taylor also foreshadowed research and technology development to support future methods, including:

- Expanded recognition of different sources of agricultural waste as feedstocks, to support an enhanced biomethane or "green gas" method;
- Livestock feed technologies to reduce emissions from agriculture in the future; and
- Direct air capture technologies, which absorb carbon from the atmosphere for reuse or permanent storage underground.

Then in January, our hyperactive Minister (not a criticism) announced the approval of four new methods:

1. Industrial and Commercial Emissions Reduction methods such as upgrading or replacing equipment and fuel switching;
2. Plantation Forestry, building on the existing methods;
3. Biomethane, to expand existing waste methods to include biomethane activities such as capturing and reefing biogas from organic waste, animal effluent and wastewater; and finally,
4. Blue carbon

'Blue carbon' refers to carbon captured by ocean and coastal ecosystems. According to the National Oceanic and Atmospheric Administration (NOAA), an American scientific and regulatory agency within the US Department of Commerce, sea grasses, mangroves and salt marshes along the coastline sequester carbon at a much faster rate than terrestrial forests and can hold this carbon as a carbon sink for millions of years. Protecting and restoring these coastal habitats is therefore a good way to reduce climate change. This is without even considering the co-benefits in terms of habitat conservation, storm protection and nursery habitat for commercial and recreational fishing.

The US was the first nation to include blue carbon in its national greenhouse gas emissions inventory. Australia similarly reports on blue carbon in its inventory – utilising the Intergovernmental Panel on Climate Change 2013 Wetlands Supplement. This means that Australia can claim credit for legitimate offsets within the sector.

Whilst the Minister was able to proudly claim credit for the growth of the scheme, the 1000th project had been registered, and the 100 millionth ACCU issued, some were questioning whether this growth in quantity has been at a cost in quality.

In fact, work towards an ERF method for blue carbon had commenced in about 2016, with the Government commissioning CSIRO to do a technical review of blue carbon abatement opportunities under the ERF. CSIRO had identified the following activities as worth exploring further:

- Reintroduction of tidal flows to restore mangrove and tidal marsh ecosystems,
- Land use planning for sea-level rise to allow inland migration of mangrove and tidal marsh,
- Avoidance of seagrass loss from direct physical disturbance,
- Avoidance of seagrass loss and reestablishment or creation of new seagrass ecosystems,
- Avoided clearing (mangroves) and avoided soil disturbance (mangroves and tidal marsh).

The Government published a scoping study in September 2018 in which it said that the first of the above options had been found to be the most promising to progress in the first instance. It also announced that it would set up a blue carbon method Working Group to help progress development of the method.

The announcement this January was that the ERF will now credit eligible carbon projects that introduce tidal flows to help establish coastal wetland ecosystems. An eligible project would involve the removal or modification of a tidal restriction mechanism to introduce tidal flow to ecosystems, including supratidal forests, mangroves, saltmarshes and seagrass. Abatement would be achieved by increasing carbon stored in soil or vegetation, and/or avoiding emissions from soils as they are rewetted, or from freshwater wetlands being returned to saline wetlands.

The method for calculation of net abatement is to be model based, with the Government publishing a blue carbon accounting model technical overview. A proponent could choose either a 25 or 100 year permanence period. A sequestration buffer is to be applied to counter the loss of containment.

So blue carbon has been introduced into a rapidly expanding program, and at a time when there is growing suspicion of “greenwashing”. Is this a step too far?

The Government believes blue carbon projects could result in up to 3 million tonnes of abatement. We are told that on the East coast of Australia (QLD and NSW) there is a combined 100,000 hectares of land that has been historically disconnected from tidal influence. Other projects have been canvassed in SA and Victoria. So there does seem to be sufficient scope to make the program worthwhile. Then of course there are all the co-benefits in terms of ecosystem resilience and conservation habitat.

The quality of a project including hydrological assessments and engineering will be key. The abatement must be measurable and verifiable, so the veracity of the accounting model is important. A commitment to maintain the asset for the long term is also essential. These will

be complicated projects and the Government and its agencies have an interest in preserving the Offsets Integrity Standards.

The Government does seem to have started at the conservative end of the blue carbon spectrum. It had also the benefit of international experience in the Verified Carbon Standard's "Methodology for Tidal Wetland and Seagrass Restoration VM0033." The accounting models are complicated but a lot of work has been done globally to design models which will withstand critical analysis.

There is no doubt that there is growing focus on the importance of coastal ecosystems in the global carbon inventory. This is encouraging actions in both conservation and restoration. But actions need to be financed, and if projects do genuinely protect the existing carbon sinks, and support removal of carbon otherwise emitted, then there is no reason why they should not be seen as legitimate as the other opportunities within the land use sector. The government is up with the global leaders in endorsing this blue carbon opportunity and should be commended for its initiative.

Hon Robert Hill AC

Hon Robert Hill AC Robert Hill was Australia's Environment Minister from 1996-2002. He led the Australian delegation at the Kyoto climate change conference and introduced Australia's Renewable Energy Target. He is currently Adjunct Professor in Sustainability at the US Studies Centre at the University of Sydney and Chairman of the Cooperative Research Centre for Low Carbon Living at the University of New South Wales.

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