



ISSN Print: 2541-5298
ISSN Online: 2541-6464

SRIWIJAYA Law Review

Editorial Office: Faculty of Law, Sriwijaya University
Jalan Srijaya Negara, Palembang, South Sumatra 30139, Indonesia.
Phone: +62711-580063 Fax: +62711-581179
E-mail: sriwijayalawreview@unsri.ac.id| sriwijayalawreview@gmail.com
Website: <http://journal.fh.unsri.ac.id/index.php/sriwijayalawreview>

Regulatory Support for Biosequestration Projects in Australia: A Useful Model for Transition to Net-Zero Emissions?

Steven Geroe^{a*}

^{a*} School of Law, La Trobe University, Australia. Corresponding Author Steven Geroe, email: s.geroe@latrobe.edu.au

Article	Abstract
<p>Keywords: Biologic carbon sequestration; Carbon offsets; Climate change; Emissions mitigation; Regulation.</p> <p>Article History Received: Nov 10, 2021; Reviewed: Des 30, 2021; Accepted: Jan 24, 2022; Published: Jan 31, 2022.</p> <p>DOI: 10.28946/slrev.Vol6.Iss1.1510.pp1-23</p>	<p>This paper considers the effectiveness of Australian regulatory measures to support storing atmospheric carbon in plants and organic matter in soils (biosequestration), a central element of the Australian greenhouse gas (GHG) emission policy through the Emissions Reduction Fund (ERF). Eligible methodologies under the ERF are broader than those in other jurisdictions. Hence Australian experience may have international application. The functionality of Australian regulation to achieve GHG emissions reduction is considered, focusing on provisions relating to additionality, permanence, monitoring, reporting and verification of emissions bio-sequestration. This analysis is conducted by reviewing key publications by research organisations, academics, government departments, industry organisations, environmental organisations and private sector consultancies. While the integrity of Australian biosequestration offsets is generally well regarded, persistent issues have been identified with regard to the additionality of avoided deforestation methane capture in intensive agriculture and landfill gas projects. The proportion of Australian emissions represented by existing biosequestration offset projects is deficient. These issues must be addressed in order to scale up biosequestration projects as an effective element of Australia's net-zero emissions strategy. It can best be achieved by tightening Safeguard Mechanism baselines to drive demand for carbon credits and funding the Clean Energy Regulator to implement effective, independent MRV. Ongoing regulatory reform will be necessary to address such issues as they arise in the course of the implementation of specific methodologies. Nonetheless, ongoing emissions risks relating to biosequestration and other offset projects can only be adequately addressed by complementary policy to reduce emissions at the source.</p>

©2022; This is an Open Access Research distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original works are properly cited.

INTRODUCTION

As agriculture, forestry, and other land use (AFOLU) account for almost one-quarter of global greenhouse gas (GHG) emissions,¹ methods to reduce emissions from land are crucial to meet UNFCCC climate targets. Projects designed to store atmospheric carbon in plants and organic matter in soils (terrestrial biosequestration) and marine biosequestration can create carbon sinks of global significance.² This potential is reflected Paris Agreement Article 4.1,³ calling for a balance in investment in carbon mitigation and carbon sinks.

In late 2021, Australia committed to achieving net-zero emissions by 2050.⁴ Carbon sinks created by terrestrial as opposed to marine biosequestration projects are a significant element of Australia's strategy to achieve this target.⁵ Examples include forestry-related projects and farming methods designed to build up soil carbon. Indeed, following the repeal of the Carbon Pricing Mechanism (CPM) in 2014 (a fixed carbon price planned to transition to an emissions trading scheme), biosequestration projects have played a central role in Australian emissions policy under the Emissions Reduction Fund (ERF). Hence this paper's examination of the effectiveness of regulation of biosequestration projects relates to a central element of Australia's low-carbon transition strategy.

Additionally, Australian regulatory support for biosequestration covers a broader range of project types than other international schemes.⁶ Perhaps the most potentially significant such category is soil carbon sequestration, in which Australian research organisations such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO) have globally recognised expertise.⁷ For these reasons, regulatory support of biosequestration projects in Australia has the potential for more international application. Given projected significant increases in Australian agricultural production to meet regional demand,⁸ moreover, these projects are of increasing significance to moderating economy-wide emissions in Australia.

¹ "Intergovernmental Panel on Climate Change, *Climate Change and Land: An International Panel on Climate Change Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*," 2020, https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf. The term bio-sequestration is used as a short form of biologic, as opposed to geologic, sequestration. See USGS, "What's the Difference between Biologic and Geologic Sequestration?" https://www.usgs.gov/faqs/what-s-difference-between-geologic-and-biologic-carbon-sequestration?qt-news_science_products=0#qt-news_science_products.

² Rosemary Rayfuse, "Drowning Our Sorrows to Secure a Carbon Free Future – Some International Legal Considerations Relating to Sequestering Carbon Fertilising the Oceans," *University of New South Wales Law Journal*, no. 31 (2008): 919-920.

³ Paris Agreement, "Opened for Signature 22 April 2016 [2016] ATS 24 (Entered into Force 4 November 2016), [4.1]." (n.d.).

⁴ "Australian Government Department of Industry, Science, Energy and Resources 'Australia's Long-Term Emissions Reduction Plan: A Whole-of-Economy Plan to Achieve Net Zero Emissions by 2050,'" 2021, [https://www.industry.gov.au/sites/default/files/October 2021/document/australias-long-term-emissions-reduction-plan.pdf](https://www.industry.gov.au/sites/default/files/October%2021/document/australias-long-term-emissions-reduction-plan.pdf).

⁵ "Australian Government Department of Industry, Science, Energy and Resources 'Australia's Long-Term Emissions Reduction Plan: A Whole-of-Economy Plan to Achieve Net Zero Emissions by 2050.'" 76

⁶ Jonathan Verschuuren, "Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative," *Climate Law* 7, no. 1 (2017): 6–7.

⁷ "For Information on the Soil Carbon Research Program See Commonwealth Scientific and Industrial Research Organisation," n.d., <https://csiropedia.csiro.au/soil-carbon-research-program/>.

⁸ See for example "National Farmers Federation, 2030 Roadmap: Australian Agriculture's Plan for a \$100 Billion Dollar Industry," 2020, https://nff.org.au/wp-content/uploads/2020/02/NFF_Roadmap_2030_FINAL.pdf.

This paper examines Australian regulatory support for biosequestration projects, drawing on a review of key publications of the full range of stakeholders and researchers. These include government departments, industry organisations, research organisations, scholarly researchers, industry organisations, international organisations, environmental organisations and private sector entities. While this study is not a comparative analysis, the approach to functionalism in comparative law informs the evaluation of law concerning its functionality in achieving defined results⁹ – i.e. GHG emissions reduction to achieve Australia's 2050 net-zero target through biosequestration. More specifically, the paper reviews evidence of the adequacy of provisions relating to additionality, permanence and monitoring, reporting and verification (MRV) of emissions in the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth.) and related regulation.

As this area is characterised by an accumulation of overlapping policies, programs and regulatory measures over time, a chronological approach is adopted. Section Two explains why the agricultural sector was excluded from a proposed emissions trading scheme in 2010, mainly for reasons of complexity, uncertainty and cost of methodologies, particularly for less well-resourced farms. It explains why on-farm biosequestration Carbon Farming Initiative (CFI) projects were included as an eligible offset category of the Carbon Pricing Mechanism (CPM) in 2011 - to develop project methodologies in the most favourable circumstances, creating a source of on-farm income that could be extended to other farms on demonstration of viability. Section Three explains how the CFI transitioned into the Emissions Reduction Fund (ERF) and its associated Safeguard Mechanism on the repeal of the CPM in 2014, and the relationship between the ERF and the Carbon Solutions Fund now under development. While it contains a summary description of key project types, technical details of multiple project methodologies are beyond the scope. Section Four considers key regulatory provisions for ERF projects, focusing on permanence, additionality and monitoring and enforcement of emissions reductions. Section Five examines the Australian voluntary carbon market, including the Carbon Industry Code of Conduct. Section Six provides a summary of the more important state-level bio-sequestration programs. Section Seven provides a summary outline of compliance and voluntary carbon market trends in Australia in the context of global trends. Section Eight outlines key reform proposals of the King and Climate Change Authority reviews of the ERF. These reviews have found that the ERF has generally functioned effectively and has a high level of integrity supported by provisions on permanence, additionality and MRV. Nonetheless, improvements are needed in terms of the development of specific methodologies. ERF reviews have suggested a range of reforms to support smaller-scale on-farm bio-sequestration projects, to implement a more streamlined and whole-farm approach to emissions management. The Australian government has largely adopted these recommendations, which are undergoing consultation and development. The final section concludes that while the integrity of Australian bio-sequestration offsets is generally well regarded, persistent problems have been identified concerning the additionality of avoided deforestation methane capture in intensive agriculture and landfill gas projects. Moreover, the proportion of Australian emissions represented by existing

⁹ Penelope J. Crossley, *Designing Sustainable Development - The Effectiveness of PV Solar Regulation in Australia and China*, *Asia Pacific Journal of Environmental Law* 15, vol. 1, 2013. This methodology was initially set out in Konrad Zweigert and Hein Kotz, 1998. *An Introduction to Comparative Law*, Clarendon Press, 3rd ed, 34-35

biosequestration offset projects is deficient. The most effective ways to address these issues would be to tighten Safeguard Mechanism baselines to drive demand for carbon credits generated by biosequestration projects and to resource, the Clean Energy Regulator adequately to implement effective, independent MRV. Ongoing regulatory reform will be necessary, moreover, to address additionality and technical issues arising in the course of implementation of specific methodologies. Nonetheless, ongoing emissions risks relating to biosequestration and other offset projects can only be adequately addressed by complementary policy to reduce emissions at the source.

ANALYSIS AND DISCUSSION

Agriculture, Emissions Trading and Biosequestration Projects

The development of regulation of biosequestration projects in Australia has occurred in the context of treatment of agriculture in successive proposals for emissions trading schemes. This is because a large proportion of biosequestration projects in Australia are conducted on agricultural properties, as well as in the forestry sector and on indigenously owned land. In 2010, the Rudd Labour government excluded agriculture from the Carbon Pollution Reduction Scheme (CPRS), a proposed ETS that (for political reasons) was never implemented. The main reasons for the exclusion of agriculture were uncertainties about the application of complex abatement and emissions measurement methodologies across the great diversity of Australian agricultural businesses and economic impacts – particularly on smaller, less well-resourced properties. In 2011 the Gillard Labour government legislated the Carbon Pricing Mechanism (CPM), which differed from the CPRS proposal in several ways. It commenced operation on 1 July 2012 and was designed to operate with a fixed price until 2015, at which time it would transition into a cap-and-trade market price ETS. The Carbon Farming Initiative was established by the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth) (the CFI Act). It was a voluntary carbon abatement scheme, through which participants could earn offset credits for the CPM in the form of Australian Carbon Credit Units (ACCUs). This created a financial incentive to develop abatement and measurement methodologies in the most viable agricultural conditions while avoiding costly obligations in more challenging circumstances. The CPM was repealed in 2014 by the Abbott Coalition government. At that time, the CFI was integrated into the Emissions Reduction Fund (ERF). The ERF continued to function based on the CFI Act, the *Carbon Credits (Carbon Farming Initiative) Regulations 2011* (the CFI Regulations) and the *Carbon Credits (Carbon Farming Initiative) Rule 2015* (the CFI Rule). CFI projects automatically continued under the ERF.¹⁰

The Emissions Reduction Fund, the Safeguard Mechanism and the Carbon Solutions Fund *The ERF and the Safeguard Mechanism*

After the repeal of the CPM in 2014, the ERF and its associated Safeguard Mechanism (SM) became the Australian federal government's central policy for addressing GHG emissions. The ERF is a voluntary scheme, implemented to date through reverse auctions for government

¹⁰ Clean Energy Regulator, “Carbon Farming Initiative,” n.d., <http://www.cleanenergyregulator.gov.au/Infohub/CFI/Carbon-Farming-Initiative>.

contracts, selling to the lowest price bidder for emissions reduction projects. Participants can earn Australian carbon credit units (ACCUs) for emissions reductions achieved through accredited projects. One ACCU is earned for each tonne of carbon dioxide equivalent (tCO₂-e) stored or avoided by a project. ACCUs can be sold to generate income, either to the Clean Energy Regulator (CER) through a carbon abatement contract or in the secondary market. Other than the CER, buyers are ERF participants whose projects did not generate sufficient credits to meet contractual obligations, entities with obligations under the Safeguard Mechanism (SM), or organisations with mitigation objectives implemented through the voluntary carbon market.¹¹

The SM was initially designed to ensure covered facilities' emissions did not *exceed* the CER's historical business as usual (BAU) baselines. The rationale was to prevent emissions mitigated through the ERF from being offset by rising emissions elsewhere in the economy. Thus the ERF was designed only to *reduce* the emissions of firms voluntarily opting into the scheme through tendering for abatement projects. The SM applies to facilities with direct emissions of over 100 000 t/CO₂-e per year. It includes electricity generation, mining, oil and gas, manufacturing, transport, construction and waste, covering around half of Australia's emissions. From 1 July 2018, covered facilities can purchase and surrender ACCUs generated by ERF projects or on the voluntary carbon market to offset emissions over their baseline. The 2019 amendments to SM baseline rules were designed to facilitate amending baselines to reflect actual production increases and incorporate more emissions intensity as opposed to absolute emissions indicators.¹² Thus the SM is no longer designed to prevent increases in economy-wide emissions. At the 2019 Federal election, the Labour opposition proposed tightening baselines to reduce emissions by forty-five per cent from 2005 levels by 2030 and expanding it into a baseline and credit ETS through permit trading between covered facilities in addition to existing purchase options for ACCUs.¹³ The 100 million ACCUs traded since the inception to the ERF in 2014 to 2021 accounted for just two per cent of Australia's emissions for that period.¹⁴

The ERF Project Types

The ERF projects include avoided emissions of methane from the digestive tract or dung of livestock, or from rice fields, soil, landfill gas, or methane or nitrous oxide from the burning of savannas or grasslands, crop stubble/residue, or sugar cane before harvest. It also includes bio-sequestration projects through soil carbon farming projects such as cover cropping, minimum tillage and biochar, and farm forestry projects. Approved methodologies for agricultural projects include methane capture and use in biodigesters to produce power in piggeries, reducing GHG emissions by feeding nitrates to beef cattle and dietary additives to dairy cattle, reducing fertiliser emissions in irrigated cotton, measuring soil carbon and estimating soil carbon using default values. Eligible methodologies for producing carbon sinks include reforestation,

¹¹ Clean Energy Regulator, "Emissions Reduction Fund," n.d., <http://www.cleanenergyregulator.gov.au/ERF>.

¹² World Bank Group, "International Carbon Action Partnership and Navigant Consulting, State and Trends of Carbon Pricing 2019 (June 2019)," n.d., 29, <https://openknowledge.worldbank.org/handle/10986/31755>.

¹³ Ben Potter, "Labour's Safeguard Mechanism 2.0 Explained," *Australian Financial Review*, n.d., <https://www.afr.com/policy/energy-and-climate/labor-s-safeguard-mechanism-2-0-explained-20190401-p519q0>.

¹⁴ Carbon Market Institute, "Time for Carbon Market to Scale-up as Corporates Commit to Net-Zero," n.d., <https://carbonmarketinstitute.org/2021/09/10/time-for-carbon-farming-to-scale-up-as-corporates-commit-to-net-zero-emissions/>.

revegetation and protecting native forest at imminent risk of clearing, human-induced regeneration of the native forest, avoiding deforestation and clearing of native regrowth, and plantation forestry. Eligible projects for savannah fire management for carbon sequestration and emissions avoidance “reduce the frequency and extent of large, intense late dry season fires in savannas, resulting in fewer greenhouse gas emissions and more carbon being sequestered in dead organic matter. They involve fire management through planned burning occurs primarily in the early dry season.”¹⁵ These projects characteristically draw on indigenous fire management practices and often involve the participation of indigenous communities. To April 2021, \$2.55 billion was contracted for 499 projects covering 205 MtCO₂e of emissions abatement. Of this, vegetation projects covered 138.6 MtCO₂e, landfill and waste 25.9 MtCO₂e, agriculture 15 MtCO₂e and savannah burning 13.6 MtCO₂e.¹⁶

While there are remaining uncertainties as to the potential of methodologies such as soil carbon sequestration,¹⁷ with adequate monitoring, reporting and verification (MRV), such projects may deliver substantial benefits for GHG emissions mitigation.¹⁸ Additionally, vegetation projects have co-benefits of reduced salination and erosion and improved water retention. Soil-carbon projects are associated with improved soil quality.¹⁹ For these reasons, Verschuuren recommends calibrating biosequestration policy to capture co-benefits, including climate adaptation, food security, resilient and sustainable farm businesses, and securing and creating jobs in the agribusiness sector.²⁰ This approach to Climate-Smart Agriculture (CSA) is consistent with supporting further scaling-up of methodologies such as soil carbon sequestration. These co-benefits must be balanced against risks relating to permanence, additionality and verification of carbon sequestration. For example, ERF critics have raised additionality concerns in relation to vegetation management methods (such as avoided deforestation) on private properties, in some cases at a disproportionate level to the value of the land concerned,²¹ as opposed to mitigation of emissions at source. Public policy considerations relating to this calculus of environmental risks and rewards are discussed in the concluding section.

¹⁵ Clean Energy Regulator, “Opportunities for the Land Sector,” n.d., <http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector>.

¹⁶ Clean Energy Regulator, “ERF Auction 2021,” n.d., <http://www.cleanenergyregulator.gov.au/ERF/auctions-results/april-2021>.

¹⁷ See, for example, Australian Government Department of Agriculture, “Water and the Environment, Soil Carbon Research: Key Findings,” n.d., https://www.agriculture.gov.au/ag-farm-food/climatechange/australias-farming-future/climate-change-and-productivity-research/soil_carbon.

¹⁸ See for example R. et al. Zomer, R.J., Bossio, D.A., Sommer, “Global Sequestration Potential of Increased Organic Carbon in Cropland Soils,” *Scientific Reports* 7, 2017, 15554, <https://doi.org/10.1038/s41598-017-15794-8>.

¹⁹ Verschuuren, “Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia’s Carbon Farming Initiative.”

²⁰ Verschuuren.

²¹ Paul J Burke, “Undermined by Adverse Selection: Australia’s Direct Action Abatement Subsidies,” *Economic Papers* 3, no. 35 (2016): 216,223, <https://onlinelibrary.wiley.com/doi/epdf/10.1111/1759-3441.12138>. See also Richie Merzian, Polly Hemming and Annica School, *Questionable Integrity: Non-additionality in the Emissions Reduction Fund’s Avoided Deforestation Method* (Australia Institute Discussion Paper, September 2021). This paper argues that avoided deforestation projects have generated credits at a volume higher than historically average levels of land clearing. Hence the permits may not represent genuinely additional avoided deforestation.

Transition to the Carbon Solutions Fund

Australian low-carbon regulation post-CPM has been characterised by an accumulation of policies, funds and programs building on their predecessors, the latest of which is the Climate Solutions Fund (CSF). The CSF is not intended to repeal and replace the ERF. However, it will introduce changes in terms of additional categories of projects funded (for example, hard to abate sectors in heavy industry such as aluminium), types of financing (such as leveraging private investment), and funding application processes. The CSF is part of the \$A 3.5 billion Climate Solutions Package, including funding support for the Snowy 2.0 hydroelectric project, the MarinusLink transmission project and the National Electric Vehicle Strategy.²²

Key Regulatory Provisions for Erf Projects

Overview

This section focuses on regulatory controls regarding the permanence of carbon storage, additionality and monitoring, reporting and verification (MRV) to ensure genuine, measurable emissions abatement. ERF projects are only eligible when covered by an approved methodology. The Emissions Reduction Assurance Committee (ERAC) approves methodologies based on integrity standards designed to ensure that abatement is permanent and additional to business as usual (BAU). Under *CFI Act* s133, abatement must be measurable and verifiable and take into account possible leakage (which must be deducted from the abatement). It must meet internationally recognised accounting standards, be supported by relevant (peer-reviewed) science, and account for any cyclical variability. (Unless otherwise indicated, provisions referred to in this section relate to the *CFI Act*).

Permanence

Permanence obligations address the risk of releasing carbon stored in vegetation or soils through changes in land use, fires, droughts or other unpredictable events. Sequestration is regarded as permanent if it is maintained on a net basis for 100 years. Permanence obligations relate to carbon stores for which ACCUs have been issued. Project proponents must choose a permanence period of either 25 or 100 years that cannot subsequently be varied (s 86 and s 87A). The twenty-five-year option involves a twenty per cent reduction in allowable credits to cover the risk of carbon release after the project ends. All projects include a five per cent buffer, or reduction of credits, to cover the risk of escape of stored carbon (s 16). These obligations are entered in the ERF register, which prospective purchasers of the land can search. On registration of the project, a permanence plan must be provided to the CER, explaining proposed actions to protect the carbon sequestered throughout the permanence period. The plan must be updated in offset reports after years 8 and 24 of the crediting period. If a fire or other disturbance reduces the amount of carbon stored, reasonable steps must be taken to allow the carbon stock to return to previously reported values. Otherwise, ACCUs equivalent to the loss must be relinquished to the CER (s 90). CER guidelines encourage proponents to work collaboratively with local fire authorities. Proponents must report burns of (the smaller of) at least 50 hectares or five per cent

²² Clean Energy Regulator, “Climate Solutions Fund,” n.d., <http://www.cleanenergyregulator.gov.au/csf/Pages/CSF-home.aspx>.

of the project (CFI Rule s86). Almost fifty CER guidance documents indicate what amounts to reasonable steps to protect stored carbon for specific project methodologies.

Crediting of ACCUs is conditional upon compliance with all requirements of the *Carbon Credits (Carbon Farming Initiative) Act 2011*, the *Carbon Credits (Carbon Farming Initiative) Rule 2015*, and the applicable methodology. It includes record-keeping, reporting and audit requirements, notification requirements (including concerning project changes), maintenance of carbon stores and any applicable carbon maintenance obligations. Penalties for non-compliance include revocation of a project, relinquishment of a specified number of ACCUs, civil penalties and/or criminal proceedings.²³ Monitoring requirements relate to the reversal of carbon storage risks, for example, through erosion, fire, removal of vegetation below 40 per cent, or when land is converted from permanent pasture to cropland with no pasture cover.²⁴

Carbon maintenance obligation declarations made in accordance with the *Carbon Credits (Carbon Farming Initiative) Rule 2015* can be made where projects are not compliant and ACCUs have not been relinquished for any carbon stores lost.²⁵ Non-compliance with a carbon maintenance obligation declaration through actions reducing stored carbon or failing to take reasonable steps to ensure stored carbon is not below benchmark levels can lead to fines of up to 10,000 penalty units (\$A 222) for corporations and up to 2,000 penalty units for individuals, for each contravention (s 97(9) and s 221). A court may also order observance of these obligations.²⁶

Additionality

CFI Act s 27(4A) contains a threefold additionality test: the *newness requirement* (para (a)); the *regulatory additionality requirement* (para (b)); and the *government program requirement* (para (c)). It means that ERF projects must not relate to activities required by any law of Commonwealth, state or territory governments. They must relate to new activities or expansion of existing practices that commenced before project registration. In limited circumstances, projects may receive funding from multiple sources.²⁷ Detailed rules apply as to which funding arrangements under other programs may or may not operate concurrently with ERF eligibility.²⁸

²³ Clean Energy Regulator, "Participant Obligations," n.d., <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/participant-obligations>. See also Arjuna Dibley and Martijn Wilder, "Forest Carbon Rights: Lessons Learned from Australia and New Zealand," *Carbon and Climate Law Review* 10, no. 3 (2016): 202,209. ; Justine Bell-James, "Developing a Framework for 'Blue Carbon' in Australia: Legal and Policy Considerations," *University of New South Wales Law Journal* 39, no. 4 (2016): 1583-1591.

²⁴ Climate Change Authority, "Review of the Emissions Reduction Fund," n.d., <https://www.climatechangeauthority.gov.au/publications/review-emissions-reduction-fund-2020>. The CCA is a statutory body established by the Australian government, "It Provides Reports on Request of the Australian Government, and Conducts Independent Its Own Independent Re-Search Analysis," n.d., <https://www.climatechangeauthority.gov.au/about-cca>.

²⁵ Clean Energy Regulator, "Carbon Maintenance Obligations," n.d., <http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/carbon-maintenance-obligations>.

²⁶ "The Emissions Reduction Fund and Permanence on the Land," n.d., Link on above URL.

²⁷ Wilder, "Forest Carbon Rights: Lessons Learned from Australia and New Zealand."

²⁸ Clean Energy Regulator, "The Government Program Requirement," n.d., <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/regulatory-additionality-and-government-programs#government-program-requirement>.

Innovative projects on the 'positive list' established by CFI regulations 58-60 that are not 'common practice' are automatically deemed additional.²⁹

Baxter and Gilligan have expressed concerns over the application of the additionality tests in s 27 to large-scale landfill gas projects. They argue that an exception to the regulatory and program additionality requirements for projects initially incentivised under the (discontinued) NSW Greenhouse Gas Reduction Scheme enabling them to continue receiving funding under the ERF, undermines the objectives of the Act.³⁰ Under some states' environmental protection legislation, moreover, landfill gas facilities are required to install methane capture. While there are public policy pros and cons of this exception, it relates to a choice of scheme design explained in the explanatory memoranda to the Act, as opposed to misfeasance or non-compliance. The same point can be made in relation to the decision to allow crediting of ACCUs for methane captured and Renewable Energy Certificates for energy generated under the Renewable Energy Target Scheme (that terminated for large projects in 2020). An essential aspect of the policy rationale for this exception is whether the project proponents concerned were thereby overcompensated. Baxter and Gilligan refer to the profitable overall financial position of the project proponents (based information publicly reported under *Corporations Act 2001* (Cth) obligations), but not to rates of return on ERF projects (that may be commercial in confidence). The issue of potential over-compensation has also been raised with regard to methane capture projects in large-scale piggeries, where economies of scale and co-benefits for power generation also raise additionality issues. While such technologies may remain cost-prohibitive for smaller facilities even with ERF funding, some observers suggest that medium-sized facilities may currently be a 'sweet spot' where ERF funding is being optimally used. That said, Australia Pork has estimated that ERF funding underpinned the viability of around half of currently installed biodigester methane capture plants, illustrating its utility in scaling up low-emissions technology.³¹ This suggests a need for a review mechanism based on objective criteria included in the regulation, such as a range of allowable return on investment (ROI) on ERF projects, or a mechanism analogous to degression rates in FITs, progressively reducing financial support over time for specified methodologies.

Despite these concerns, the Climate Change Authority refers to “. . . the strong reputation of Australia's high integrity carbon offsets market, which is founded on the ERF's integrity standards, including additionality, and the measurement, reporting and verification system that ensures ACCUs represent a tonne of genuine abatement.”³² It concludes that: “The Offsets Integrity Standards underpin the integrity of the scheme and should be retained as they are. However, more can be done to provide greater certainty to ERF participants as to how the Standards are interpreted and applied.” Thus improving the delivery of offset integrity relates to

²⁹ Nicola Durrant, “Legal Issues in Carbon Farming: Biosequestration, Carbon Pricing and Carbon Rights,” *Climate Law* 2, no. 4 (2011): 515-525.

³⁰ *CFI Act* (Cth) s 27(4A) (b)(ii) permits an overriding, method-specific additionality test, set out in the methodology determination, instead of the three-part additionality test above. See Tim Baxter and George Gilligan, “Verification and Australia's Emissions Reduction Fund: Integrity Undermined Through the Landfill Gas Method?,” *Australian Journal of Environmental Law* 4, no. 1 (2017): 16. See also Burke above n. 21, 223.

³¹ Verschuuren, “Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative.” above n. 6, 42-43.

³² Authority, “Review of the Emissions Reduction Fund.” above n, 24, 38

clear communication of standards for specific methodologies that are contained in around 50 detailed guidelines for particular project types. It notes that the International Carbon Reduction and Offset Alliance (ICROA) recognises the ERF as meeting its best practice integrity principles for carbon credits (published in the World Bank’s State and Trends of Global Carbon Markets 2020) through the application of the Offsets Integrity Standards.³³

Monitoring and Enforcement

According to its website, the CER monitors compliance with project requirements by assessing project proponents' reports conducting agency initiated audits and inspections. CER has powers to inspect project locations (s 198-200), to require documents and information (s 185), and to require scheme participants to appoint a registered greenhouse and energy auditor to carry out compliance audits (s214-215).³⁴ Acceptance of enforceable undertakings, as well as outcomes of any court action, the issuance of infringement notices, and other types of enforcement action, must be published by CER. Its approach to compliance “involves assisting scheme participants to understand their rights and obligations through education and training programs, providing feedback on performance to support compliance, and ensuring regulatory responses are proportionate to the risks posed by any non-compliance.”³⁵

It can impose administrative sanctions, such as requiring the relinquishment of ACCUs for non-compliance with permanence or other obligations. The CER can accept ‘enforceable undertakings’ from project proponents. These are publicly accessible statements indicating project proponents will undertake specified actions to improve compliance, a breach of which may result in court proceedings (s 236-238). Other enforcement measures include infringement notices, civil penalties (such as pecuniary damages) and prosecution for criminal sanctions, including imprisonment. Where ACCUs are issued on the basis of fraudulent statements, on conviction, a court may order relinquishment of the ACCUs (s 188). Non-compliance with the duty to report under the Act is a strict liability offence, not requiring proof of intention, recklessness or negligence.³⁶

The Voluntary Carbon Market

Climate Active Carbon Neutral Certification

The demand for ACCUs in the voluntary market is provided by firms seeking carbon neutrality for reasons of altruism and/or reputational advantage in the market. Climate Active certification is based on the standards and guidelines for voluntary offset projects in Australia. Climate Active is a partnership between the Australian Government and Australian businesses to reduce

³³ Authority.

³⁴ Clean Energy Regulator, “Monitoring and Enforcement,” n.d., <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Monitoring-and-enforcement>. See also Verschuuren, “Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia’s Carbon Farming Initiative.” above n. 6, 23. CER interviewees indicated that CER conducts site inspections and audits itself, citing CFI Act, ss. 213–215

³⁵ Clean Energy Regulator, “Compliance and Enforcement Approach,” n.d., <http://www.cleanenergyregulator.gov.au/About/Compliance-and-Enforcement/compliance-and-enforcement-approach>.

³⁶ Durrant, “Legal Issues in Carbon Farming: Biosequestration, Carbon Pricing and Carbon Rights.” above n. 29, 526

voluntary emissions. It provides certification to businesses that have demonstrably achieved zero emissions. Different standards apply for buildings, events, organisations, precincts and products and services. While organisations with GHG accounting under the *National Greenhouse and Energy Reporting Act 2007* (Cth) (the NGER Act) will have systems in place to conduct such carbon accounting procedures, they amount to a significant undertaking for smaller organisations. Emissions that cannot be eliminated must be offset by purchasing carbon offset units.³⁷ Most of the content of the standards relates to carbon accounting for energy use, industrial emissions, and emissions from transport, buildings and other productive activities. This scheme is not supported by legislation or regulations apart from the Climate Active Carbon Neutral Standard, standards applicable for buildings and other products and services, and the NGER Act.³⁸ Review of Department of Industry decisions is conducted internally in the department. In the absence of related regulations, such decisions could only be challenged under generally applicable grounds of administrative review.

Eligible offsets include ACCUs, all types of credits produced by the international ETS under the UNFCCC, Verified Emissions Reductions (VERs) under the Gold Standard, and Verified Carbon Units (VCUs) under the Verified Carbon Standard. Sources of ACCUs listed by the CER are the Carbon Market Institute's Carbon Marketplace and the Emissions Reduction Fund project register.³⁹ The Carbon Market Institute (CMI) is the industry body of carbon markets in Australia.⁴⁰ The CMI Registry lists offset projects available for investment, either voluntary or for compliance with the safeguard mechanism.⁴¹ It also provides information on many private organisations acting as intermediaries between offset project developers and purchasers of offset credits. The Aboriginal Carbon Foundation is relevant to savannah burning on indigenously owned land in Northern Australia.⁴²

The Australian Carbon Industry Code of Conduct

The Australian Carbon Industry Code of Conduct (the Code) is administered by the CMI.⁴³ It is designed to provide consumer protection for project proponents (such as farmers and indigenous stakeholders) dealing with carbon service providers. Code signatories include carbon service providers who, on CMI estimates, represent almost half of all carbon credits issued under the ERF. A Code Review Panel acts as an independent arbitrator of Code compliance and appeals processes. The New South Wales and Queensland governments have joined as 'formal Government Partners' endorsing the Code.

³⁷ Australian Commonwealth Department of Industry, "Science, Energy and Resources," Climate Active, n.d., <https://www.industry.gov.au/regulations-and-standards/climate-active>. See also Climate Active, "How It Works," n.d., <https://www.climateactive.org.au/what-climate-active/how-it-works>.

³⁸ See for example "Carbon Neutral Standard for Organisations" 4, no. 1 (n.d.): 37.

³⁹ Clean Energy Regulator, "Buying ACCUs," n.d., <http://www.cleanenergyregulator.gov.au/Infohub/Markets/Pages/Buying-ACCUs.aspx>.

⁴⁰ Carbon Market Institute, "Carbon Market Institute," n.d., <http://carbonmarketinstitute.org/about/>.

⁴¹ Carbon Market Institute, "Registry," n.d., <http://marketplace.carbonmarketinstitute.org/> <http://marketplace.carbonmarketinstitute.org/registry/>.

⁴² Aboriginal Carbon Foundation, "See Aboriginal Carbon Foundation," n.d., <https://www.abcfoundation.org.au/>.

⁴³ Carbon Market Institute, "World First Australian Carbon Industry Code of Conduct Now Fully Operational," CMI media, n.d.

Disclosure obligations include all legal and regulatory obligations of the Signatory; project method requirements; administrative and compliance requirements of the project, such as record keeping, audits, and eligibility criteria, options for selling carbon credits; the project timeline; the client's obligations relating to the land during the project's permanence period; the client's obligations if there is a natural disturbance to the land; risks and potential consequences of the project; and the implications if the land where the project is being undertaken is sold. Signatories are also required to disclose any conflicts of interest; provide clients with a written project management plan and ensure that they understand it; provide clients with a copy of the Code of Conduct fact sheet and the Signatory's own complaints handling procedure documents.⁴⁴ Signatories must comply with the CFI Act, regulations and rules, regulatory guidance on the CER website, the Australian Consumer Law and the Native Title Act.⁴⁵ Agreements with Signatories must be in writing, in clear and transparent language.⁴⁶ The Code Administrator can conduct investigations and audit compliance checks, using the information submitted under *Corporations Act* Part IV obligations to hold an Australian Financial Services Licence.⁴⁷

Code breaches relating to disclosure obligations, project management, dispute resolution and administration are categorised as severe, major, medium or minor.⁴⁸ The Code Administrator appoints an independent auditor at the Signatory's cost for severe breaches. Audit results and actions to prevent the breach from occurring again must be sent to the Code Administrator. The breach will be listed on the Code website. For less severe breaches, a similar approach is taken, without the requirement to appoint an independent auditor. Where breaches are not rectified, signatories can be suspended or removed from the register. Accordingly, that entity will not be able to describe itself as a Signatory to the Code or use the Code brand mark. In this way, the Code provides a valuable means of consumer protection for clients who are aware of its rights. The fact sheet for the Code provides a concise summary of many of these rights.

The CMI has also conducted a detailed scoping study of the potential for biosequestration projects in the Asia Pacific region.⁴⁹ CMI consultation with the Australian corporate sector and carbon industry found a 'consensus that Asia-Pacific nations had the significantly untapped potential for natural carbon sequestration and related co-benefits.'⁵⁰ The study listed seven Pacific nations as representing some of the most robust opportunities: Fiji, PNG, the Solomon Islands, Vanuatu, Timor-Leste, New Caledonia and Samoa. It concluded that the 12.5 million people in these countries "hold custody over a higher ratio of carbon sequestration potential per

⁴⁴ Carbon Market Institute, "Australian Carbon Industry Code of Conduct Fact Sheet," no. June (2021): 5, <https://carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Code-of-Conduct-Fact-Sheet-June-2021.pdf>. See also Carbon Market Institute Carbon Market Institute, "Australian Carbon Industry Code of Conduct" 2, no. 2 (2021): 2.3, <https://carbonmarketinstitute.org/app/uploads/2021/08/Australian-Carbon-Industry-Code-of-Conduct-Version-2.0-FINAL.pdf>.

⁴⁵ Institute, "Australian Carbon Industry Code of Conduct."

⁴⁶ Institute.

⁴⁷ Institute.

⁴⁸ Institute. Breach Matrix, [3.6].

⁴⁹ Carbon Market Institute, "Australian Emissions Reduction Investors Set Their Eyes on Asia Pacific Climate Action," CMI medi, n.d., <https://carbonmarketinstitute.org/2021/06/24/australianemissions-reduction-investors/>.

⁵⁰ Carbon Market Institute, "Nature Based Investment in the Asia-Pacific Region, Scoping Study (Report for the Australian Department of Agriculture, Water and the Environment," *Department of Agriculture, Water and the Environment, Australia*, no. June (2021): 8, <https://carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Nature-Based-Investment-in-the-APAC-Region-Scoping-Study-June-2021.pdf>.

capita than any other region of comparable size . . . They have significant forests, mangroves, coral reefs, and seagrasses that all have huge potential for carbon sequestration, and the good news is, the Australian business community sees significant potential for financial investment”.⁵¹ The Australian Federal government recently committed \$59.9 million ‘to developing a high-integrity carbon offset scheme in the Indo-Pacific region.’⁵² Co-benefits of biosequestration projects are particularly useful for Pacific Island countries, as many are highly dependent on the ecosystem services of their natural environments, with large areas of relatively pristine natural environment worthy of protection. Pacific Island nations, moreover, are particularly vulnerable to impacts of climate-induced sea-level rise.⁵³

State-Level Initiatives

Some state and territory governments have also introduced incentives for biosequestration projects. For example, the Western Australian government’s Carbon Farming and Land Restoration Program is providing \$15 million in grants for farmers and researchers to develop soil carbon and revegetation programs.⁵⁴ The Western Australian Environment Protection Authority's guidelines for the treatment of greenhouse gas emissions in the environmental impact assessment process for development proposals will allow for offsetting of emissions with ACCUs and some other carbon units. Proposals exceeding 100,000 tonnes CO₂-e annually must establish a plan to reduce or offset emissions towards net-zero by 2050.⁵⁵

The Queensland Government’s Land Restoration Fund (LRF) is a \$500 million program supporting land-sector carbon projects that deliver additional environmental, socio-economic, and First Nations co-benefits. A key theme of Queensland's Climate Transition Strategy is a transition to zero emissions industries of the future, including expansion of carbon farming as a critical industry development goal. Queensland's Carbon Farming Industry Roadmap indicates that Queensland has secured a large portion of contracted abatement from the land sector under the ERF, delivering approximately 74.7 MtCO₂e of abatement under ERF contracts, worth approximately \$794.9 million from 2015 - 2031. The Roadmap cites an analysis by the consulting firm Energetics in 2017 indicating that Queensland could generate between \$1.4 and \$4.7 billion from land and agriculture offsets cumulatively by 2030, abating between 32 and 104 million tonnes across the decade.⁵⁶ The Roadmap indicates that state and local government policy net-zero emissions and carbon-neutral targets are significant investment drivers in carbon farming projects. It states that carbon farming emissions reductions should be incorporated into state government net-zero emissions targets.⁵⁷ Roadmap recommendations include requiring

⁵¹ Carbon Market Institute.

⁵² Carbon Market Institute.

⁵³ Carbon Market Institute.

⁵⁴ Alannah MacTiernan, "\$15 Million Boost for Carbon Farming Projects," media statement, Western Australian Minister for Regional Development; Agriculture and Food and Hydrogen Industry, n.d., <https://www.mediastatements.wa.gov.au/Pages/McGowan/2021/07/15-million-dollar-boost-for-carbon-farming-projects.aspx>.

⁵⁵ Authority, "Review of the Emissions Reduction Fund."

⁵⁶ Carbon Market Institute, "Carbon Farming Industry Roadmap – Queensland (CMI Report for the Queensland Government)," 2020, 10, https://www.qld.gov.au/__data/assets/pdf_file/0026/105749/carbon-farming-industry-roadmap.pdf.

⁵⁷ Carbon Market Institute.

major infrastructure projects to offset their emissions, participation of large-scale polluters in a secondary market for ACCUs from land sector projects, mapping strategic opportunities for state-wide carbon farming projects, and providing incentives (lease agreements, tax concessions) for landholders implementing carbon projects.⁵⁸

Carbon Market Trends

To date, the CER has been the leading purchaser of ACCUs, acquiring ninety-five per cent of ACCUs sold in 2019. Liable entities under the Safeguard Mechanism, state and local government programs, and enterprise purchases in the voluntary market made up the balance. Despite continuing federal funding under the Climate Solutions Fund, future Australian Government demand for ACCUs remains uncertain.⁵⁹ The Queensland Government's Carbon Farming Roadmap recommends continuing federal funding of carbon farming activities by allocating at least \$200 million a year until the introduction of a market mechanism to secure sustainable private sector demand.⁶⁰ Some ERF participants have argued that an ETS is needed, as government funding for an increasing number of agricultural emission-reduction projects must become unsustainable at some point. Others were concerned about price volatility and low prices, indicating a preference for the price certainty provided under long-term ERF abatement contracts with the CER.⁶¹

The Safeguard Mechanism has generated a low and declining level of demand for ACCUs. From 2020–21, baselines are generally calculated on the emissions intensity of production and will only require ACCUs for increases of emissions intensity over BAU. Carbon neutral certification under the Climate Active program is the largest source of demand in the voluntary market for ACCUs. While voluntary markets are growing, they represented less than 5 per cent of the demand for ACCUs in 2019.⁶² While businesses are increasingly motivated by consumer and shareholder pressure to reduce emissions, demand for ACCUs is affected by the availability of cheaper international offset units. In 2019, ACCUs were just 6 per cent of Climate Active offsets.⁶³ The expanding voluntary market reflects global trends. The value of voluntary credits doubled between 2017 and 2020, partly due to the establishment of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).⁶⁴ The CER is establishing a carbon exchange to facilitate both large-scale polluters and small to medium-sized businesses' market participation.⁶⁵ It is anticipated that this will lead to increased investment volumes in both compliance and voluntary markets. Given Australia's current regulatory settings, the most straightforward way to reduce emissions consistent with achieving net-zero by 2050 would be

⁵⁸ Carbon Market Institute.

⁵⁹ Authority, "Review of the Emissions Reduction Fund."

⁶⁰ Carbon Market Institute, "Carbon Farming Industry Roadmap – Queensland (CMI Report for the Queensland Government.)"

⁶¹ Verschuuren, "Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative."

⁶² Authority, "Review of the Emissions Reduction Fund."

⁶³ Authority.

⁶⁴ Carbon Market Institute, "Nature Based Investment in the Asia-Pacific Region, Scoping Study (Report for the Australian Department of Agriculture, Water and the Environment.)"

⁶⁵ Carbon Market Institute, "Time for Carbon Market to Scale-up as Corporates Commit to Net-Zero," media release 20 September 2021, n.d., <https://carbonmarketinstitute.org/2021/09/10/time-for-carbon-farming-to-scale-up-as-corporates-commit-to-net-zero-emissions/>.

through the progressive reduction of Safeguard Mechanism baselines. This approach was proposed in December 2021 by the Australian Labour opposition, in conjunction with the announcement of a target of a 43 per cent reduction in 2005 emissions by 2030.⁶⁶ This would drive investment in low-emissions technology and demand for biosequestration and other offset credits. This would be a departure from Australia's current approach in which the Safeguard Mechanism is not designed to reduce emissions in line with Australia's international commitments.⁶⁷

Proposals for Erf Reform

The Australian government has agreed with all of the 2020 Expert Panel Review recommendations into Additional Sources of Low-cost Abatement (the King Review) discussed in this section. In most instances, the Australian government response to the review indicates that it will undertake consultation with regard to these reforms.⁶⁸ Firstly, the King Review recommended simplifying ERF compliance obligations by imposing an overarching duty of utmost good faith, modelled on that in the *Insurance Contracts Act 1984* (Cth).⁶⁹ This would require ERF participants to act with utmost honesty and integrity in all ERF project actions. The consequences of breaching this duty are yet to be determined but could resemble existing enforcement powers under the CFI Act.⁷⁰ The recommendation of creating a fixed priced purchasing desk for small projects would address barriers to small project participation due to high transaction costs associated with measurement, reporting and verification requirements under the current system, along with minimum bid requirements for ERF contracts.

Many carbon farming projects are too small to attract extensive scale finance and investment. As Verschuuren observes, "ERF projects have been dominated by a relatively small number of large project agents or aggregators, especially with vegetation projects."⁷¹ Many single-activity agricultural ERF methods are not economically viable and do not align with farming systems. The Queensland Roadmap recommends a whole-of-farm method to enable increased uptake by landholders and increased abatement generated.⁷² Aggregated projects can be problematic for compliant participants, as the entire aggregated project will be considered

⁶⁶ Katherine Murphy, "Anthony Albanese Commits Labor to Emissions Reduction Target of 43% by 2030," *The Guardian*, 2021, <https://www.theguardian.com/australia-news/2021/dec/03/anthony-albanese-commits-labor-to-emissions-reduction-target-of-43-by-2030>.

⁶⁷ Wilder, "Forest Carbon Rights: Lessons Learned from Australia and New Zealand."

⁶⁸ Energy and Resources Department of Industry, Science, "Australian Government Response to the Final Report of the Expert Panel Examining Additional Sources of Low-Cost Abatement (the King Review)" 2, no. 10 (2020), <https://www.industry.gov.au/data-and-publications/government-response-to-the-expert-panel-report-examining-additional-sources-of-low-cost-abatement>.

⁶⁹ Report of the Expert Panel Examining Additional Sources of Low-cost Abatement, "(Report for the Australian Department of Industry, Science, Energy and Resources," 14 February 2020, n.d., <https://www.industry.gov.au/news/expert-panel-identifies-opportunities-to-reduce-emissions>. This report is generally referred to as the King Review. Grant King was Chair of the Expert Panel). In July 2021, Mr King became Chair of the Climate Change Authority (CCA). The King Review is not the same as the 2020 CCA review of the ERF. See CCA, above n. 24

⁷⁰ Baker and McKenzie, "Big Shake-up Planned for Australia's Carbon Market," 12 June 2020, n.d., <https://www.bakermckenzie.com/en/insight/publications/2020/06/big-shake-up-planned-for-australias-carbon-market>.

⁷¹ Verschuuren, "Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative."

⁷² Carbon Market Institute, "Carbon Farming Industry Roadmap – Queensland (CMI Report for the Queensland Government.)"

non-compliant in the event of non-compliance by one participant. Individual participation by smaller farms can be difficult, however, as multiple methodologies on a single farm must be administered as separate projects. For these reasons, a whole farm approach to reducing emissions can be more cost and environmentally effective. This would also enable on-farm experimentation to determine which methodology was most effective.⁷³ Recommendations for ‘project stacking’ were accepted, where multiple ERF projects on the same property can be submitted in a single offsets report and subject to a single audit process.⁷⁴ The Australian government has also agreed with recommendations on using streamlined measurement, reporting and verification on small projects and directly subsidising the costs of complex soil carbon measurement and model-based processes that can form a significant barrier to participation.⁷⁵ A National Soil Strategy will also be developed. The recommendation for below baseline credits for transformational projects delivering significant low-cost abatement in energy and industrial efficiency will be supported by CSF co-investment funding.

An article on a transnational law firm website observes: "A key issue that links to market viability is that the current baselines are set at levels that the large emitters can meet with relative ease."⁷⁶ This enables large emitters to generate credits easily, potentially undermining the price of all credits, including ACCUs. The article recommends reducing baselines on different trajectories for different sectors, which would also facilitate Australian emissions reductions. The CCA has expressed similar concerns and also recommends reducing baselines.⁷⁷

Despite these issues, both the Climate Change Review and the King Review found that the ERF has generally functioned effectively, with a high level of integrity supported by provisions on permanence, additionality and monitoring, reporting and compliance.⁷⁸ Nonetheless, improvements are needed in terms of the development of specific methodologies. Recommended reforms to support smaller-scale on-farm bio-sequestration projects through a more streamlined and whole-farm approach to emissions management have broadly been adopted by the Australian government and are undergoing consultation and development.

Is Australian Regulation of Bio-Sequestration A Useful Model to Facilitate Net-Zero Emissions By 2050?

This paper’s position with regard to whether the current regulatory model of support for bio-sequestration projects is likely to facilitate the achievement of net-zero emissions by 2050 relates to the context of Australian low-carbon policy more generally. Public policy debate on the utility of bio-sequestration offset projects partly relates to perspectives on potential risks and benefits for economy-wide emissions reductions. Some risks of biosequestration offset projects are common to all offsets in terms of additionality, permanence and adequacy of MRV systems. Other risks relate to less comprehensively demonstrated bio-sequestration methodologies. Some

⁷³ Verschuuren, “Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia’s Carbon Farming Initiative.”

⁷⁴ Department of Industry, Science, “Australian Government Response to the Final Report of the Expert Panel Examining Additional Sources of Low-Cost Abatement (the King Review).”

⁷⁵ Department of Industry, Science.

⁷⁶ McKenzie, “Big Shake-up Planned for Australia’s Carbon Market.”

⁷⁷ Authority, “Review of the Emissions Reduction Fund.”

⁷⁸ Authority.

methodologies, such as methane capture in intensive feedlots, are well established and increasingly commercially mainstream. Others, such as soil carbon sequestration, require further research to establish accurate parameters in very diverse on-farm implementation contexts. As one carbon agent surveyed by Verschuuren put it: “We are still learning how to do it under different circumstances”.⁷⁹ Nonetheless, several carbon agents regraded soil carbon as a promising future methodology. They praised the government for supporting a methodology that had not been fully proven, arguing that continuous monitoring led to continuous improvement.⁸⁰

As with offsets generally, some environmentalists have expressed concerns that credits in effect create a license to pollute at source for fossil fuel and other emissions-intensive industries. These concerns are amplified by the fact that ACCUs account for only six per cent of the Australian voluntary market under the Climate Active Program, with the remainder supplied by cheaper offshore credits.⁸¹ From this perspective, it can be argued that regulatory support for relatively more expensive Australian bio-sequestration projects is less problematic.

In Australia, voluntary market demand is driven by corporations, local governments, and other organisations' carbon neutral/net-zero commitments. Taking large gas producers as an example, plans for these commitments typically include components of bio-sequestration offsets, carbon capture and storage (CCS), higher efficiency fuels and industrial processes, and in some cases, measures to reduce emissions in export markets (scope three emissions).⁸² Wind and solar power have scaled up many orders of magnitude greater than CCS, despite all the financial resources of the fossil fuel industry.⁸³ Given the ongoing research and development necessary, even organisations largely positive about CCS, such as the International Energy Agency project to develop mainly after 2030.⁸⁴ There are also widely divergent views as to the atmospheric impacts of fugitive methane emissions from unconventional gas developments. Some studies have concluded that sharply rising atmospheric methane levels, of a kind significant for climate change, have occurred contemporaneously with increased unconventional gas development.⁸⁵ This is a potentially significant factor for fossil fuel companies' emissions impact and overall Australian emissions, given the Australian government's commitment to gas led post-Covid 19 economic recoveries.⁸⁶ The cumulative uncertainty and concomitant environmental risk of ‘net zero’ fossil fuel development based around unconventional gas development, combined with

⁷⁹ Verschuuren, “Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia’s Carbon Farming Initiative.”

⁸⁰ Verschuuren.

⁸¹ Authority, “Review of the Emissions Reduction Fund.”

⁸² Climate Change Report 2021, “Report Highlights, 1,” n.d., <https://www.santos.com/wp-content/uploads/2021/02/2021-Climate-Change-Report.pdf>.

⁸³ One analysis concluded that ‘wind and solar are displacing roughly 35 times as much co2 every year as the complete global history of ccs’. Michael Barnard, “Carbon Capture's Global Investment Would Have Been Better Spent on Wind & Solar,” 21 April 2019, n.d., <https://cleantechnica.com/2019/04/21/carbon-captures-global-investment-would-have-better-spent-on-wind-solar/?fbclid=iwar0t-vf6haucbtvic9jtwkc7gtb-wuhkomhsqlsfegdnfunacvgyomk2w0>.

⁸⁴ International Energy Agency, “Net Zero by 2050: A Roadmap for the Global Energy Sector (May 2021), CCUS,” n.d., <https://www.iea.org/reports/net-zero-by-2050f>.

⁸⁵ Blaine Friedlander, “Study: Fracking Prompts Global Spike in Atmospheric Methane,” 14 August 2019, n.d., <https://news.cornell.edu/stories/2019/08/study-fracking-prompts-global-spike-atmospheric-methane>.

⁸⁶ Gas Fired Recovery, “Media Release of the Australian Prime Minister, Minister for Energy and Emissions Reduction, Minister for Resources,” Water and Northern Australia, n.d., <https://www.pm.gov.au/media/gas-fired-recovery>.

CCS and bio-sequestration offsets, is significant. These risks must be balanced against the potentially vast scale of carbon bio-sequestration.⁸⁷

One way to frame the public policy issue is to inquire how much risk in relation to less comprehensively proven biosequestration offset methodologies is it environmentally prudent to take? Where net-zero enterprise targets are voluntary, implemented by the purchase of ACCUs on the Australian voluntary market, there is little direct public policy downside. Nonetheless, the possibility of greenwashing arises, and related effects on political pressure for other regulatory controls on polluters. Where compliance with Safeguard Mechanism baselines is concerned, the risk of ‘false equivalences’⁸⁸ arises with less proven biosequestration methodologies.

The calculus of environmental risk and reward for less comprehensively proven biosequestration methodologies (or avoided deforestation projects with questionable additionality) cannot be viewed in isolation from other aspects of Australian low-carbon and energy policy. In this writer's view, Australia should impose a nationwide moratorium on unconventional gas development due to unacceptable environmental, human health, and climate risks. This has been included in the constitution of the state of Victoria, despite ongoing political and financial pressure from the federal government.⁸⁹ Approvals should also be withheld for future ‘mega’ coal mines for environmental and climate, and possibly economic reasons. Continuing state-level support for renewable energy should be combined with accelerated support for renewably generated hydrogen. The approach of co-investment in clean energy hydrogen hubs and focus on the export potential in the federal government commissioned National Hydrogen Strategy presents a viable pathway towards largely decarbonising electricity generation, industry and transport.⁹⁰ The approach federal government and private enterprise co-investment in energy and industrial efficiency projects in hard-to-abate sectors is also positive. Public funding for CCS should be provided on an equal basis with renewables, regarding the level of subsidy per t/CO₂e abated.⁹¹ On current indications, CCS projects would not be cost-competitive, and this would prevent a perverse outcome of subsidising continued fossil fuel development over renewables.

These policy settings would place Australia firmly on a path of low-carbon economic development. It would signal a shift away from prolonging the fossil fuel era through the support of increasingly expensive and dangerous technologies such as unconventional gas. Australia would transition out of fossil fuels while exploiting its existing coal mines and conventional gas reserves. In this context, risks of bio-sequestration offsets for Australia's highly polluting fossil fuel and resource industries would be acceptable.

⁸⁷ Budiman Minasney and Edward Jones Alex McBratney, “The Untapped Potential of Soil Carbon,” n.d., <https://www.sydney.edu.au/news-opinion/news/2020/11/20/untapped-potential-soil-carbon-sequestration-national-agriculture-day.html> .

⁸⁸ Gilligan, “Verification and Australia’s Emissions Reduction Fund: Integrity Undermined Through the Landfill Gas Method?”

⁸⁹ Daniel Andrews, “Enshrining Victoria’s Ban on Fracking Forever,” media statement Victorian Premier, n.d., [https://www.premier.vic.gov.au/sites/default/files/2021-03/210305 - Enshrining Victoria%E2 %80%99s Ban On Fracking Forever.pdf](https://www.premier.vic.gov.au/sites/default/files/2021-03/210305_-_Enshrining_Victoria%E2%80%99s_Ban_On_Fracking_Forever.pdf).

⁹⁰ Council of Australian Governments Energy Council, “Australia’s National Hydrogen Strategy,” 2019, <https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy>.

⁹¹ Ross Garnaut, *Superpower: Australia’s Low-Carbon Opportunity* (La Trobe University Press, 2019).

CONCLUSION

This paper finds that the current regulation of Australian biosequestration projects can be a useful model to facilitate the achievement of net zero emissions by 2050, provided there is rigorous enforcement of CFI Act provisions on additionality and permanence. Ongoing regulatory reform based on learning-by-doing will be necessary to address such issues as they arise in the course of the implementation of specific methodologies. This will also require the provision of adequate funding to the Clean Energy Regulator to implement ongoing, independently conducted MRV. Provided there is rigorous enforcement of such rules on historically problematic project types such as avoided deforestation and emerging methodologies such as soil carbon sequestration, bio-sequestration projects can play an expanded role in driving Australian emissions reductions. Given Australia's current regulatory settings, the most straightforward way to achieve this would be by progressively reducing Safeguard Mechanism baselines in line with interim targets to achieve net-zero emissions by 2050. As Australian regulation covers a broader range of bio-sequestration projects than other jurisdictions, the development of methodologies with potential global benefits should be incentivised through these incremental regulatory reforms.

REFERENCES

- Aboriginal Carbon Foundation. "Aboriginal Carbon Foundation," n.d. <https://www.abcfoundation.org.au/>.
- Alex McBratney, Budiman Minasney and Edward Jones. "The Untapped Potential of Soil Carbon," n.d. <https://www.sydney.edu.au/news-opinion/news/2020/11/20/untapped-potential-soil-carbon-sequestration-national-agriculture-day.html> .
- Andrews, Daniel. "Enshrining Victoria's Ban on Fracking Forever." media statement Victorian Premier, n.d. [https://www.premier.vic.gov.au/sites/default/files/2021-03/210305 - Enshrining Victoria%E2 %80%99s Ban On Fracking Forever.pdf](https://www.premier.vic.gov.au/sites/default/files/2021-03/210305-Enshrining%20Victoria%E2%80%99s%20Ban%20On%20Fracking%20Forever.pdf).
- Australian Government Department of Agriculture. "Water and the Environment, Soil Carbon Research: Key Findings," n.d. https://www.agriculture.gov.au/ag-farm-food/climatechange/australias-farming-future/climate-change-and-productivity-research/soil_carbon .
- Australian Government Department of Industry, Science, Energy and Resources 'Australia's Long-Term Emissions Reduction Plan: A Whole-of-Economy Plan to Achieve Net Zero Emissions by 2050,'" 2021. [https://www.industry.gov.au/sites/default/files/October 2021/document/australias-long-term-emissions-reduction-plan.pdf](https://www.industry.gov.au/sites/default/files/October%202021/document/australias-long-term-emissions-reduction-plan.pdf).
- Australian Commonwealth Department of Industry. "Science, Energy and Resources." Climate Active, n.d. <https://www.industry.gov.au/regulations-and-standards/climate-active>.
- Barnard, Michael. "Carbon Capture's Global Investment Would Have Been Better Spent on Wind & Solar." 21 april 2019, n.d. <https://cleantechnica.com/2019/04/21/carbon-captures-global-investment-would-have-been-better-spent-on-wind-solar/?fbclid=iwar0t-vf6haucbtkic9jtwkc7gtb-wuhkomhsqslsfegdnfunacvvygomk2w0>.
- Bell-James, Justine. "Developing a Framework for 'Blue Carbon' in Australia: Legal and Policy Considerations." *University of New South Wales Law Journal* 39, no. 4 (2016): 1583,1591.
- Burke, Paul J. "Undermined by Adverse Selection: Australia's Direct Action Abatement

- Subsidies.” *Economic Papers* 3, no. 35 (2016): 216,223. <https://onlinelibrary.wiley.com/doi/epdf/10.1111/1759-3441.12138>.
- Carbon Market Institute. “Carbon Farming Industry Roadmap – Queensland (CMI Report for the Queensland Government,” 2020, 10. https://www.qld.gov.au/__data/assets/pdf_file/0026/105749/carbon-farming-industry-roadmap.pdf.
- . “Nature Based Investment in the Asia-Pacific Region, Scoping Study (Report for the Australian Department of Agriculture, Water and the Environment.” *Department of Agriculture, Water and the Environment, Australia*, no. June (2021): 8. <https://carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Nature-Based-Investment-in-the-APAC-Region-Scoping-Study-June-2021.pdf>.
- . “Australian Carbon Industry Code of Conduct” 2, no. 2 (2021): 2.3. <https://carbonmarketinstitute.org/app/uploads/2021/08/Australian-Carbon-Industry-Code-of-Conduct-Version-2.0-FINAL.pdf>.
- . “Australian Carbon Industry Code of Conduct Fact Sheet,” no. June (2021): 5. <https://carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Code-of-Conduct-Fact-Sheet-June-2021.pdf>.
- . “Australian Emissions Reduction Investors Set Their Eyes on Asia Pacific Climate Action.” CMI medi, n.d. <https://carbonmarketinstitute.org/2021/06/24/australianemissions-reduction-investors/>.
- . “Carbon Market Institute,” n.d. <http://carbonmarketinstitute.org/about/>.
- . “Registry,” n.d. <http://marketplace.carbonmarketinstitute.org/> <http://marketplace.carbonmarketinstitute.org/registry/>.
- . “Time for Carbon Market to Scale-up as Corporates Commit to Net-Zero,” n.d. <https://carbonmarketinstitute.org/2021/09/10/time-for-carbon-farming-to-scale-up-as-corporates-commit-to-net-zero-emissions/>.
- . “Time for Carbon Market to Scale-up as Corporates Commit to Net-Zero.” media release 20 September 2021, n.d. <https://carbonmarketinstitute.org/2021/09/10/time-for-carbon-farming-to-scale-up-as-corporates-commit-to-net-zero-emissions/>.
- . “World First Australian Carbon Industry Code of Conduct Now Fully Operational.” CMI media, n.d.
- “Carbon Neutral Standard for Organisations” 4, no. 1 (n.d.): 37.
- Clean Energy Regulator. “Buying ACCUs,” n.d. <http://www.cleanenergyregulator.gov.au/Infohub/Markets/Pages/Buying-ACCUs.aspx>.
- . “Carbon Farming Initiative,” n.d. <http://www.cleanenergyregulator.gov.au/Infohub/CFI/Carbon-Farming-Initiative>.
- . “Carbon Maintenance Obligations,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/carbon-maintenance-obligations>.
- . “Climate Solutions Fund,” n.d. <http://www.cleanenergyregulator.gov.au/csf/Pages/CSF-home.aspx>.
- . “Compliance and Enforcement Approach,” n.d. [http://www.cleanenergyregulator.gov.au/ About/Compliance-and-Enforcement/compliance-](http://www.cleanenergyregulator.gov.au/About/Compliance-and-Enforcement/compliance-)

- and-enforcement-approach.
- . “Emissions Reduction Fund,” n.d. <http://www.cleanenergyregulator.gov.au/ERF>.
- . “ERF Auction 2021,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/auctions-results/april-2021>.
- . “Monitoring and Enforcement,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Monitoring-and-enforcement>.
- . “Opportunities for the Land Sector,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector>.
- . “Participant Obligations,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/participant-obligations>.
- . “The Government Program Requirement,” n.d. <http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/regulatory-additionality-and-government-programs#government-program-requirement>.
- Climate Active. “How It Works,” n.d. <https://www.climateactive.org.au/what-climate-active/how-it-works>.
- Climate Change Authority. “Review of the Emissions Reduction Fund,” n.d. <https://www.climatechangeauthority.gov.au/publications/review-emissions-reduction-fund-2020>.
- Council of Australian Governments Energy. “Australia’s National Hydrogen Strategy,” 2019. <https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy>.
- Crossley, Penelope J. *Designing Sustainable Development - The Effectiveness of PV Solar Regulation in Australia and China*. *Asia Pacific Journal of Environmental Law* 15. Vol. 1, 2013.
- Department of Industry, Science, Energy and Resources. “Australian Government Response to the Final Report of the Expert Panel Examining Additional Sources of Low-Cost Abatement (the King Review)” 2, no. 10 (2020). <https://www.industry.gov.au/data-and-publications/government-response-to-the-expert-panel-report-examining-additional-sources-of-low-cost-abatement>.
- Durrant, Nicola. “Legal Issues in Carbon Farming: Biosequestration, Carbon Pricing and Carbon Rights.” *Climate Law* 2, no. 4 (2011): 515,525.
- “For Information on the Soil Carbon Research Program See Commonwealth Scientific and Industrial Research Organisation,” n.d. <https://csiropedia.csiro.au/soil-carbon-research-program/>.
- Friedlander, Blaine. “Study: Fracking Prompts Global Spike in Atmospheric Methane.” 14 August 2019, n.d. <https://news.cornell.edu/stories/2019/08/study-fracking-prompts-global-spike-atmospheric-methane>.
- Garnaut, Ross. *Superpower: Australia’s Low-Carbon Opportunity*. La Trobe University Press, 2019.
- Gilligan, Baxter and George. “Verification and Australia’s Emissions Reduction Fund: Integrity Undermined Through the Landfill Gas Method?” *Australian Journal of Environmental Law*

4, no. 1 (2017): 16.

Intergovernmental Panel on Climate Change. *Climate Change and Land: An International Panel on Climate Change Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terr.* 2020. https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf.

International Energy Agency. "Net Zero by 2050: A Roadmap for the Global Energy Sector (May 2021), CCUS," n.d. <https://www.iea.org/reports/net-zero-by-2050f>.

MacTiernan, Alannah. "\$15 Million Boost for Carbon Farming Projects." media statement, Western Australian Minister for Regional Development; Agriculture and Food and Hydrogen Industry, n.d. <https://www.mediastatements.wa.gov.au/Pages/McGowan/2021/07/15-million-dollar-boost-for-carbon-farming-projects.aspx>.

McKenzie, Baker and. "Big Shake-up Planned for Australia's Carbon Market." 12 June 2020, n.d. <https://www.bakermckenzie.com/en/insight/publications/2020/06/big-shake-up-planned-for-australias-carbon-market>.

Murphy, Katherine. "Anthony Albanese Commits Labor to Emissions Reduction Target of 43% by 2030." *The Guardian*, 2021. <https://www.theguardian.com/australia-news/2021/dec/03/anthony-albanese-commits-labor-to-emissions-reduction-target-of-43-by-2030>.

National Farmers Federation. *2030 Roadmap: Australian Agriculture's Plan for a \$100 Billion Dollar Industry,* 2020. https://nff.org.au/wp-content/uploads/2020/02/NFF_Roadmap_2030_FINAL.pdf.

Report of the Expert Panel Examining Additional Sources of Low-cost Abatement. "(Report for the Australian Department of Industry, Science, Energy and Resources." *14 February 2020*, n.d. <https://www.industry.gov.au/news/expert-panel-identifies-opportunities-to-reduce-emissions>.

Paris Agreement. opened for signature 22 April 2016 [2016] ATS 24 (entered into force 4 November 2016), [4.1]. (n.d.).

Potter, Ben. "Labour's Safeguard Mechanism 2.0 Explained." *Australian Financial Review*, n.d. <https://www.afr.com/policy/energy-and-climate/labor-s-safeguard-mechanism-2-0-explained-20190401-p519q0>.

Rayfuse, Rosemary. "'Drowning Our Sorrows to Secure a Carbon Free Future – Some International Legal Considerations Relating to Sequestering Carbon Fertilising the Oceans.'" *University of New South Wales Law Journal*, no. 31 (2008): 919,920.

Recovery, Gas Fired. "Media Release of the Australian Prime Minister, Minister for Energy and Emissions Reduction, Minister for Resources." Water and Northern Australia, n.d. <https://www.pm.gov.au/media/gas-fired-recovery>.

Santos, Climate Change Report 2021. "Report Highlights, 1," n.d. <https://www.santos.com/wp-content/uploads/2021/02/2021-Climate-Change-Report.pdf>.

The CCA is a statutory body established by the Australian Government. "It Provides Reports on Request of the Australian Government, and Conducts Independent Its Own Independent Research Analysis," n.d. <https://www.climatechangeauthority.gov.au/about-cca> .

"The Emissions Reduction Fund and Permanence on the Land," n.d. Link on above URL.

- Verschuuren, Jonathan. "Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative." *Climate Law* 7, no. 1 (2017): 6–7.
- Wilder, Arjuna Dibley and Martijn. "Forest Carbon Rights: Lessons Learned from Australia and New Zealand." *Carbon and Climate Law Review* 10, no. 3 (2016): 202-209.
- World Bank Group. "International Carbon Action Partnership and Navigant Consulting, State and Trends of Carbon Pricing 2019 (June 2019)," n.d., 29. <https://openknowledge.worldbank.org/handle/10986/31755>.
- Zomer, R.J., Bossio, D.A., Sommer, R. et al. "Global Sequestration Potential of Increased Organic Carbon in Cropland Soils." *Scientific Reports* 7, 2017, 15554. <https://doi.org/10.1038/s41598-017-15794-8>.