Australian Government
Climate Change Authority

CARBON FARMING INITIATIVE REVIEW REPORT

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Australian Government
Climate Change Authority

22 December 2014

The Hon. Greg Hunt, MP
Minister for the Environment
Parliament House
CANBERRA ACT 2600

Dear Minister

In accordance with section 306 of the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth), the Climate Change Authority submits to you its report of the Carbon Farming Initiative review.

As also required by the Act, the report will be published on the Authority's website (www.climatechangeauthority.gov.au).

Yours sincerely

Bernie Fraser
Chair

GPO Box 1944, Melbourne VIC 3001 | T: +61 (0)3 8656 3000 | F: +61 (0)3 8656 3030

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SUMMARY

The Authority is required by legislation to review the Carbon Farming Initiative (CFI) every three years; this is its first review. The review has benefited from consultations with stakeholders from a range of sectors and the Authority thanks those who contributed.

When introduced in 2011, the CFI was designed to complement the carbon pricing mechanism. Accordingly, it focused on sectors not covered by the carbon price, namely: agriculture, waste (in part), and land use, land use change and forestry. CFI projects earned credits that could be sold to entities with liabilities under the carbon pricing mechanism.

The carbon price has since been repealed, and the CFI has been expanded to form the Emissions Reduction Fund (ERF) and now covers all sectors of the economy. The ERF is the central plank of the government's Direct Action Plan to reduce Australia's greenhouse gas emissions. It has been introduced through amendments to the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth), which brings it within the scope of this review. For simplicity's sake, this report refers to the CFI as the scheme as originally configured, and the ERF as the scheme as approved by the parliament in November 2014.

Under the ERF, the government will purchase emissions reductions through auctions (and possibly other means). Fixed-price contracts, typically for seven years, will be offered to those who are successful at auction. Other changes to streamline the scheme are also being introduced, and a safeguard mechanism (that will discourage large emitters from increasing their emissions above historical levels) is to commence in July 2016.

While these changes are substantial, the ERF retains an essential characteristic of the CFI in that it credits projects for reducing emissions below a defined baseline, and the baseline reflects what would have been expected to occur in the absence of the scheme.

The changes to the CFI are important for this review in two ways. First, as the scheme is being expanded to become the central element of Australia's policy to reduce emissions and meet its targets, the lessons to be gleaned from its operation to date will be of interest in assessing the likely performance of the ERF. Second, as this review follows closely on the policy development process for the ERF, care has been taken not to duplicate that process, but to focus instead on the extent to which the design of the ERF addresses problems identified with the CFI, as well as other challenges that may arise.

PERFORMANCE OF THE CARBON FARMING INITIATIVE TO DATE

The CFI follows a set sequence. In essence:

- A method (also known as a 'methodology') setting out rules for undertaking and monitoring CFI projects of a particular type is developed and approved.
- Individuals or firms develop projects to reduce emissions that can be pursued under that method.
- The project proceeds and credits are issued for verified emissions reductions—these credits can then be sold.

While the effectiveness of the scheme depends on credits, having a range of methods covering different types of activities that have potential to attract projects is an essential building block. The

first methods were approved in June 2012 and the number has since grown to 26. Methods are now available for a range of activities in areas such as agriculture (for example, soil carbon and manure management), landfill and waste treatment, reforestation, avoided deforestation and savanna burning.

Initially, most projects that entered the CFI transitioned from other programs, such as the New South Wales Government's Greenhouse Gas Reduction Scheme. Over time, the number of projects has increased to 178, and new projects now make up about two-thirds of the total. Just under half of all projects are in landfill and waste treatment, with avoided deforestation, forestry and savanna burning projects making up most of the remainder. Notably, only seven agriculture projects have been approved.

Real emissions reductions have been achieved but they are relatively small

The number of credits generated under schemes such as the CFI does not necessarily equate to the emissions reductions brought about by the scheme. The number of credits may exceed 'real' emissions reductions because:

- the emissions reductions that were measured or estimated did not in fact occur, or occurred to a lesser extent (measurement risk)
- the emissions reductions occurred, but would have happened even without the scheme (additionality risk)
- the emissions reductions relate to sequestration that did not persist for the required period (permanence risk)
- the project triggered an increase in emissions outside the project (leakage risk).

In the Authority's view the CFI appears to have achieved a reasonably high level of environmental integrity (i.e. it has brought about real reductions in emissions that would not otherwise have occurred). The main area of possible concern, as is usual for schemes of this type, is with additionality. The problem is that it can be virtually impossible for governments, regulators or indeed anyone outside the firm concerned, to quantify what would have otherwise happened.

The available evidence suggests that additionality rates for the CFI have been reasonably high. First, the CFI has taken a conservative approach to method development and approval, tending to exclude most activities that are potentially commercially viable in their own right. Second, a considerable proportion of CFI projects are for activities that have no commercial driver, and therefore would not have happened without the scheme. Third, robust arrangements appear to be in place to exclude activities that are required under government regulation.

That said, some CFI projects potentially had a commercial driver, and the tests applied are not capable of definitively determining whether these are additional: some credits issued are likely to have been non-additional.

Despite the risks identified earlier, the number of credits issued is likely to be a reasonable indication of the emissions reductions the CFI has achieved. As at 3 December 2014, 10.6 million credits had been issued, with each credit representing one tonne of emissions reductions. This equates to emissions reductions of, on average, about 2.5 Mt CO_2-e per year, with emissions reductions increasing over time. This is equivalent to about a two per cent reduction in emissions covered by the CFI. This annual quantity of emissions reductions is roughly on par with reductions achieved by the Renewable Energy Target (RET) in recent years.

Some costs have been unnecessarily high

Some emissions reduction policies in Australia have been criticised for being uncoordinated and high cost. The CFI is not in this category; abatement costs were capped by expected carbon prices.

This does not mean, however, that there was no scope for reductions in costs. The government invested heavily in method development, sometimes in areas that have, at least to date, failed to attract projects. While it would be unrealistic to expect the level of interest in running projects of different types to always be accurately predicted, more might have been done to better prioritise method development. Some private expenditure on method development also has been less cost-effective than it might have been, because proponents had an incentive to develop narrow methods that were not suitable for use by other firms.

At the same time, some costs associated with measurement, verification and reporting appear to have been higher than necessary, with costs not aligned with the risks being managed.

PROSPECTS FOR IMPROVEMENT UNDER THE EMISSIONS REDUCTION FUND

The move from the CFI to the ERF created an opportunity to learn from experience with the CFI. Following extensive consultations throughout 2014, the new scheme was legislated in November 2014.

The Emissions Reduction Fund incorporates some important improvements

Uncertainty about future prices for credits was the single most important factor that discouraged participation in the CFI. Perhaps the most important improvement under the ERF is that project proponents will have the certainty of a fixed-price contract, typically over seven years, and in some cases, possibly up to 10 years. This is likely to provide an attractive investment proposition for activities that generate a high proportion of their emissions reductions within the contract period.

The ERF also adopts a new approach to method development, which entails:

- prioritising method development
- developing methods that have broader applicability and are potentially more consistent in their approach to managing risks
- introducing facility-based methods (for multiple activities at the one facility)
- allowing baselines based on emissions intensity (so that reductions in emissions per unit of production can be credited).

Some potential downsides also exist, including potentially greater difficulties in managing additionality risks for methods with very broad applicability. Overall, however, in the Authority's judgement the new approach to method development and approval is an improvement; well implemented it is likely to increase participation and reduce transaction costs (on a per tonne CO_2-e basis).

Another improvement is more flexible reporting. This allows project proponents to weigh up for themselves the cash flow advantages of reporting—and therefore receiving credits—more frequently against the extra time and cost that might be involved. Risk-based auditing of emissions reductions will also be introduced. The details are yet to be finalised, but, in-principle, a well-designed risk-based audit regime should reduce transaction costs without eroding the environmental integrity of the scheme.

But it also introduces some new or expanded risks

Unlike the CFI, which was a comparatively small land-based program, the ERF will operate across all sectors of the economy, has a funding commitment of at least $2.55 billion and is being relied upon to do a lot of the heavy lifting to meet Australia's emissions reduction goals. Rapidly expanding the scale and scope of the scheme brings significant risks, especially for additionality.

Developing robust methods and credible baselines for many new activities will be challenging, and risks will need to be well managed if additionality rates are not to decline sharply, and/or many opportunities to achieve low-cost abatement remain outside the ERF. Good governance arrangements will be critical, and the Department of the Environment and the Clean Energy Regulator are developing the expertise, capacity and consultation mechanisms that will be important for the scheme to perform. The risks escalate for large projects, suggesting that consideration be given to introducing enhanced additionality tests for projects above a threshold level.

Another risk is that the ERF could fail to encourage investments that would achieve low-cost abatement over a long period. If contract periods are mostly capped at seven years, projects with much longer abatement profiles would probably need to rely on an expectation of reasonable prices beyond the contract period. While there are some potential sources of demand for such credits, in the near term at least, price expectations are likely to be both low and uncertain.

And there are some problems that the Emissions Reduction Fund simply cannot address

Some problems identified with the CFI cannot be fixed under the ERF because they are inherent in crediting-below-a-baseline approaches. Even if the additionality risk is appropriately managed some non-additional emissions reductions will inevitably be credited, and some genuine abatement opportunities excluded—for fear they are non-additional, or because they do not lend themselves to an activity- or facility-based method. In the process, considerable resources could be devoted to managing the additionality risk given the complex nature of the task.

Uncertainty has plagued Australian policy on climate change for many years. While the passage of the ERF amendments and the availability of methods and contracts will bring a degree of certainty for some activities over the next few years, the role and budget allocation for the ERF after 2020 is unclear. Expectations of longer-term policy stability and predictability will be important in supporting investments required to help Australia meet its long-term emissions reduction goals.

POLICY INTERACTIONS

CFI and ERF projects can deliver benefits other than emissions reductions. Sometimes these benefits accrue to the project proponent—as, for example, when a firm installs more energy efficient equipment it also saves on energy costs, and when farmers plant trees they might also get shelter and soil protection benefits. At other times the benefits accrue more widely, such as the biodiversity benefits of establishing native vegetation on previously cleared land.

Some stakeholders have argued that the ERF should pay a higher price for credits from projects with significant public co-benefits. The government has decided against this approach, and that the ERF will focus on achieving lowest cost emissions reductions. The Authority endorses this approach for two reasons:

- paying for co-benefits from the ERF would reduce the capacity of the scheme to reduce emissions, which would be at odds with its central role in achieving Australia's targets
- the co-benefits concerned are better assessed and secured through other programs.

That said, to achieve the best outcomes the ERF will need to interact efficiently with other policies and programs. Projects should in general be able to secure support from both the ERF and other

relevant programs where the programs are paying for different benefits and where this does not undermine additionality for the ERF.

In addition to crediting approaches, which underpin the ERF, there are many policy tools available to reduce emissions, including regulatory standards and information campaigns. Carbon prices—another tool—have been ruled out by the government. International emissions reduction units may also have a role to play; the Authority has previously recommended they be used to bridge any gap between domestic reductions and Australia's targets. Some tools are better suited than others in exploiting different emissions reduction opportunities, but the best approach to reducing emissions is to have access to the widest possible array of policy measures.

THE EMISSIONS REDUCTION FUND AND EMISSIONS REDUCTION TARGETS

Australia has a minimum target to reduce emissions by 5 per cent relative to 2000 levels by 2020. Earlier this year, the government estimated 421 Mt CO_2-e of cumulative abatement would be needed over the period 2015-20 to meet this target. Since then, falling electricity demand and other factors have likely reduced the task, with one source recently estimating required abatement over the period 2015-20 to be as low as 225-279 Mt CO_2-e.

The government has not released estimates of the reductions it expects to secure through the ERF over the period to 2020. Available studies of Australia's emissions reductions opportunities, and of what the ERF is likely to achieve with its current funding, however, suggest that the ERF would fall well short of achieving the reductions required to meet Australia's minimum 2020 target. This highlights the need to strengthen the ERF wherever possible—the planned safeguard mechanism is important here but that is still in the design stage.

More generally, the limitations inherent in ERF-type schemes—together with the obvious budgetary limitations—again highlight the imperative of policy-makers having access to the widest possible range of policy instruments to achieve Australia's targets for both 2020 and the period beyond.

Over the next 18 months the Authority will review Australia's post-2020 emissions reduction goals, and the policies needed to achieve those goals. This review will take particular account of international action, and the implications for Australia.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS	NUMBER	PAGE
The CFI has achieved about 10 Mt CO_2-e of real emissions reductions over the last four years. Its additionality rates seem reasonably high and it takes a conservative approach to the measurement of emissions. To date, no specific concerns about permanence or leakage have been identified.	C 1	25
Participation in, and emissions reductions from, the CFI have been constrained, principally because policy uncertainty led to low price expectations and a lack of confidence in longer-term returns. Participation has also been affected by gaps in method coverage and broad exclusions, and relatively high transaction costs.	C 2	34
By providing a fixed price for up to seven years, the standard ERF contract is likely to be attractive to many project proponents—particularly those with projects that generate a relatively large proportion of emissions reductions in their early years.	C 3	36
Changes to streamline the ERF are likely to result in lower transaction costs than for the CFI, in many cases without adversely affecting emissions reductions. The ERF approach to method development and approval appears to represent an improvement from the CFI approach, but much will depend on implementation.	C 4	41
Given uncertain and potentially low prices for credits beyond the ERF contract period, standard seven-year contracts (and even 10-year contracts) might not provide sufficient incentive for some long-lived investments that deliver abatement over an extended period, thereby excluding some low-cost opportunities.	C 5	42
Expansion and streamlining of the ERF are likely to result in additionality rates declining somewhat. Provided the decline is small and compensated by lower transaction costs and greater participation, this ‘rebalancing’ would constitute an improvement. There is a risk, however, that these changes could cause additionality rates to decline sharply, particularly as the scheme is expanding into areas where it is inherently difficult to judge additionality (such as energy efficiency).	C 6	44
Domestic and international experience suggests there are inherent limitations and complexities in crediting emissions reductions. The ERF purchasing scheme will inevitably miss some low-cost abatement opportunities because it is not feasible to devise methods and baselines that would credit these opportunities without also crediting many non-additional projects.	C 7	46

CHAPTER 1. INTRODUCTION

This chapter introduces the review and provides an overview of the Carbon Farming Initiative (CFI) and Emissions Reduction Fund (ERF). It also outlines the criteria the Climate Change Authority (the Authority) has used to assess the performance of the scheme and introduces the concept of additionality, which plays a central role in the operations of the CFI and ERF.

1.1. ABOUT THIS REVIEW

The Authority is an independent statutory agency, established to provide expert advice on Australian climate change policy. The Authority is required by the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth) to review the CFI every three years; this is its first review.

Uncertainty about the future of the Authority, together with staffing and other constraints, has led to the review being conducted over a short timeframe. Reflecting this, the review is not comprehensive but concentrates on what the Authority considers to be the some of the more significant issues. The review considers:

- performance of the CFI to date
- prospects for improving on that performance in the newly introduced ERF
- interactions between the CFI/ERF and other policies
- the role of the scheme in meeting Australia's greenhouse gas emissions targets.

The Authority recognises that the CFI is a relatively new scheme (with three years of operation) that has recently morphed into the ERF. This is a relatively short period on which to assess the performance of the scheme.

During the course of the review, the Authority has engaged with a range of stakeholders across various sectors. An issues paper was released on 17 October 2014; this generated 17 submissions. The Authority met directly with 20 individual stakeholders and held a roundtable meeting on 25 November 2014, at which some preliminary conclusions were tested. Some stakeholders raised issues that the Authority has not been able to examine in this review; some of these are noted in this report. Further details on consultations are included in Appendix A.

Given the competitive nature of the CFI market, some of the Authority's discussions with stakeholders were conducted on a confidential basis; where relevant this confidentiality has been respected in this report.

The Authority has had regard to the legislation passed recently to amend the CFI Act to form the ERF, as well as to the extensive consultations (including public submissions on the ERF green paper) leading up to the legislative change. The Authority has also drawn on its own previous consultations and research reports; in particular, the April 2014 study *Coverage, Additionality and Baselines—Lessons from the Carbon Farming Initiative and Other Schemes*.

1.2. OVERVIEW OF THE CARBON FARMING INITIATIVE AND EMISSIONS REDUCTION FUND

The CFI was originally designed as a 'carbon offset' scheme to complement the carbon pricing mechanism. The carbon pricing mechanism has since been repealed, and the CFI has been

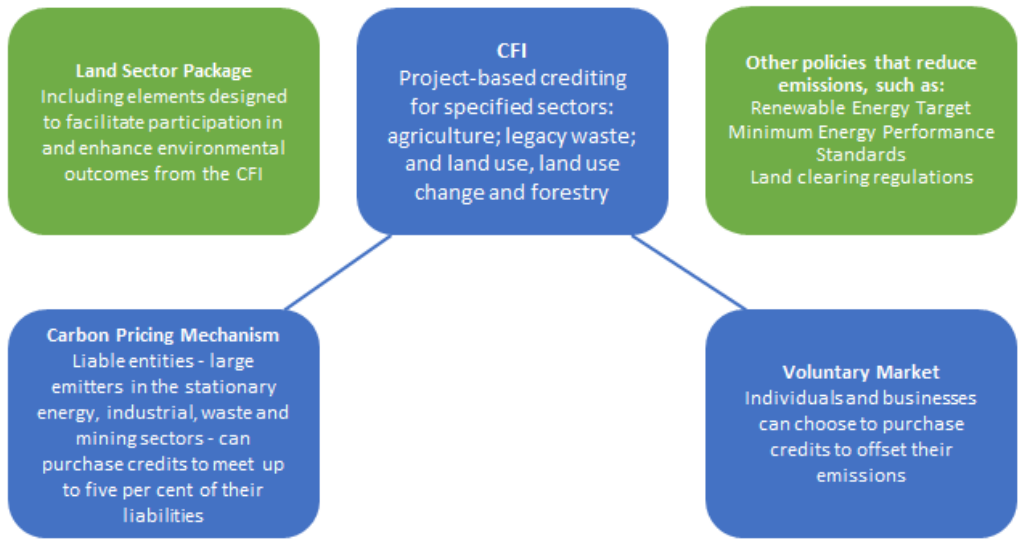
transformed into the ERF, which is now the central element of the government's Direct Action Plan to reduce Australia's greenhouse gas emissions.

The ERF has been introduced through amendments to the CFI Act, so the CFI could be said to continue. In the interests of simplicity, however, in this report references to the CFI are to the scheme as originally configured, while the ERF refers to the scheme as approved by the parliament in November 2014. This approach is consistent with the white paper on the ERF, which states that the 'Carbon Farming Initiative will be folded into the Emissions Reduction Fund so there is one programme' (Commonwealth of Australia 2014, p. 58).

1.2.1. THE CARBON FARMING INITIATIVE AS ORIGINALLY CONFIGURED

The CFI, which commenced operation in December 2011, was a voluntary project-based initiative that provided incentives for individuals and organisations to sequester carbon and avoid or reduce greenhouse gas emissions. The CFI focused on sectors that were not covered by the carbon pricing mechanism, namely: agriculture; legacy waste (that is, emissions from waste deposited before the introduction of the carbon pricing mechanism); and land use, land use change and forestry (Figure 1). Firms in the sectors covered by the carbon pricing mechanism (such as electricity generation and industrial processes) could buy credits from CFI projects and use these to 'offset' their carbon price liability. In this way, the CFI extended the reach of the carbon price to a wider set of activities across the Australian economy.

FIGURE 1: THE CARBON FARMING INITIATIVE IN THE BROADER POLICY CONTEXT



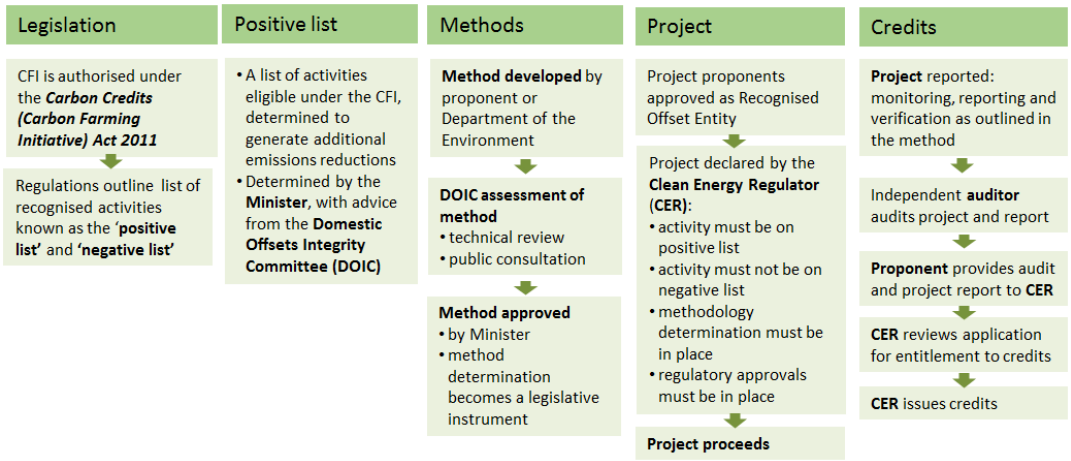
Note: Green boxes are policy elements that are not part of the CFI and are not involved in the purchase of credits.

Source: Climate Change Authority

The CFI created incentives by crediting projects for achieving emissions reductions below a defined baseline (essentially 'business-as-usual' levels). To be accepted into the CFI, projects were required to meet a range of criteria, including that they could be conducted under an approved method or 'methodology'. Project proponents were issued with credits, known as Australian carbon credit units (ACCUs), for verified emissions reductions, and these could be sold to entities with liabilities under the carbon pricing mechanism. This opportunity exists until 2 February 2015, which is the deadline

for the final surrender period of the carbon pricing mechanism (CER 2014). The CFI process is summarised in Figure 2 and discussed further in Chapter 2.

FIGURE 2: OVERVIEW OF THE CFI PROCESS



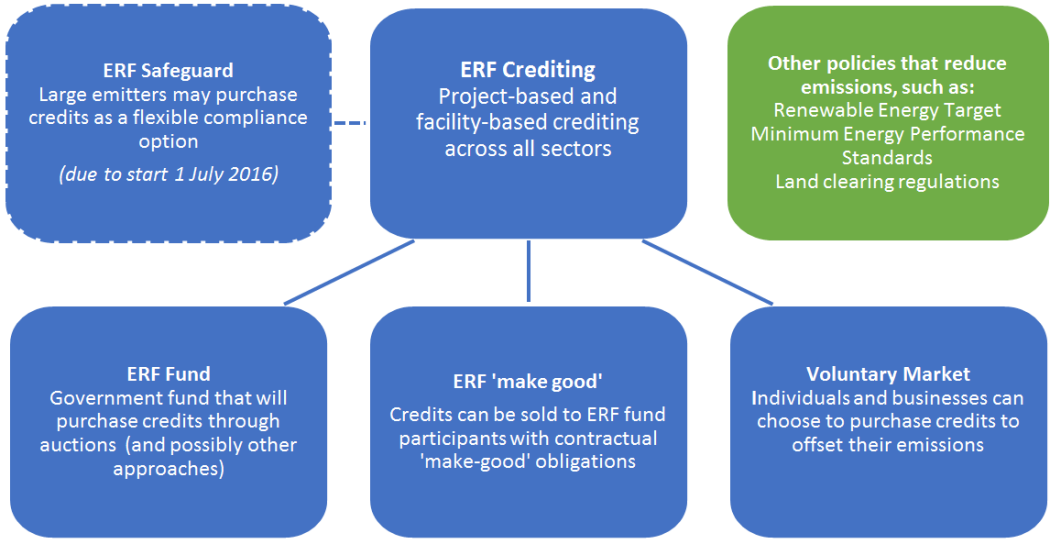
Source: Climate Change Authority based on DCCEE (2012)

The Land Sector Package was announced at the same time as the CFI, in July 2011. It was designed to improve the resilience of Australia's flora and fauna to the impacts of climate change and enhance the environmental outcomes of carbon farming projects. Some parts of the package facilitated participation in the CFI; for example, $20 million was allocated under Carbon Farming Futures to convert research into practical CFI methods (Commonwealth of Australia 2011, p. 95). A $22 million Indigenous Carbon Farming Fund was also established to assist Indigenous communities benefit from the CFI (Commonwealth of Australia 2011, p. 97).

1.2.2. THE SCHEME IN ITS NEW FORM AS THE EMISSIONS REDUCTION FUND

Amendments made recently to the CFI Act established the ERF. The amendments retain some of the main features of the original scheme, while substantially altering or expanding others (Figure 3). The amendments also require the development of a 'safeguard mechanism', to commence on 1 July 2016. In developing the ERF the government has sought to build upon lessons learnt under the CFI.

FIGURE 3: THE EMISSIONS REDUCTION FUND IN THE BROADER POLICY CONTEXT



Note: Green box shows policy elements that are not part of the ERF and are not involved in the purchase of credits.

Source: Climate Change Authority

The main changes under the ERF are:

- Coverage has been expanded to allow all sectors of the economy to participate (whereas the CFI covered sectors that account for about 20 per cent of Australia's emissions).
- The government will be the main purchaser of credits (whereas under the CFI credits were sold mainly to liable entities under the carbon pricing mechanism).
- The processes for developing methods, approving projects and crediting emissions reductions have been 'streamlined'.
- A safeguard (penalty) mechanism will operate from 1 July 2016.

The government has committed $2.55 billion for purchasing credits, with further funding to be considered in future budgets (Commonwealth of Australia 2014). Credits will be purchased through auctions (and potentially also through other means) and the government will enter into contracts with successful bidders. The standard contract period will be seven years, with longer contracts possible in some circumstances. A new set of draft rules proposes that longer contracts not exceed 10 years' duration (DOE 2014a). Some private sales may occur through the voluntary market, make-good provisions (under which ERF project proponents buy credits to make up for shortfalls in contracted quantities) and, possibly in the future, to entities with liabilities under the safeguard mechanism. The ERF process is summarised in Figure 4.

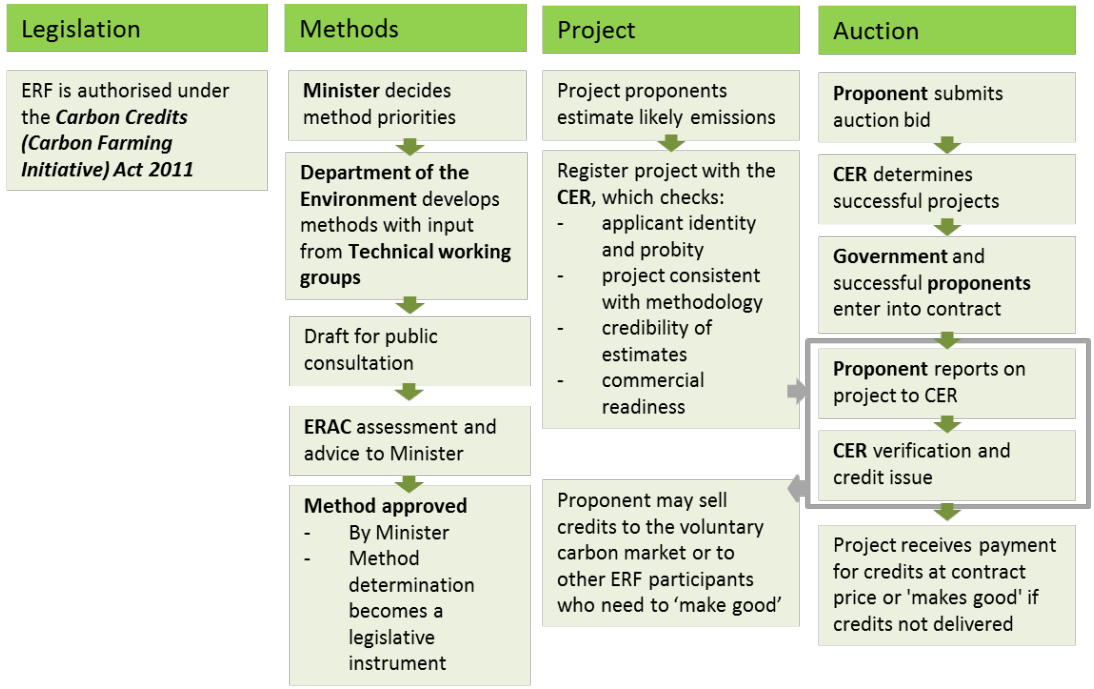
The purpose of the safeguard mechanism is to ensure that emissions reductions paid for through the ERF are not offset by increases in emissions elsewhere in the economy (Commonwealth of Australia 2014, p. 51). While the mechanism is under development, the government has indicated it will:

- apply to facilities with direct emissions over 100,000 tonnes per year (covering about 52 per cent of Australia's emissions)

- use baselines that reflect the highest level of reported emissions for a facility over the period 2009-10 to 2013-14 (DOE 2014b).

Existing CFI projects will automatically be registered under the ERF and projects will receive a new crediting period starting from the commencement of the scheme. Registered projects will have the option to continue to use the version of the method in force when the project was approved, or proponents may apply to use another applicable method. CFI project proponents will be able to participate in an auction run by the Clean Energy Regulator (CER) (DOE 2014c).

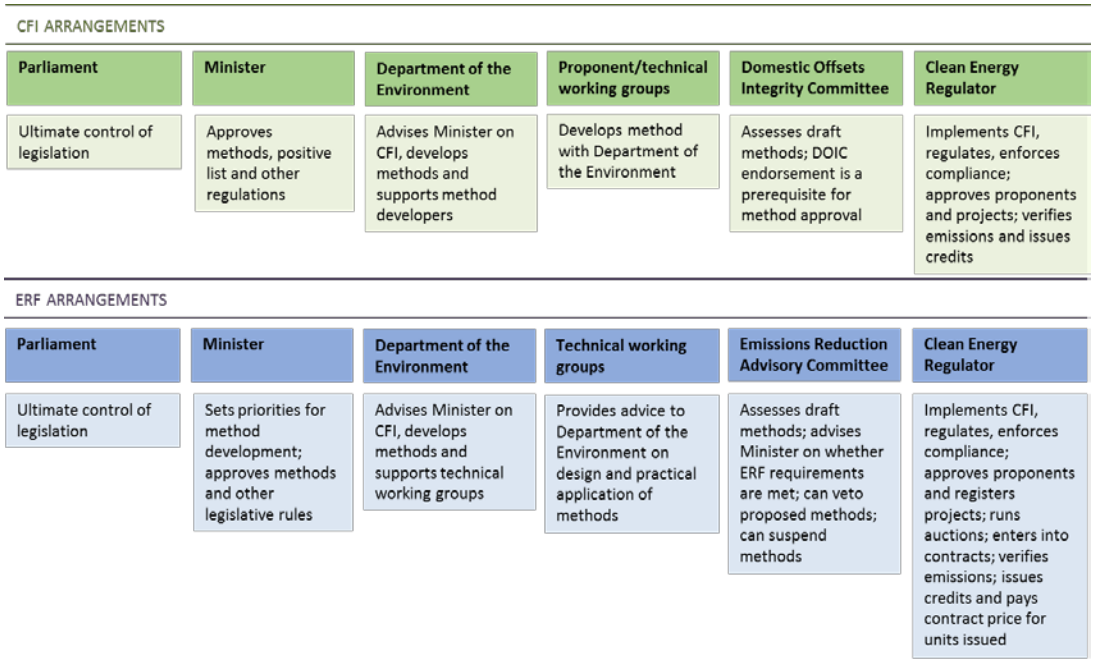
FIGURE 4: OVERVIEW OF THE ERF PROCESS



Source: Climate Change Authority based on Commonwealth of Australia (2014)

Governance arrangements for the ERF are different in some respects from those that applied to the CFI (Figure 5). The government has stated that it will review operational elements of the ERF towards the end of 2015 (Commonwealth of Australia 2014).

FIGURE 5: OVERVIEW OF GOVERNANCE ARRANGEMENTS



Source: Climate Change Authority

1.3. CRITERIA FOR ASSESSING PERFORMANCE

The Authority's work is guided by the principles set out in the *Climate Change Authority Act 2011* (Cth). These include that measures to respond to climate change should:

- be economically efficient, environmentally effective, equitable and in the public interest
- support the development of an effective global response to climate change, and be consistent with Australia's foreign policy and trade objectives
- take account of the impact on households, businesses, workers and communities.

The Authority has assessed the CFI (in its old and new forms) against both these guiding principles, and the objects of the CFI Act, which are to:

- implement some of Australia's obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol to that convention
- create incentives for people to carry on offset projects
- reduce greenhouse gas emissions in a way that protects Australia's natural environment and improves resilience to the effects of climate change.

The Authority's view is that the most important criteria for this review are environmental effectiveness (i.e. generating additional reductions in emissions) and economic efficiency (i.e. and doing so in cost-effective ways relative to alternative approaches). Other criteria have been referred to where relevant.

The scheme's environmental effectiveness is a function of the quantity of real (that is, accurately measured, and 'permanent') emissions reductions it brings about. This means that effectiveness can

be measured in tonnes of carbon dioxide equivalent greenhouse gases (CO_2-e). To help interpret the significance of the emissions reductions achieved, this review compares the scheme's impact with relevant benchmarks, such as the emissions reductions achieved by other policies. Interim indicators, such as the number of methods developed and approved, and number of projects established are also useful, particularly for what is a relatively new scheme.

The emissions reductions achieved by the scheme depend on the level of participation and the environmental integrity of the scheme. Environmental integrity would be eroded if the scheme were to issue credits for emissions reductions that:

- were measured or estimated, but did not in fact occur, or occurred to a lesser extent (measurement risk)
- occurred, but would have happened even without the scheme (additionality risk)
- relate to sequestration that did not persist for the required period (permanence risk)
- triggered an increase in emissions outside the project (leakage risk).

The environmental effectiveness of the scheme determines its contribution to meeting Australia's emissions reduction targets, and therefore its international commitments. This contribution is of direct relevance to the performance of the CFI and ERF, given the CFI Act object relating to Australia's obligations under the UNFCCC. It is particularly important now, given that the ERF is the centrepiece of the government's plan to reduce Australia's emissions.

Estimating the costs of dangerous climate change is a notoriously difficult task, but it is one that is unnecessary in a review such as this. Australia has set emissions reduction targets, and implicit in this is an acceptance that the benefits of achieving those targets will outweigh the costs involved. This means that assessing the economic efficiency of the CFI and ERF schemes predominately relates to the cost to the community per tonne of emissions reductions brought about through the schemes.

In making this assessment a broad concept of cost should be adopted, factoring in:

- direct project costs—for example, costs associated with planting trees, maintaining them and forgoing the income that could have come from using the land for agricultural production
- transaction costs borne by project proponents—including the time and expense in contributing to method development, developing projects, and reporting and verifying emissions reductions
- transaction costs borne by the government—including for developing policy and methods, and administering the scheme.

Where any of these costs is higher than necessary there is at least some degree of inefficiency. Therefore, in this review assessments are made on the extent to which there are opportunities to reduce costs without reducing environmental integrity.

1.4. THE IMPORTANCE OF ADDITIONALITY

The CFI and ERF are specific examples of a broad type of policy called 'baseline and credit schemes'. These schemes take many different forms, but they all share some basic features, including setting a baseline, and issuing credits when the outcome is better than the baseline. Australia has implemented a range of baseline and credit schemes at the state and national level, including the Renewable Energy Target (RET), the New South Wales Greenhouse Gas Reduction Scheme (GGAS) and the New South Wales Energy Savings Scheme (ESS).

A key challenge in baseline and credit schemes is to set the baseline at a level that ensures credits are only issued for 'additional' emissions reductions—that is, reductions that would not have occurred but for the scheme. If the emissions reductions would have occurred anyway (that is, under business-as-usual), they do not contribute to the environmental effectiveness of the scheme. Moreover, where this occurs, all transaction costs associated with participation in the scheme are a waste of the community's resources. Additionality is therefore central to the environmental effectiveness of baseline and credit schemes (CCA 2014; PC 2008; World Bank 2010).

It is possible for all or only some of the credits issued to a project to be non-additional. The former occurs where the project being credited would have taken place without the scheme. The latter occurs where the project would not have proceeded, but the baseline set is above business-as-usual. An example of the latter is where a firm upgrades to more energy efficient equipment and the baseline is set based on the emissions associated with the old equipment, when business-as-usual behaviour would have seen it upgraded in two or three years' time.

Experience in Australia and elsewhere indicates that non-additional credits can substantially reduce a scheme's effectiveness:

- One study estimated that 70 per cent or more of credits under the New South Wales GGAS scheme were likely to relate to non-additional emissions reductions over the life of the scheme (MacGill et al. 2005).
- A recent review of the Victorian Energy Efficiency Target scheme estimated that only 8 million tonnes of emissions reductions could be attributed to the 16.7 million certificates created. Both non-additional credits and measurement problems contributed to this discrepancy (DSDBI 2014).

Additionality tends to be harder to assess for projects that offer low-cost emissions reductions. If a firm is proposing to undertake an activity that is rarely undertaken in its sector, and is (without scheme support) clearly commercially inferior to alternatives, additionality can be self-evident. In contrast, if a firm proposes an activity that is only slightly commercially inferior to an alternative with higher emissions, it can be all but impossible to independently verify that the activity is additional.

There is no easy answer to how to deal with additionality issues under a baseline and credit scheme. A wide range of approaches has been developed and used, including considering regulatory requirements, common practices in the industry and the individual project's finances. Stringent additionality tests can be costly and can exclude some projects that were actually additional, while a more relaxed approach can impair the integrity (and therefore effectiveness) of the scheme. The best approach is to try to strike a reasonable balance between the costs involved in assessing additionality and those resulting from incorrect assessments.

CHAPTER 2. PERFORMANCE OF THE CARBON FARMING INITIATIVE

This chapter assesses the performance of the CFI to date—that is, before its expansion into the ERF. Section 2.1 documents progress that was made in developing methods, attracting projects and generating credits. Sections 2.2 to 2.4 examine particular aspects of performance relating to the emissions reductions achieved and the costs of the scheme. Section 2.5 identifies the main factors that limited participation in the CFI.

2.1. METHODS, PROJECTS AND CREDITS

CFI methods, projects and credits sat within a legislative framework governed by the CFI Act. The framework involved a number of elements, as follows.

- **Legislation and regulations**—specified the coverage and governing principles for the scheme. These principles helped ensure environmental integrity by requiring that:
  - emissions reductions are measurable and verifiable
  - measurement methods are supported by peer-reviewed science and are not inconsistent with Australia's international greenhouse gas emissions accounts
  - measurement methods account for leakage and variability, and use conservative assumptions
  - emissions reductions are additional to what would occur in the absence of the project
  - carbon sequestration is permanent (carbon stocks maintained on average for at least a 100-year period)
  - projects avoid negative social or environmental consequences, including impacts on water availability, biodiversity conservation, employment and other values.
- **Positive list**—specified eligible activities under the CFI. This was a list of activities that were not common practice in an industry and were therefore considered to generate additional emissions reductions.
- **Methods (or 'methodologies')**—rules for undertaking and monitoring a project and generating credits. A method was required for each kind of activity that could be credited under the scheme and was required to contain:
  - a list of emissions sources and sinks affected by the project
  - monitoring, verification and reporting requirements
  - instructions for determining a baseline that represents what would occur in the absence of the project
  - procedures for measuring or estimating emissions reductions or sequestration relative to the baseline.
- **Projects**—activities that reduce emissions to gain credits. To be approved, a project was required to be covered by a method and implement an activity that was both included on the positive list, and was not on the 'negative list' (a list of activities that pose unacceptable risks to water, biodiversity, and so on). To undertake a CFI project, a person was required to become a 'recognised offsets entity'.
- **Crediting**—after emissions reductions or sequestration from approved projects were verified, ACCUs were issued by the CER. All ACCUs can be traded or sold in Australia. Prior to CFI Act amendments implementing the ERF, ACCUs could be converted into Kyoto units for export, on request. It appears this option was never used.

2.1.1. AVAILABLE METHODS

A project was only able to participate in the CFI if it was covered by an approved method. The range of CFI methods therefore indicates the scope of activities that could participate.

Method proposals were developed by the Australian Government or industry participants. The Domestic Offsets Integrity Committee (DOIC) considered each proposal and either endorsed or did not endorse it on the basis of legislated criteria, including the 'offsets integrity standards'. These standards were designed to ensure that credits issued under CFI methods represented real and additional emissions reductions.

The Minister considered endorsed methods and could approve them by making a methodology determination, which is a legislative instrument under the CFI Act. All CFI methods that were endorsed by the DOIC were approved by the Minster.

In all, 26 CFI methodology determinations were made and eight method proposals were considered by the DOIC but not endorsed (Table 1), while one CFI method was varied. The majority of methodology determinations were for activities in the forests and waste sectors. Savanna burning and some agriculture activities (such as livestock manure management) were also covered by methodology determinations.

TABLE 1: METHODOLOGY DETERMINATIONS MADE AND PROPOSALS NOT ENDORSED, BY ACTIVITY

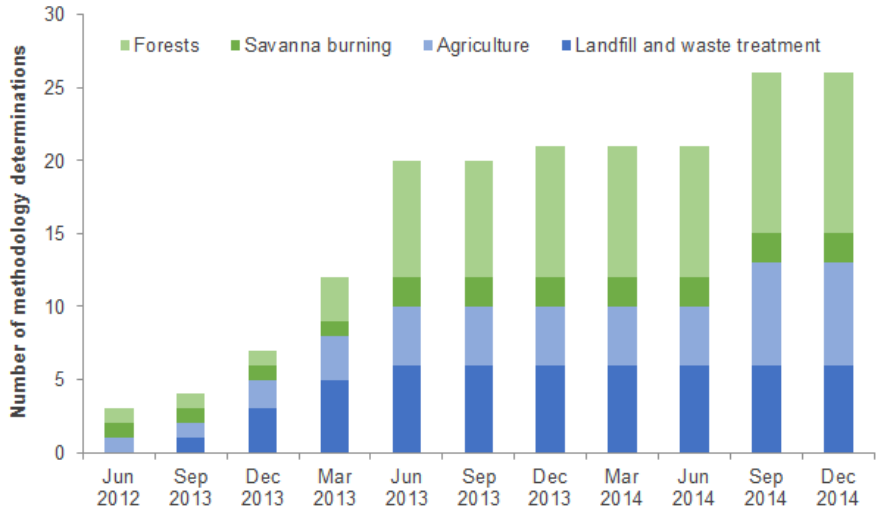
ACTIVITY	METHODOLOGY DETERMINATIONS MADE	METHODOLOGY PROPOSALS NOT ENDORSED
Methane in piggeries	3	1
Livestock feed additives	2	2
Dairy manure management	1	–
Soil carbon	1	–
Feral camel culling	–	1
Managed grazing systems	–	1
Alternative fertiliser products	–	1
Reforestation and other forestry activities	10	1
Avoided deforestation	1	1
Savanna burning	2	–
Landfill and waste treatment	6	–
Total	**26**	**8**

Note: Data current as at 3 December 2014.

Source: Climate Change Authority based on DOE (2014a, 2014b)

The CFI Act commenced in December 2011 and the first methodology determinations were made in June 2012. Since then, methods have become available for an expanding range of activities (Figure 6). Most CFI methods (20 of 26) were made by July 2013.

FIGURE 6: METHODOLOGY DETERMINATIONS, BY SECTOR



Note: Figure shows total CFI methods available at the end of the month specified. Data current as at 3 December 2014. 'Forests' refers to reforestation, avoided deforestation and other forest activities.

Source: Climate Change Authority, based on dates on which determinations were made

The DOIC refused to endorse method proposals that did not meet the offsets integrity standards or other legislated criteria. For example, a proposed avoided deforestation method was refused partly because some activities potentially within its scope were not covered by the additionality test regulations (the positive list) (DOIC 2013a, p. 2). A proposal for a method to establish agribelt forests was refused endorsement partly because it did not provide adequate instructions for establishing project baselines (DOIC 2013b, p. 1).

In general, the greater the number of methods, the greater the range of activities that could be accommodated within the CFI. However, this was not always the case, because:

- Methods could have broad or narrow applicability within a sector. For example:
  - the 'Savanna burning 1.1' method applies broadly across savanna areas in northern Australia that receive more than 1000 millimetres long-term average annual rainfall
  - a method covering projects that divert construction and industrial waste from landfill and use it to manufacture fuel ('Diverting waste from landfill for process engineered fuel manufacture') is only applicable to previous Greenhouse Friendly projects and only has one registered project.
- Some sectors had multiple methods for distinct activities (for example, within the forests sector there is one avoided deforestation method, two methods for human-induced regeneration of native vegetation and a number of methods for the planting of forests). Some activities had multiple methods using distinct approaches to measuring or estimating the emissions reductions achieved (for example, there are three reforestation and afforestation methods, each with slightly different rules for measuring the quantity of carbon sequestered).
- A small number of methods were revisions of previous methods.

Gaps in the coverage of approved methods meant the CFI did not in practice encourage all 'eligible' emissions reduction activities. For example, commercial forestry and early finishing of beef cattle are activities with potential to reduce emissions but no approved methods. Section 2.5 examines gaps in methods.

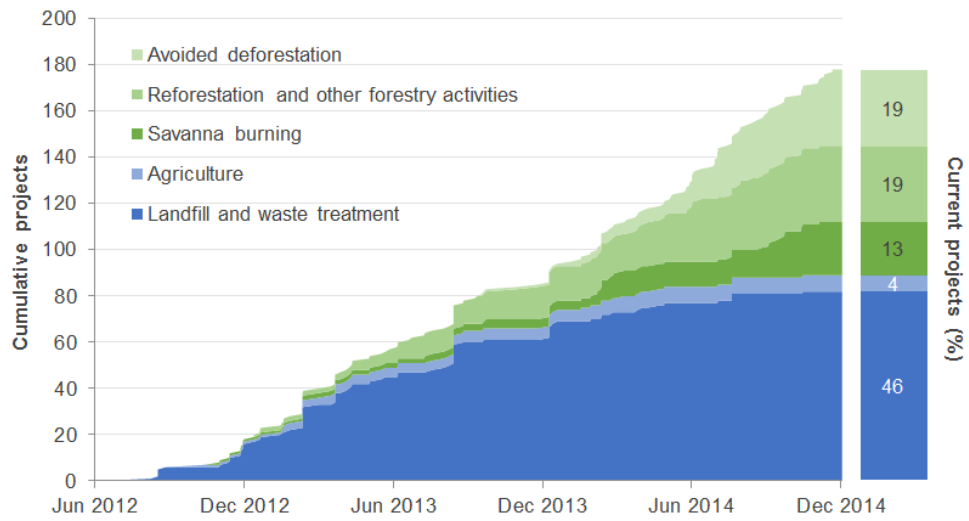
2.1.2. PROJECT UPTAKE

One object of the CFI Act is to create incentives for offsets projects. The number of projects is an indicator of how successful the CFI has been in meeting this objective.

There were 178 CFI projects as at 3 December 2014. Just under half of these (46 per cent) were landfill and waste treatment projects, 19 per cent were avoided deforestation projects, and 19 per cent were other types of forest projects. Savanna burning projects (13 per cent) and agriculture projects (four per cent) made up the remainder.

Figures 7 and 8 show there has been a slow but steady ramp-up of projects since the first method was made in 2012. Landfill and waste treatment projects dominated initially, but over time participation in other sectors increased, particularly for forest activities.

FIGURE 7: PROJECT ENTRY, BY SECTOR

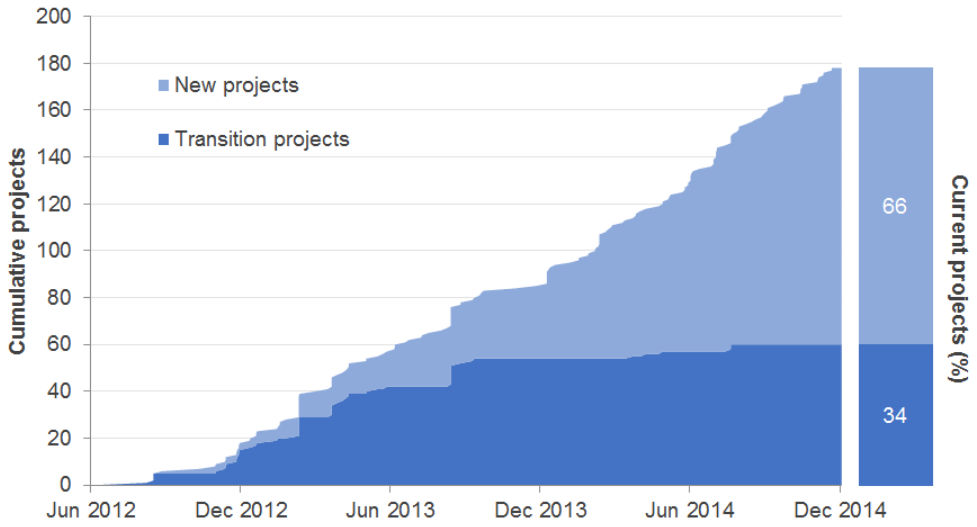


Note: 'Current projects' percentages do not add to 100 due to rounding. Data current as at 3 December 2014.

Source: Climate Change Authority based on CER (2014a)

Project types covered by an approved method were allowed to transition into the CFI from pre-existing state and Commonwealth offsets schemes; for example the New South Wales Government's GGAS. About a third of all projects that have entered the CFI have transitioned from pre-existing schemes (Figure 8). These 'transition projects' dominated the early CFI period, but their entry has slowed considerably since mid-2013, likely because most projects that were eligible to transition had already done so.

FIGURE 8: PROJECT ENTRY—NEW AND TRANSITION PROJECTS



Note: Data current as at 3 December 2014.

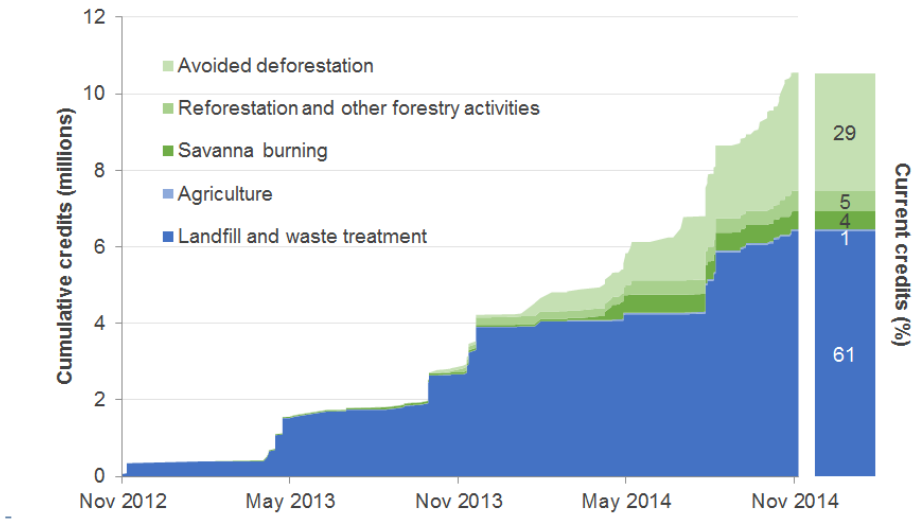
Source: Climate Change Authority, based on Clean Energy Regulator data

2.1.3. CREDITS ISSUED

The number of credits issued is a key indicator of the CFI's environmental effectiveness (as discussed later, the environmental integrity of credits also needs to be taken into account).

As at 3 December 2014, 10.6 million ACCUs had been issued. Credit issuance has increased sharply in recent months. This is likely to be because CFI project proponents wish to sell credits to entities liable under the carbon pricing mechanism before the final surrender deadline on 2 February 2015. As at 3 December 2014, 61 per cent of credits have been for landfill and waste treatment projects, and 29 per cent have been for avoided deforestation projects. Reforestation and other forestry projects account for five per cent of credits; however, these are likely to generate increasing amounts of credits over time because forest growth generally accelerates five to 10 years after planting. Savanna burning projects (four per cent) and agriculture projects (one per cent) make up the remainder (Figure 9).

FIGURE 9: CUMULATIVE CREDITING, BY SECTOR

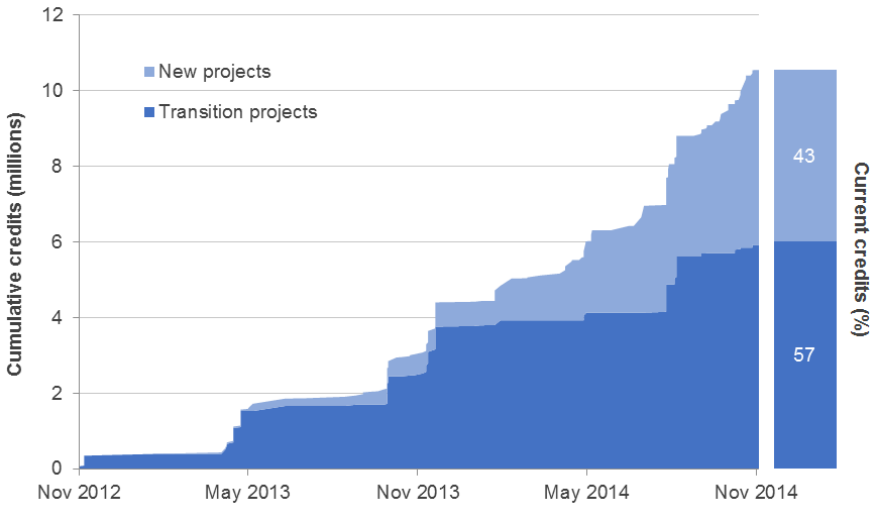


Note: Data current as at 3 December 2014.

Source: Climate Change Authority, based on Clean Energy Regulator data

The proportion of credits issued to new projects has increased over time; however, more than half of all CFI credits have been issued to transition projects (Figure 10).

FIGURE 10: CUMULATIVE CREDITING—NEW AND TRANSITION PROJECTS



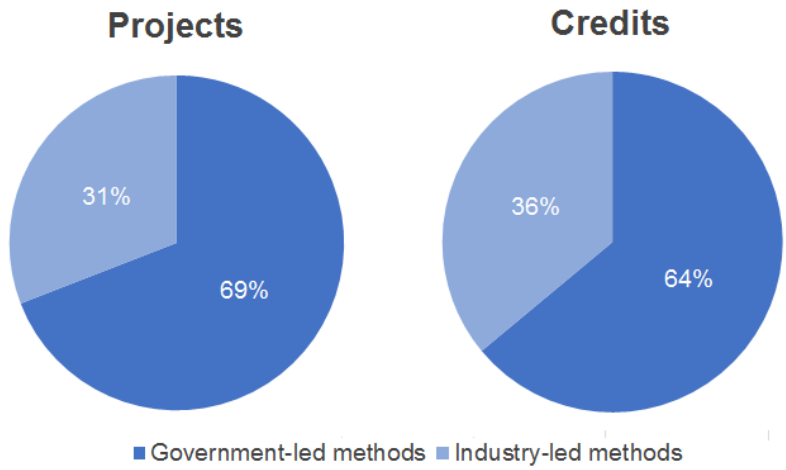
Note: Data current as at 3 December 2014.

Source: Climate Change Authority, based on Clean Energy Regulator data

As noted in section 2.1.1, government and industry could develop a method for DOIC approval. At 3 December 2014, 69 per cent of all projects and 64 per cent of total issued credits were under government-led methods (Figure 11). This result is heavily influenced by the fact that the

government-led method for capture and combustion of landfill gas accounted for 38 per cent of total projects and 56 per cent of total credits. The most significant industry-led method is for avoided deforestation, which accounted for 19 per cent of total projects and 29 per cent of total credits.

FIGURE 11: PROJECT AND CREDITING PROPORTIONS TO DATE, BY LEAD DEVELOPER



Note: Data current as at 3 December 2014.

Source: Climate Change Authority based on DOE (2014a) and CER (2014a)

2.2. ENVIRONMENTAL INTEGRITY

The CFI's environmental effectiveness is determined by the quantity of additional and accurately measured emissions reductions that are permanent and not diminished by leakage.

2.2.1. ADDITIONALITY

For a CFI project to qualify as additional it must initially fulfil two requirements:

- The law must not require the activity ('regulatory additionality').
- The activity must be on the positive list, which identifies a broad set of abatement activities that are not 'common practice' in an industry or region ('common practice test').

Methods could not be approved unless the projects covered by the method passed these tests. These tests were also applied at the individual project level before project approval.

The CFI established robust arrangements to prevent activities that were required under government regulation from being accepted into the CFI. The Authority has not found any evidence that the regulatory additionality test was not applied appropriately (although, as discussed later, some transition projects were exempted from this test).

Similarly, the DOIC clearly considered common practice when advising the Minister that activities should be included on the positive list. For example, its advice to include farm forestry plantations provided evidence that this activity has low adoption rates (DOIC 2012d). Where the DOIC has advised against inclusion, it was generally because an activity was already common practice (for example, the diversion of mixed organic waste by the electricity generation industry: DOIC 2014) or

because there was insufficient evidence that the activity could reduce emissions or of the conditions under which it could reduce emissions (for example, applying organic fertilisers to soil: DOIC 2013c).

The DOIC also applied the common practice test in considering methods, even when the project activity was already on the positive list. For example, while livestock feeding supplements appear on the positive list, the DOIC refused to endorse two methods for livestock feed additives, partly because some of the supplements were already commonly used (DOIC 2012a and 2012c).

While the CFI has applied these requirements rigorously, a broader question arises—do these tests provide a good assurance of additionality? Some baseline and credit schemes, such as the Clean Development Mechanism, apply a detailed 'financial additionality' test at the project level. This assesses 'the investment environment, business operations and motivations of the project provider or investor to determine their likely actions in the absence of the scheme incentive' (CCA 2014a, p. 31), which can provide a greater assurance that emissions reductions are really additional.

The CFI did not apply a project-level financial additionality test. This was a deliberate design choice to avoid the high transaction costs associated with project-level assessments (Macintosh 2012). The common practice test could be seen as a rough proxy for financial additionality (applied at the activity-wide rather than project-specific level). In practice, it appears to have delivered reasonable results.

It is clear that a significant proportion of CFI projects are financially additional. These projects have no apparent financial driver that would have made them attractive without the scheme. These include flaring of landfill gas, savanna burning, environmental tree planting and livestock manure management.

Other projects may not be financially additional. For example, in some cases land clearing involves costs that exceed the returns from grazing or cropping on the cleared land. Accordingly, leaving the forest intact may be the best option from a commercial perspective. The CFI sought to exclude such non-additional avoided deforestation projects by limiting participation to landowners who had obtained a permit to clear before July 2010. While this would undoubtedly have excluded many non-additional projects, it is unlikely to have excluded them all. Some landowners could have obtained clearing permits for an area greater than what they actually intended to clear in order to retain some flexibility; others may have intended to exercise the permit but then found the returns from clearing did not justify the expense. Both categories of landowners would be in a position to put forward non-additional projects that could pass the CFI additionality test.

The Authority does not have any specific evidence that this has occurred. Nevertheless, the example highlights the possibility that some CFI credits may not represent additional emissions reductions.

Additionality arrangements for transition projects were designed to ensure that a project was additional at the time it commenced, not the time it entered the CFI. This is appropriate; when policy settings change it is generally desirable not to penalise firms that made investments based on a reasonable expectation of the policy continuing.

It is likely, however, that transition arrangements have resulted in some non-additional emissions reductions. This is because some landfill transition projects were exempt from the regulatory additionality test and applied a baseline representing a default methane capture rate, which was zero per cent for previous Greenhouse Friendly projects and 24 per cent for GGAS projects (DIICCSRTE 2013). Landfills are now usually subject to at least some methane capture requirements, and many non-transition landfills are likely to have a regulatory baseline of at least 30 per cent (CER 2013). Greenhouse Friendly began in 2001; thus, the additionality of some project types, including baseline requirements, may not been have re-assessed for over a decade.

2.2.2. MEASUREMENT

CFI methods use different approaches to calculate emissions reductions achieved. Some methods involve direct measurement of emissions reductions (for example, the reforestation and afforestation methods require project proponents to sample and measure the trees they have planted). Others estimate reductions using a model (for example, the 'Savanna Burning 1.1' method uses a tool called SavBAT to estimate emissions reductions from changes in burning practices).

Several sources of evidence suggest that the CFI's measurement practices resulted in conservative levels of crediting.

First, stakeholders consulted for this review generally reported that measurement practices were rigorous and/or conservative. Indeed, some stakeholders criticised measurement requirements for being overly rigorous or conservative, noting this could deter participation. These claims were made by both project proponents and others who had no commercial interest in CFI projects.

Second, academic analysis has concluded that the CFI used conservative measurement approaches. Macintosh (2012, p. 16) discusses analysis finding that FullCAM, the model used to estimate sequestration from some reforestation projects, could underestimate the sequestration that some projects actually achieve. Although its estimations are conservative, FullCAM is also used in the calculation of Australia's national greenhouse gas inventory. Therefore its use ensures consistency between CFI methods and the inventory, a requirement of the offsets integrity standards.

Third, there are examples of the DOIC refusing to endorse method proposals for reasons related to scientific measurement of emissions and sequestration. For example, it refused to endorse a method proposal for managing feral camel populations partly because there was not enough evidence that the estimates, projections or assumptions used to calculate emissions reductions were conservative (DOIC 2012b).

Therefore, it seems likely that emissions measurements underpinning credit issue have been somewhat conservative.

2.2.3. PERMANENCE

The CFI legislation contains permanence arrangements so that if sequestered carbon is released within 100 years (for example, through fire), project proponents are obliged to either restore carbon stocks or hand back credits. A five per cent risk of reversal buffer adjusts for the carbon that is temporarily lost before carbon stocks are restored and for carbon losses due to wrongdoing by the project proponent that are unable to be restored.

The Authority has not identified any specific problems with the permanence arrangements. Given that these arrangements manage the effects of events that might only occur infrequently, such as drought or fire, it is too early in the scheme to judge whether they will continue to work smoothly or whether the five per cent risk of reversal buffer is set at the right level. The risk of reversal buffer should be monitored carefully in future reviews.

2.2.4. LEAKAGE

The CFI Act provides that methods can include a leakage deduction (paragraph 133(1)(e)). This would adjust crediting to account for increases in emissions that were caused by a CFI project but occur outside the project's greenhouse gas assessment boundary.

No CFI methods included a leakage deduction. Leakage can be influenced by commodity markets, and can occur at different spatial scales and over time, so it is hard to estimate. This review has not

had time to examine the effects of projects on emissions outside their accounting boundaries. This is an issue that could be explored in future reviews.

2.3. SCALE OF EMISSIONS REDUCTIONS

The total emissions reductions achieved by the CFI is the ultimate measure of the scheme's environmental effectiveness.

CFI credits have been issued for 10.6 Mt CO_2-e of emissions reductions (as at 3 December 2014). Although the CFI commenced in late 2011, some of these reductions occurred as early as 1 July 2010, because some projects were allowed to receive backdated credits.

The number of credits does not necessarily equate to the scheme's actual emissions reductions. Where non-additional projects are credited, actual emissions reductions would be less than the number of credits. On the other hand, credits are only issued after emissions reductions are reported and verified, so the scheme will have achieved some emissions reductions that are not reflected in current credit numbers.

Considering these factors, and given that the CFI appears to have operated with a reasonably high degree of environmental integrity, the CFI has likely achieved about 10 Mt CO_2-e of emissions reductions in total or, on average, about 2.5 Mt CO_2-e per year (with more emissions reductions in later years than in earlier years).

The CFI specifically aimed to contribute to meeting Australia's international commitments under the Kyoto Protocol and UNFCCC. All CFI emissions reductions have counted towards Australia's Kyoto Protocol commitments, because even though the scheme covered 'non-Kyoto' activities, no methods were approved for these activities.

CONCLUSION

C 1. The CFI has achieved about 10 Mt CO_2-e of real emissions reductions over the last four years. Its additionality rates seem reasonably high and it takes a conservative approach to the measurement of emissions. To date, no specific concerns about permanence or leakage have been identified.

The remainder of this section compares the emissions reductions achieved by the CFI with emissions in the sectors covered by the scheme and with emissions reductions achieved by other policies.

2.3.1. REDUCTIONS AS A SHARE OF SECTORAL EMISSIONS

The land management and waste sectors were estimated to have emissions of about 110 Mt CO_2-e in 2012 (or about 20 per cent of Australia's total emissions in that year) (Table 2).

TABLE 2: ESTIMATED EMISSIONS IN SECTORS COVERED BY THE CFI—2011 AND 2012

EMISSIONS SECTOR	2011 EMISSIONS (Mt CO_2-e)	2012 EMISSIONS (Mt CO_2-e)	CHANGE (Mt CO_2-e)
Agriculture	84.6	87.4	2.8
Waste	12.9	11.7	–1.2
LULUCF—deforestation	38.5	32.8	–5.7
LULUCF—afforestation and reforestation	–26.4	–21.9	4.5
CFI sectors—total	109.6	110	0.4
National Inventory Report total (excluding Kyoto Protocol Article 3.4 activities)	553.6	554.6	1.0
CFI sectors—% of National Inventory Report total	**19.8**	**19.8**	

Notes: Negative numbers for afforestation and reforestation represent sequestration. The National Inventory Report total does not include emissions and removals from activities accounted for under Article 3.4 of the Kyoto Protocol (forest management, cropland management, grazing land management and revegetation). Savanna burning emissions are part of the agriculture category in the National Inventory Report.

Source: Climate Change Authority based on Commonwealth of Australia (2014a)

The CFI's average annual emissions reductions of 2.5 Mt CO_2-e represents about a two per cent reduction in emissions from the land management and waste sectors. This is not a precise comparison of like with like, because not all reductions in waste emissions can be credited under the CFI; further, some activities that the CFI covers are not included in the National Inventory Report 2012 (in particular, activities accounted for under Article 3.4 of the Kyoto Protocol).

The average reductions caused by the CFI have been smaller than recent emissions increases in the land sector. In the latest quarterly update to the National Inventory, emissions from the land management sectors are estimated to have increased by about 8 Mt CO_2-e (or seven per cent) in the year from March 2013 to March 2014 (Commonwealth of Australia 2014b), about three times the size of the CFI's average annual emissions reductions. Nevertheless, the CFI helped reduce emissions from what they would otherwise have been.

2.3.2. REDUCTIONS RELATIVE TO OTHER POLICIES

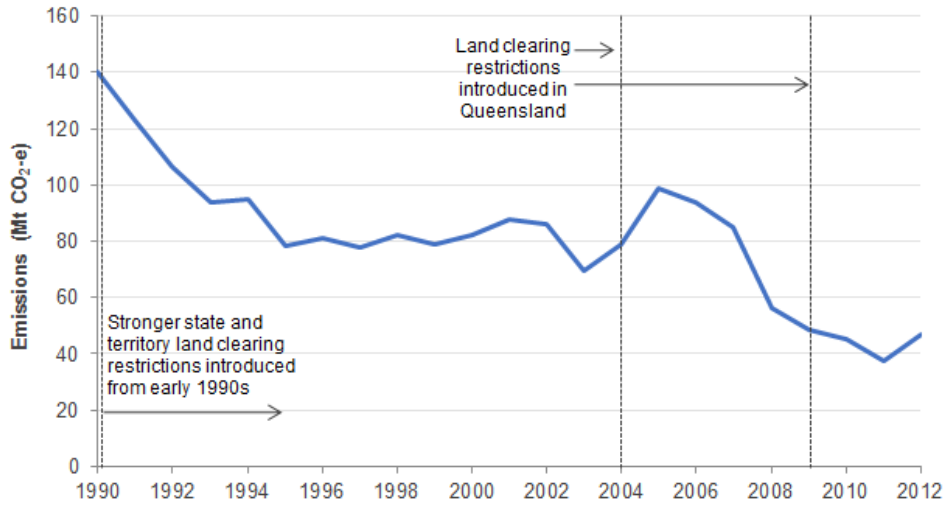
The RET is estimated to have reduced electricity sector emissions by 20 Mt CO_2-e between 2001 and 2012 (CCA 2012, p. 12) or about 1.7 Mt CO_2-e on average per year. This is somewhat lower on average than the CFI. That said, the RET achieved average annual emissions reductions of more than 3 Mt CO_2-e between 2009 and 2012 (Figure 16 in SKM 2012, p. 27), and is projected to deliver substantially more in the years to 2020 (Warburton review 2014, p. 60).

State restrictions on land clearing have contributed to a significant decline in emissions from deforestation. Stronger land clearing regulations were introduced in New South Wales, Queensland and Western Australia from the early 1990s which, along with economic conditions, reduced the rate of first-time clearing of undisturbed forest and contributed to an emissions decline between 1990 and

2011 (Figure 12). Deforestation emissions fell from 140 Mt CO_2-e in 1990 to 38 Mt CO_2-e in 2011 (CCA 2014b, pp. 308–311). In Australia's 2010 emissions projections, the Department of Climate Change and Energy Efficiency estimated that changes to vegetation management laws in Queensland and New South Wales would reduce deforestation emissions by 18 Mt CO_2-e per year over the period 2008–2012 (DCCEE 2010). This illustrates that land clearing laws have been one of the biggest contributors to Australia's emissions reductions since 1990, delivering far greater emissions reductions than either the CFI or the RET.

Deforestation emissions increased to 47 Mt CO_2-e in 2012 (CCA 2014b, p. 309) but recently decreased to below 40 Mt CO_2-e, according to 2014 quarterly estimates. Despite this decrease, the recent relaxation of land clearing restrictions in New South Wales, Queensland and Western Australia (CCA 2014b, p. 311) could, in future, contribute to reversing the large emissions reductions achieved.

FIGURE 12: AUSTRALIA'S DEFORESTATION EMISSIONS, 1990–2012



Source: Climate Change Authority calculations using results from Treasury and DIICCSRTE (2013)

2.4. COSTS

The administration of the CFI created a number of transaction costs for project proponents and the government. The level of transaction costs was important as it affected participation in the scheme and the cost to the community of achieving emissions reductions. Direct project costs were also important.

2.4.1. TRANSACTION COSTS FOR PROJECT PROPONENTS

In addition to the direct costs of undertaking a project, project proponents incurred various transaction costs associated with:

- CFI method development (if an appropriate method was not already available)
- project applications
- reporting and verification requirements.

There is very limited public quantitative data on the transaction costs incurred by CFI project proponents. This makes it difficult to determine how important transaction costs have been in determining participation in the scheme. Nonetheless, available information provides some insights:

- Private method developers reported that methods could cost hundreds of thousands of dollars to develop. These private costs are consistent with the Methodology Development Grants program, which are discussed below.
- Where project proponents had to develop a new method to participate in the scheme, the cost would likely have presented a significant financial disincentive. Development aside, the method approval process also imposed transaction costs on developers, who commonly observed that the approval process was very time-consuming (for example, Australian Industry Greenhouse Network sub. 13, p. 2) and took 'longer … than would normally be expected' (Fares Rural sub. 3, p. 3). Some method developers expressed frustration at long approval timeframes ranging from 12 to 24 months.
- Project applications for sequestration projects were reported to have significant legal costs. Proponents were required to obtain regulatory approvals, demonstrate they held applicable carbon sequestration rights and obtain the consent of eligible interest holders. Some of these processes involved long waiting times.
- The costs of complying with reporting and verification requirements varied significantly across activities and methods, and are likely to have reduced participation by some types of projects.
    - Some project proponents using methods with direct measurement and sampling approaches reported that monitoring and reporting costs constituted a large share of transaction costs. In contrast, some proponents using methods with models and tools to calculate emissions reductions reported these were a much lower proportion of overall costs.
    - Auditing costs usually ranged from $15,000 to $30,000 per audit. The Aboriginal Carbon Fund (2014) noted that, for savanna projects, audit costs could be prohibitive and could influence a decision about whether to proceed with a project. On the other hand, Clear Environment, a consulting firm that provides audit services, commented that auditing costs were often relatively low in the firm's experience—usually under two per cent of the returns obtained from credits (sub. 6, p. 1).
    - The time taken for the CER to approve project reports was initially slow in some cases. However, there is evidence that the CER is reducing its processing times.

2.4.2. TRANSACTION COSTS FOR GOVERNMENT

The government incurred various transaction costs, including those relating to:

- developing methods (by the Department of the Environment)
- administering the scheme (by the CER). The CER's costs included costs incurred in assessing project applications and reports; providing input to method development processes, education and engagement; and monitoring compliance.

Method development is likely to be the largest transaction cost incurred by the Department of the Environment; however, the direct costs incurred by the Department are not publicly available. Government grants for method development give some indication of government expenditure, however other significant costs (for example, staffing) would have been incurred. The Methodology Development Grants program provided grants ranging from $110,000 to $214,000 for four method development projects, and the Indigenous Carbon Farming Fund allocated $2.7 million in five grants to develop methods and supporting tools—these grants ranged from $60,000 to $1.2 million.

Direct scheme administration costs incurred by the CER in the 2013–14 financial year amounted to approximately $6.1 million. This corresponds to over $40,000 for each project that was in the scheme by the end of 2013–14; or around $1.40 for every credit issued that year. The bulk of scheme administration costs (almost $3 million) were incurred in developing and conducting assessment processes (for example, assessing projects for approval). Education and engagement accounted for over $1.5 million.

While transaction costs are necessary to ensure the environmental integrity of schemes such as the CFI, it is likely that costs have been unnecessarily high in some areas. In particular, the approach to developing methods under CFI—whereby anyone could propose a method—resulted in a number of methods that were very narrowly defined. For example, there are three reforestation and afforestation methods that relate to very similar activities, differing in their specific measurement requirements. The need to develop a new method where there was a very similar method available is likely to have increased transaction costs for some proponents, and discouraged other potential proponents from participating.

The lack of a formal prioritisation process is likely to have directed resources to less worthwhile methods. For example, government and industry resources have been used to develop 10 methods for activities that have had no uptake (Table 3). This partly reflects that some projects moved on to newer methods (for example, savanna burning projects) and that some methods have only become available recently (for example, ‘Measurement based methods for new farm forestry plantations’ became available in August 2014). However, some methods appear to have been developed for activities that are not likely to be commercially viable. For example, there are two methods for dairy activities but no projects, and the Australian Dairy Industry Council (sub. 1) has stated that these activities are not viable at a carbon price of $23 per tonne of CO_2-e.

Some stakeholders suggested some rules under the CFI (for example, some measurement, auditing and verification requirements) were too prescriptive, and neither proportional nor well-targeted to the environmental integrity risks that they sought to manage.

To some extent, it is to be expected that transaction costs would be high in the early years of the CFI, as perfect foresight regarding which methods to develop is not possible and experience needs to be gained in how to best ensure scheme integrity. Accordingly, it would be expected that costs would decline over time, and indeed there is some evidence that this has occurred already to some extent.

TABLE 3: PROJECTS AND CREDITING, BY METHOD

Sector	Method	Government or industry applicant	Projects	Credits
Agriculture	Destruction of methane generated from dairy manure in covered anaerobic ponds	Government	0	0
	Destruction of methane from piggeries using engineered biodigesters	Government	0	0
	Destruction of methane generated from manure in piggeries	Government	0	0
	Destruction of methane generated from manure in piggeries 1.1	Government	7	56,827
	Reducing greenhouse gas emissions in beef cattle through feeding nitrate containing supplements	Industry	0	0
	Reducing greenhouse gas emissions in milking cows through feeding dietary additives	Industry and government	0	0
	Sequestering carbon in soils in grazing systems	Government	0	0
Forests	Environmental plantings	Government	14	430
	Mallee plantings	Government	2	22,573
	Human-induced regeneration of a permanent even-aged native forest	Government	0	0
	Human-induced regeneration of a permanent even-aged native forest 1.1	Government	3	92,068
	Measurement based methods for new farm forestry plantations	Industry	0	0
	Native forest from managed regrowth	Industry	1	0
	Native forest protection (avoided deforestation)	Industry	33	3,087,341
	Reforestation and afforestation	Industry	5	188,124
	Reforestation and afforestation 1.1	Industry	0	0
	Reforestation and afforestation 1.2	Industry	6	168,299
	Reforestation by environmental or mallee plantings—FullCAM	Government	2	63,553
Savanna burning	Savanna burning	Government	0	0
	Savanna burning 1.1	Government	23	467,542
Landfill and waste treatment	Avoided emissions from diverting waste from landfill for process engineered fuel manufacture	Industry	1	64,103
	Avoided emissions from diverting waste from landfill through a composting AWT technology	Industry	4	111,366
	Capture and combustion of landfill gas	Government	68	5,875,622
	Capture and combustion of methane in landfill gas from legacy waste—upgraded projects	Government	4	170,616
	Diverting waste to an alternative waste treatment facility	Industry	3	161,838
	Enclosed mechanical processing and composting alternative waste treatment	Industry	2	21,291
	Subtotals—methods from industry applicants		55	3,802,362
	Subtotals—methods from government applicants		123	6,749,231
	Totals		**178**	**10,551,593**

Note: Method titles are taken from DOE 2014 and are shortened versions of the legislative instrument titles. Grey shading indicates methods with no projects or credits. 'Government' denotes methods developed by the Australian Government. 'Industry' denotes methods developed by other participants, including other levels of government. Data current as at 3 December 2014.

Source: Climate Change Authority based on CER (2014a) and DOE (2014a)

2.4.3. VERY HIGH-COST EMISSIONS REDUCTIONS HAVE BEEN AVOIDED

The CFI is a voluntary incentive-based scheme, so CFI project proponents would only have participated if they expected the price they would receive for credits would exceed their total costs per credit (comprising direct project costs and transaction costs). Liable entities under the carbon pricing mechanism were the major buyers and, given that an ACCU represented an alternative compliance unit, the carbon price set an effective cap on the ACCU price (the carbon price was fixed at $24.15 in 2013–14). As a result, the CFI almost certainly excluded the types of high-cost emissions reductions that have occurred under some other policies (see, for example, schemes discussed in PC 2011, pp. 123-124).

2.5. FACTORS AFFECTING PARTICIPATION

Voluntary programs such as the CFI only deliver results if they attract participants. Participation levels in large part determine the amount of emissions reductions achieved. CFI project numbers steadily increased from the beginning of the scheme; however, there is evidence that participation was not as high as it could have been. Three main factors lowered participation in the CFI, and in turn reduced its environmental effectiveness.

2.5.1. POLICY UNCERTAINTY

The first and most significant factor that deterred participation in the CFI was uncertainty about the future of carbon pricing (on which the price of CFI credits depended) and of climate change policy in Australia more broadly. Policy uncertainty plays havoc with price expectations, in this case about future prices for credits, because a change in policy settings can change demand. Heightened uncertainty over future prices increases the risks around expected revenue streams from a project, deterring some potential participants from taking up a project.

Policy settings that determine demand for credits have largely been external to the CFI legislative framework. Under the carbon pricing mechanism, liable entities could buy credits (formally termed ACCUs) and use them to meet some of their liabilities. This means the price of an ACCU could be expected to reflect the price of a carbon unit, which was fixed at $23.00 in 2012–13 and $24.15 in 2013–14.

CFI participants faced uncertainty about the carbon pricing mechanism since its inception, with the Liberal–National Coalition promising to repeal that mechanism (and doing so in 2014). Even if the carbon pricing mechanism had remained in place, CFI participants faced substantial price uncertainty. The planned link between the carbon pricing mechanism and international carbon markets (such as the European Union's Emissions Trading System) meant that the Australian carbon price was projected to fall to much lower levels in 2015 (CCA 2014b, p. 130). The Labor Government announced in 2013 that it would bring the link forward from 2015 to 2014 (Commonwealth of Australia 2013).

In consultations for this review, stakeholders overwhelmingly expressed the view that investment in CFI projects had slowed or ceased because of policy uncertainty. Fares Rural (sub. 3) argued that this uncertainty has particularly discouraged projects involving long-term investment; and Country Carbon (sub. 7) submitted that, from the beginning of the scheme, policy uncertainty beyond the 2013 election meant that projects would only be considered if they were low-risk and had short payback periods. Industry analysts (for example, RepuTex 2014, p. 11) similarly emphasised that long-term price certainty is crucial to encouraging project investment, particularly for sequestration projects.

2.5.2. ELIGIBILITY AND COVERAGE GAPS

While policy uncertainty was the most important factor, eligibility gaps and gaps in methods also reduced participation in the CFI. The CFI Act provided the basis for broad participation across the land sector and for legacy waste activities. Credits could potentially be earned for activities that:

- increased carbon stored in vegetation or soil (sequestration activities; for example, reforestation or improved management of forests)
- reduced agricultural emissions (for example, emissions from livestock production or fertiliser use)
- reduced emissions from waste deposited at a landfill before 1 July 2012.

Projects were ineligible, however, if the project activity was not on the positive list, was on the negative list, or was excluded through other specific restrictions in the Act. Even if a project was eligible under these criteria, it still could not participate if there was no applicable method.

Eligibility constraints to prevent perverse impacts

Some eligibility constraints have been the result of efforts to reduce perverse impacts. For example, the negative list excluded projects that involved planting weed species and reforestation activities judged to have unacceptable risks of negative impacts on water availability.

Some constraints that aimed to prevent perverse impacts may have been overly restrictive. For example, projects that involved any harvesting of native forest, or using material obtained from a native forest by clearing or harvesting, were excluded. This avoided providing a perverse incentive to clear native forest; excluding, for example, projects to clear low-density native forest and plant higher-density forest which sequestered more carbon. This also meant, however, that the CFI excluded projects to increase carbon sequestration through changing the timing and management of native forest harvesting. Some analysts have argued that activities that delay harvest could potentially have provided a large amount of emissions reductions at low cost (Macintosh 2012, p. 18).

The Australian Forest Products Association (sub. 9, p. 2) also argued that:

> *the negative list remains a major impediment that prevents a large number of forestry and afforestation projects from playing a role in the CFI. It imposes unnecessary constraints that effectively exclude forestry projects from the CFI, such as the restrictions on tree planting in regions with average annual rainfall above 600 mm.*

While the concerns about water use that led to these constraints would ideally be dealt with through broader water policy settings, rather than through the CFI, it not clear to the Authority whether current water policy provides adequate protection.

Positive list gaps

Eligibility constraints have also arisen where activities are not included on the positive list. For example, the positive list did not include projects to avoid harvesting on public land (such projects are eligible on private land: CFI Regulations, Reg. 3.28(1)(o)). Analysis by Perkins and Macintosh (2013) and Macintosh (2013) suggested that such projects could offer substantial emissions reductions, potentially at a low cost.

Harvesting rates may decline for commercial reasons, such as reduced demand from wood processing facilities, or from other policy motives, such as ceasing harvesting to conserve biodiversity. Accordingly, the decision to exclude harvesting of native forests on public land as an eligible activity may reflect valid concerns about additionality.

Gaps in method availability

When available methods are compared with identified emissions reduction opportunities in the land sector, gaps become apparent. Where a method was not available, the CFI could not access the emissions reduction opportunities. This is not to suggest that the ideal is to have no gaps. Methods are time-consuming and costly to develop and, therefore, should only proceed where the benefits are expected to outweigh these costs.

Establishing commercial-scale forestry plantations was not covered by a CFI method and was one example of such a gap. Even though establishing a new long-rotation hardwood plantation was on the positive list (CFI Regulations, Reg. 3.28(1)(q)), there was no method for this activity. There were no other positive listings for establishing forest for commercial harvest (for example, establishing softwood plantations). Smaller-scale plantations could participate through the 'Farm forestry' method; however, this does not apply to plantations at a commercial scale (in areas generally considered to have sufficient rainfall for commercial forestry, this method allows plantations to be no more than 100 hectares and to occupy no more than 30 per cent of a farm: CFI Regulations, Reg. 3.27).

This appears to be a significant gap, given that ClimateWorks (2013, p. 40) identified establishing forestry plantations ('reforestation of marginal land with timber plantation') as a significant source of potential emissions reductions (4.3 Mt CO_2-e of potential to 2020). Further, ClimateWorks identified establishing plantations to be a relatively low-cost source of emissions reductions (Figure 13).

As commercial plantations can have strong commercial drivers, the absence of methods could possibly be justified by additionality concerns. However, such blanket exclusions can rule out genuinely additional projects that offer significant, low-cost emissions reductions. The Australian Forest Products Association (2014, p. 8) argued that a:

> *key impediment has been the blunt interpretation of additionality, particularly for commercial plantation forest projects. The reliance on a common practice test - defined simply as an activity that represents 5 per cent of existing land use in a region - fails to acknowledge the spatial and historical (temporal) factors that have generated plantation investment.*

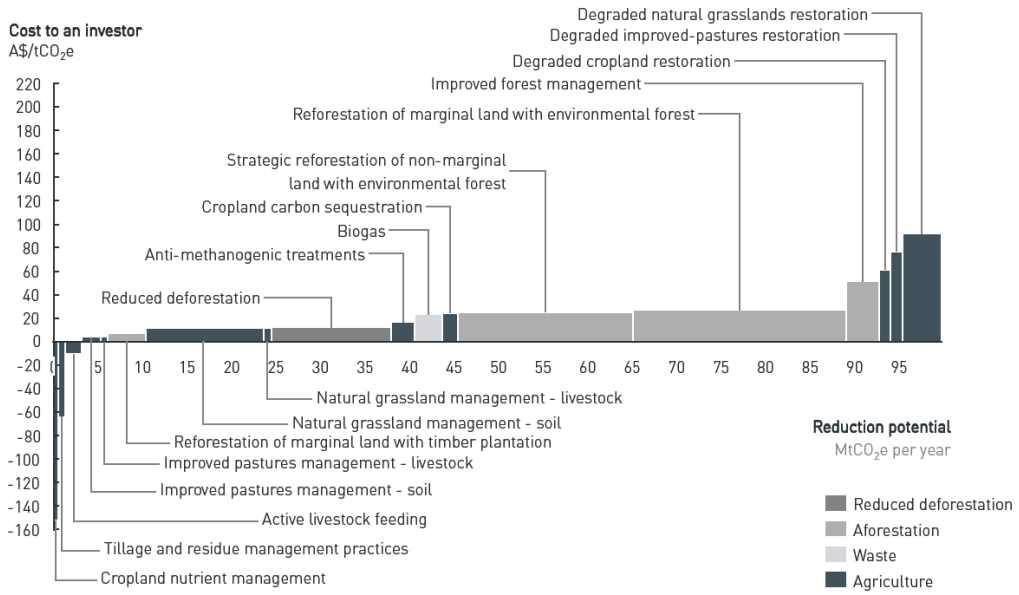
This suggests that it may have been possible to identify particular types of plantations (possibly in particular regions) that would be unlikely to be established in the absence of revenue from the CFI.

Gaps also arose where CFI methods were narrow, limiting coverage of emissions reduction activity. This partly arose due to private method development—in some cases, proponents wrote prescriptive methods to suit a particular project (and perhaps also to prevent others being able to free-ride on their investment). For example, the reforestation and afforestation series of methods each applied a slightly different measurement method for the same project type: establishing forest on clear land (CER 2014b).

2.5.3. TRANSACTION COSTS

As discussed in section 2.4, there is some evidence that transaction costs deterred participation. High method development costs and long approval timeframes are likely to have discouraged method development, which then reduced project entry. Current and potential participants reported that high transaction costs deterred participation in some cases. In particular, costs associated with measurement and reporting were often high due to rigorous method requirements, and audit costs were prohibitive in some cases. Measurement and verification was often very expensive for projects where emissions reductions are directly measured (for example, for soil carbon or reforestation projects).

FIGURE 13: SECTORAL INVESTOR ABATEMENT COST CURVE



Source: ClimateWorks 2013, p.13

Transaction costs are necessary in schemes like the CFI to protect environmental integrity. Therefore, the deterrent effect of transaction costs is only a concern to the extent that costs were higher than necessary. As discussed in section 2.4, transaction costs have been unnecessarily high; although there is evidence that some are declining.

CONCLUSION

C 2. Participation in, and emissions reductions from, the CFI have been constrained, principally because policy uncertainty led to low price expectations and a lack of confidence in longer-term returns. Participation has also been affected by gaps in method coverage and broad exclusions, and relatively high transaction costs.

CHAPTER 3. PROSPECTS FOR IMPROVEMENT UNDER THE EMISSIONS REDUCTION FUND

The ERF, which is replacing the CFI, contains a number of new and altered elements, and some aspects are still under development. The ERF has been introduced through amendments to the CFI Act, so it falls within the scope of this review.

It is not yet possible to evaluate the performance of the ERF, as it is only just commencing and no auctions have been held. As a result, this chapter examines the extent to which the design of the ERF addresses the problems with the CFI identified in Chapter 2. It also considers new or expanded challenges that may arise, particularly in light of the expanded scale and scope of the scheme.

3.1. THE EMISSIONS REDUCTION FUND INCORPORATES SOME IMPORTANT IMPROVEMENTS

Several changes under the ERF are likely to facilitate greater participation in the scheme and, provided there are effective governance arrangements in place, are unlikely to pose a significant threat to its environmental integrity.

3.1.1. INVESTMENT CERTAINTY PROVIDED THROUGH FIXED-LENGTH CONTRACTS WITH GOVERNMENT

Uncertainty about future prices for credits was the main factor discouraging participation in the CFI (Chapter 2). The ERF addresses this issue by providing price certainty over a fixed-length contract period.

Under the ERF, the government will purchase emissions reductions, in the form of ACCUs, through a reverse auction or other purchasing process. The CER will enter into contracts with successful bidders, which will guarantee the price paid for delivery of ACCUs over the life of the contract. The duration of ERF contracts will typically be seven years or less. Draft rules under the ERF create scope, however, for the CER to enter into contracts of up to 10 years for projects with a crediting period of more than seven years (DOE 2014a). The secondary market for ACCUs is likely to continue, to meet demand from ERF participants needing to ‘make good’ on contract volumes and from the voluntary market.

By providing a fixed price for up to seven years, the standard ERF contract is likely to be attractive to many project proponents—particularly those with projects that generate a relatively large proportion of emissions reductions in their early years (for example, many energy efficiency projects). Projects will, however, need to be developed and registered without any guarantee of success at auction. Accordingly, proponents with projects that would take a long time or be costly to develop would need to weigh up the risks of participating.

The extent to which the ERF is likely to stimulate investment in new projects that generate emissions reductions over a longer time (for example, afforestation) is more uncertain (section 3.2.1).

CONCLUSION

C 3. By providing a fixed price for up to seven years, the standard ERF contract is likely to be attractive to many project proponents—particularly those with projects that generate a relatively large proportion of emissions reductions in their early years.

3.1.2. IMPROVED APPROACH TO METHOD DEVELOPMENT AND APPROVAL

The lack of a coordinated approach to method development under the CFI is likely to have created unnecessary transaction costs and inhibited participation (Chapter 2). To address this problem, the ERF introduces a new approach to method development and approvals, which includes:

- prioritising methods for development
- allowing more broadly applicable activity methods
- allowing facility-based methods
- allowing baselines based on emissions intensity.

As at 11 December 2014, the Department of the Environment had issued 17 draft ERF methods for public consultation, including methods for facilities, coal mining, transport, industrial fuel and energy efficiency, and commercial building energy efficiency (DOE 2014b).

The Emissions Reduction Assurance Committee (ERAC) will assess methods and advise the Minister for the Environment on their suitability (in a similar manner to its predecessor, the DOIC). In deciding whether to approve a method, the Minister will have regard to offsets integrity standards and any advice provided by the ERAC. Importantly, the Minister must not approve a method if the ERAC advises that the method does not comply with the offsets integrity standards.

The ERAC will monitor and review the effectiveness of emissions reduction methods over time and review each method at least once every four years. A key focus of the reviews will be to ensure that emissions reductions credited under methods continue to be genuine and additional. The ERAC will also have the power to suspend methods that do not comply with the standards.

During consultation for this review, many stakeholders supported the new approach to method development and approvals, including the government playing a more central role. Likely benefits of this process include:

- targeting government resources to the most prospective methods for reducing emissions
- avoiding narrow methods that limit competition and/or have very limited uptake
- promoting a more consistent approach to managing risks, both within and between methods.

Stakeholders cautioned that there are a number of risks associated with the new approach (discussed below), and stressed that streamlining efforts should not undermine the integrity of the scheme.

Better prioritising method development

Under the CFI, anyone could propose new methods to the DOIC for assessment. The ERF has removed this process.

Under the ERF, the Minister for the Environment will determine priorities for developing methods, with advice from stakeholders and the ERAC, and taking account of:

- the potential uptake of the method and the likely volume of emissions reductions
- whether emissions reductions can be estimated with a reasonable degree of certainty and at an acceptable cost
- whether the activity could have adverse social, environmental or economic impacts
- whether the activity could be promoted more efficiently through other government measures (DOE 2014d).

The Department of the Environment will work with stakeholders through technical working groups to develop priority methods and identify priorities for future method development.

Some stakeholders expressed concern that a more centralised approach to method development could inhibit innovation. For example, government agencies may not be as well placed as individuals or businesses with specialist knowledge to identify new, low-cost abatement opportunities. As illustrated in Chapter 2, however, to date government-led methods have generated more credits than private-led methods (both in total and on average per method).

Further, the ERF includes measures that should mitigate this risk to some extent. Technical working groups (with relevant expertise in different sectors) and other individuals and businesses will be able to suggest methods for prioritisation (DOE 2014c). Nevertheless, it will be important that the Department maintains close links with the scientific community to ensure it remains informed of new abatement opportunities in sectors such as agriculture.

Another concern is the potential politicisation of the process. For example, interest groups could lobby to have methods for their projects prioritised over other methods that have stronger claims against the prioritisation criteria. Similarly, there may be a temptation for government to prioritise methods that are popular but have demonstrably high costs or a high risk of non-additionality.

One way to address this concern would be for the Minister to publish the reasons for prioritising or not prioritising particular methods, along with any accompanying analysis. This would, however, place additional demands on the Department's resources.

More broadly applicable and consistent methods

The ERF will allow a range of methods to cater for different sectors and activities. Where possible, methods under the ERF will be designed to apply broadly to similar activities, across a range of business circumstances.

The government has indicated that activity methods will be developed for specific emissions reduction activities, such as landfill gas capture, energy efficiency and land sector projects. Existing methods, for example from the Clean Development Mechanism, will be adapted where they meet the requirements of the ERF. Where appropriate, the ERF will also draw on existing activity methods developed under state-based energy efficiency schemes to develop nationally consistent methods (Commonwealth of Australia 2014).

For complex projects with the potential to deliver large volumes of genuine emissions reductions over a longer period, the ERF provides for bespoke methods (Commonwealth of Australia 2014).

While standardising methods under the ERF could encourage greater participation, there will be trade-offs:

- If a method sets a very standardised baseline, this leaves less room to consider project-specific variables. For heterogeneous activities, this runs the risk of crediting non-additional abatement or excluding additional abatement.
- Making methods less prescriptive could reduce the costs and the time it takes to develop them, potentially making them more broadly applicable. This needs to be weighed against the increased costs of determining and approving baselines at the project development and approval stage.
- To remain robust and reduce the risk of non-additionality, methods need to be updated over time to incorporate the latest information (CCA 2014a).

Project-specific additionality tests, such as financial and barrier analysis, may be appropriate for large one-off projects for which standardised tests are not well suited (CCA 2014a). This has direct relevance to the development of 'bespoke methods' under the ERF (section 3.2.2).

Several stakeholders observed that some of the draft methods released for public comment were very broad and should be complemented with plain English guidance on how to comply. (The CER will be issuing further guidance on participating in the ERF.) The very broad nature of some draft methods raises questions about whether it will be possible to apply them without increasing risks to environmental integrity (section 3.2.2).

More consistent approach to managing risks

Some stakeholders have suggested that the CFI over-emphasised scientifically-rigorous measurement of emissions, without really considering whether the prescriptive requirements imposed were proportionate to the risks. For example, some methods required a high level of accuracy for inputs that were unlikely to have a material effect on the overall estimate of emissions.

Stakeholders suggested that the inconsistent application of stringent rules, both within and across methods, compounded this problem. For example, CFI methods sometimes required a relatively low standard of evidence for important inputs for measuring emissions, introducing inaccuracies that nullified the benefits of high standards for other inputs. Similarly, it was suggested that the DOIC/ERAC should put more emphasis on managing the risk of non-additional projects rather than the risk of inaccurate measurement of emissions.

The new approach to method development should help promote greater consistency in managing risks. For example, the ERAC will be required to consider the advice from the CER about method implementation, which should help ensure that methods are workable, do not create undue compliance burdens, and are broadly consistent with each other. Periodic reviews of methods by the ERAC may also identify opportunities to enhance consistency.

Facilities methods

The Department of the Environment is currently developing a facilities method (using existing data under the National Greenhouse and Energy Reporting Scheme) to encourage emissions reductions from a wide range of activities. This method is limited to facilities that already report under the National Greenhouse and Energy Reporting Scheme and produce an output.

Facility methods are less common than activity methods in voluntary crediting schemes in Australia and other countries but, once established, can provide greater flexibility in the types of activities undertaken, and reduce measurement and audit costs (compared with activity methods) (CCA 2014a).

While many stakeholders supported the idea of a facility-wide method, some were concerned that the draft ERF facility method was so broad that, if approved in its current form, it might be difficult to implement without introducing risks to the integrity of the scheme (section 3.2.2). There will be an opportunity to address these concerns in the final ERF facility method.

Methods based on improvement in emissions intensity

To allow more types of projects to participate, the ERF will allow methods based on improvements in emissions intensity as well as methods based on absolute emissions reductions. This would allow credits to be issued for improvements in the emissions intensity of production even where production is expanding and absolute emissions increase.

Intensity baselines can play a useful role in crediting mechanisms, depending on the specific nature of the activity, and the availability and suitability of the activity data. Issues to consider include:

- All baseline emissions are a product of the baseline activity (the action that would occur in the absence of the project) and the baseline emissions factor of that activity (emissions per unit of baseline activity).
- Intensity baselines assume that baseline activity is equal to actual activity, which is a reasonable assumption provided that undertaking the project does not influence activity levels. If the additional income from crediting makes it worthwhile to do more of an activity, then actual activity is not a good proxy for baseline activity. In these circumstances, an intensity baseline would lead to over-crediting. An absolute baseline that estimates activity in advance would be better.
- Intensity baselines are more challenging if an activity is not easily defined. For example, intensity baselines could be measured in terms of a unit of input or output (such as tonnes of CO_2-e per square metre of building space used) but are more challenging if, for example, a facility produces multiple products.

Many energy efficiency and displacement methods from other schemes use intensity baselines. For example, the New South Wales ESS methodologies use improvements in building energy efficiency. The baseline is the emissions intensity of the floor space in the building ($kgCO_2/m^2$) required by regulation (CCA 2014a).

3.1.3. STREAMLINED ADDITIONALITY ASSESSMENTS

To demonstrate additionality under the CFI, proposed activities or types of projects had to go beyond common practice (and be included on what was known as the ‘positive list’), and not be required to be carried out by law.

To reduce transaction costs and encourage participation, the ERF removes the common practice test and the positive list and focuses additionality testing primarily in method development. While the positive list was originally designed to give early guidance to participants designing bottom-up methods, feedback from stakeholders suggests that in practice the process has been duplicative and time-consuming. As a result, the new approach should streamline the scheme and reduce costs for project proponents. The more centralised method development process under the ERF weakens the justification for the positive list.

While removing the positive list may eliminate duplication, the core task of determining which activities create real and additional emissions reductions remains. This will require more than an examination of historical activity; it will also require an assessment of whether the activities would have occurred anyway (CCA 2014a).

3.1.4. MORE FLEXIBLE REPORTING AND VERIFICATION

Risk-based audits

Under the CFI, project proponents received credits after submitting project reports and completing an application. All project reports had to be accompanied by a reasonable assurance audit report, with minor exceptions in the CFI regulations.

For some types of activities, auditing costs may have impeded participation in the CFI (Chapter 2). For example, project developer Fares Rural argued that the cost of current audit requirements is significant for sequestration projects, making many small projects unviable (sub. 3, p. 4). The Aboriginal Carbon Fund (2014) similarly noted that audit costs can be prohibitive for savanna burning projects. More broadly, placing onerous auditing requirements on low-risk projects is likely to impose costs for little, if any, environmental benefit.

To make it easier and less costly to participate in the scheme, the ERF removes the universal requirement for an audit report and introduces a risk-based approach to auditing emissions reductions. Under this approach, the CER will determine project audit requirements taking into account project risks and the risk profile of project proponents. This is likely to mean that proponents undertaking relatively small, uncomplicated projects could expect fewer audits than those undertaking projects that are more complicated (CER 2014).

While many stakeholders expressed in-principle support for risk-based audits, several noted that they would require further details before coming to a firm view. The CER is currently developing rules on the level of assurance, frequency and scope of the audit report that must be provided for different types of projects under the ERF (CER 2014, DOE 2014a).

Clear Environment, a consulting firm that provides assurance services under various environmental schemes, argued that audits should be mandatory prior to every issuance of credits. It argued that material misstatements were common in the CFI, and that if material issues were only identified after credits had been issued, project owners could face hardship due to obligations to then ‘make good’. It also argued that the proposed approach would significantly increase the administrative burden on the CER, as it would have to develop audit and assurance requirements on a case-by-case basis. (sub. 6, p. 1)

In principle, a well-designed risk-based audit regime should reduce transaction costs without eroding the environmental integrity of the scheme or creating other adverse impacts. For example, higher risk project proponents (such as those who have limited or no experience with similar schemes, who are using a new method, who are contracted to deliver large volumes of emissions reductions or who have a history of material misstatements) could continue to face the strict auditing requirements that applied under the CFI. Hence, they would pose no additional risk to the integrity of the scheme.

The practical challenges associated with designing an effective risk-based audit scheme are not trivial. A more conservative approach might be warranted in the early stages of the scheme to allow time to address any teething problems.

Flexibility to report more frequently

In addition to risk-based auditing, the ERF allows project proponents to report emissions reductions more frequently, which in turn allows them to access revenue from selling their credits more frequently. Under the CFI, the minimum reporting period was 12 months. Under the ERF, reporting can occur as frequently as every six months (or less if prescribed by legislative rules).

Draft rules under the ERF specify a minimum reporting period of one month. To avoid obliging the CER to process large numbers of reports for a small amount of abatement, proponents will only be

able to report more frequently than every six months if they generate abatement of more than 2000 t CO_2-e for the reporting period (DOE 2014a).

Stakeholders generally supported the enhanced flexibility. One noted that, in addition to providing participants with more frequent cash flows, more frequent reporting could reduce the reporting bottlenecks that occur under a 12-month reporting cycle.

CONCLUSION

C 4. Changes to streamline the ERF are likely to result in lower transaction costs than for the CFI, in many cases without adversely affecting emissions reductions. The ERF approach to method development and approval appears to represent an improvement from the CFI approach, but much will depend on implementation.

3.2. THE EMISSIONS REDUCTION FUND CREATES SOME NEW OR EXPANDED RISKS

As well as improvements, the ERF creates some new or expanded risks relative to the CFI. These risks will need to be well managed if the scheme is to achieve its objectives.

3.2.1. THE DESIGN OF THE NEW SCHEME MIGHT NOT SUPPORT LONG-TERM INVESTMENTS

Experience in Australia and other countries demonstrates that uptake of emissions reduction programs will inevitably be affected by perceptions of a scheme's likely stability and longevity, and that uncertainty about the policy time horizon will deter participation (CCA 2014a). Some activities, such as those that generate emissions reductions over a longer time period and/or have high upfront costs, require confidence that an incentive will be provided over the long term. Under the ERF, the crediting period for some activities, such as sequestration projects, will be up to 25 years.

Projects face uncertain (and potentially low) prices for any credits generated beyond the initial ERF contract period, which will be typically for seven years or less. As ERF support is limited to a single contract period, sales of credits beyond that would therefore rely on the secondary or voluntary market, including possible demand from entities with liabilities under the ERF safeguard mechanism. Current indications are that baselines under the safeguard mechanism will be set in a way that would be, at least initially, unlikely to create strong demand for credits (Chapter 1). This issue will be explored in the design of the safeguard mechanism; in the meantime it is hard to project the demand for credits that it may generate.

Other areas of uncertainty affecting investment decisions include the specific operation of the ERF (including likely auction prices and rules), the longevity of the ERF, and broader climate policy settings including for the RET, particularly in light of the lack of bipartisan agreement on climate change policy.

Uncertainty about future demand for credits is likely to most affect activities that generate emissions reductions over a longer time and have high upfront costs. These projects will require relatively higher prices to participate in the ERF, to account for the uncertain returns beyond the contract

period. In turn, this might render many of these projects uncompetitive relative to projects that generate a lot of emissions reductions in their early years of operation (Box 1). Moreover, lenders might be reluctant to finance long-term projects that do not have a relatively secure long-term revenue stream; these challenges are similar to those facing renewable energy investors (CCA 2014b). Existing CFI project operators who have approved methods and who are able to backdate projects might be the exception.

Draft rules on the duration of contracts give the CER the ability to enter into contracts of up to 10 years for projects that have a crediting period of more than seven years. The extent to which this mitigates risks for long-term projects remains to be seen, and will in part depend on the precise circumstances in which 10 year contracts are made available. Further, even 10 years might prove an insufficient incentive for activities that deliver abatement over an extended period (for example, afforestation).

CONCLUSION

C 5. Given uncertain and potentially low prices for credits beyond the ERF contract period, standard seven-year contracts (and even 10-year contracts) might not provide sufficient incentive for some long-lived investments that deliver abatement over an extended period, thereby excluding some low-cost opportunities.

3.2.2. THERE ARE RISKS TO ENVIRONMENTAL INTEGRITY

Unlike the CFI, which was a comparatively small land-based program that complemented the carbon pricing mechanism, the ERF is the centrepiece of the Australian Government's Direct Action Plan to reduce emissions. Expansion of coverage and the current funding commitment of $2.55 billion have the potential to significantly scale-up activity relative to the CFI. This scaling-up of activity magnifies the significance of risks to environmental integrity under the scheme.

Expansion and streamlining of the ERF are likely to result in additionality rates declining somewhat. Provided the decline is small and compensated by lower transaction costs and greater participation, this 'rebalancing' would constitute an improvement. However, buying a large volume of non-additional emissions reductions would erode the scheme's cost-effectiveness, crowd out genuinely additional reductions and reduce the scheme's contribution to meeting Australia's targets (Chapter 4).

The expanded scale and scope of the ERF requires new expertise, capacity and consultation mechanisms to be developed in a relatively short time. Developing robust methods for many new activities will be challenging, particularly as the scheme is expanding into areas where it is inherently difficult to judge additionality (such as energy efficiency) (Chapter 1). There is a risk that additionality rates could decline sharply.

As noted above, the ERF includes some features that will help manage this risk; for example, technical working groups to leverage industry and other expertise, scrutiny by the ERAC, including periodic reviews of methods, and provisions to suspend methods. The Department and CER have also acquired important experience and expertise through the CFI.

BOX 1 CONTRACT LENGTH AND TIMING OF EMISSIONS REDUCTIONS

The ERF is designed to provide certainty for participants through contracts for emissions reductions; giving them confidence they can recover costs and achieve an appropriate return. However, the benefit of this certainty is limited by contract length. Projects that generate ERF credits beyond the contract period face considerable uncertainty on future returns for credits. This creates an incentive for proponents to try to recover all their costs within the contract period. This dynamic favours projects that realise a large proportion of credits within the contract period.

FIGURE 14: PROJECT WITH A SEVEN-YEAR CREDITING PERIOD

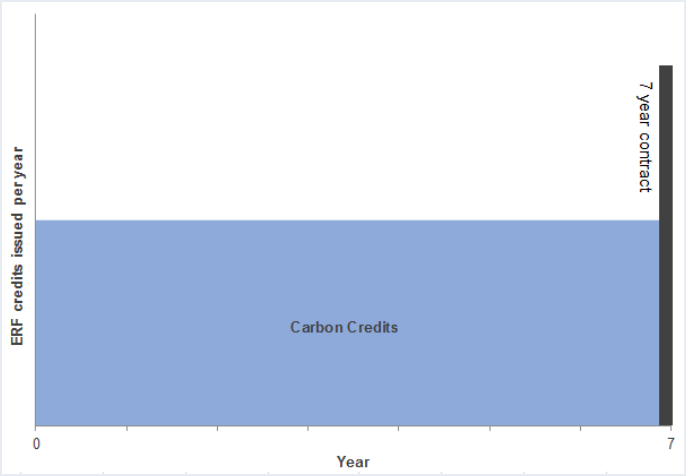


Figure 14 illustrates an ERF project that involves an upfront capital investment with a life of around seven years (for example an industrial energy efficiency project). The project is assumed to have a seven-year crediting and contract period. The project generates all of its emissions reductions (and all of its credits) within that period, so the project proponent does not have to factor in future demand risk when bidding into the ERF.

FIGURE 15: PROJECT WITH A 25-YEAR CREDITING PERIOD

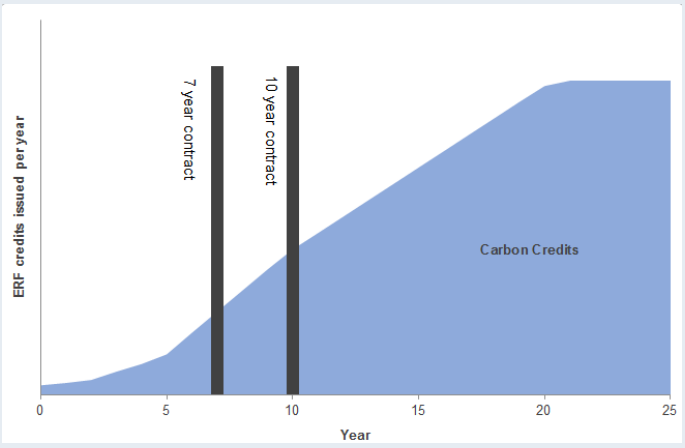


Figure 15 illustrates an ERF project with a 25-year crediting period and large upfront capital costs—a reasonable proxy for afforestation, for example. Only a small proportion of credits is generated within the seven-year contract period, so the project faces substantial future demand risk. As a result, the project proponent may need to bid a high price per credit into the ERF to make the project financially feasible.

An increase in the contract length from seven to 10 years would increase the number of credits over which the project proponent could recover a return (helping improve the project's competitiveness). However, the project proponent would still face considerable demand uncertainty, which may still deter the investment.

Very broad methods that apply across a range of projects, with different characteristics and investment drivers, could make it more difficult to establish additionality. Greenhouse Gas Consulting Services observed:

> *Some of the current [method] determinations have a scope that is wider than the previous determinations and the need to cover this wide scope has increased their complexity. This increase in complexity makes it difficult to follow the [method] within the determination and understand any particular requirements. A complex determination can result in … the content of the determination not matching its intent …The wide scope has resulted in some determinations not covering issues with the possible projects that can be included in those determinations.* (Greenhouse Gas Consulting Services, sub. 17, p. 2)

The inclusion of even a small number of methods with questionable additionality can significantly erode the environmental integrity of these types of offset schemes. Under the Alberta Offset program, for example, projects that reduced or eliminated tillage of agricultural soils to increase carbon sequestration generated 38 per cent of offset credits used between 2007 and 2012 (CCA 2014a). As low tillage was already a relatively well-established practice, however, it is likely that many of the funded projects were not additional.

At present, it is too early to say how all this will play out, and whether the new governance systems and powers will be used effectively.

CONCLUSION

C 6. Expansion and streamlining of the ERF are likely to result in additionality rates declining somewhat. Provided the decline is small and compensated by lower transaction costs and greater participation, this 'rebalancing' would constitute an improvement. There is a risk, however, that these changes could cause additionality rates to decline sharply, particularly as the scheme is expanding into areas where it is inherently difficult to judge additionality (such as energy efficiency).

Large projects and additionality

While project-level additionality tests, such as financial and barriers analysis, can be resource-intensive and time-consuming, they are likely to be warranted for projects that generate a large amount of credits—particularly in the industrial sector where there is often too few comparable facilities to apply standardised approaches, such as common practice tests. These tests would apply to large projects regardless of whether they are using a 'bespoke' method or more generic method.

The Department, in consultation with the CER and other stakeholders, should consider introducing enhanced additionality tests (such as financial and barrier analysis) for individual projects that generate a large volume of credits under the ERF. Issues to consider include:

- the appropriate threshold for applying enhanced additionality tests
- their appropriate design
- the potential for perverse incentives (such as encouraging proponents to split up larger projects into smaller projects to avoid enhanced additionality tests).

RECOMMENDATION

R.1. The Department of the Environment, in consultation with the Clean Energy Regulator and other stakeholders, should consider introducing enhanced additionality tests for individual projects that generate a large volume of credits under the ERF, with particular regard to the financial viability of the project in the absence of ERF support.

3.3. THERE ARE SOME PROBLEMS THAT THE EMISSIONS REDUCTION FUND CANNOT ADDRESS

The ERF cannot address all the problems associated with the CFI. Some have arisen because of the general limitations of project-based baseline and credit schemes. Other perceived 'problems', such as lack of participation by certain sectors, partly reflect the economic and practical realities of taking action in those sectors.

3.3.1. LIMITATIONS OF BASELINE AND CREDIT SCHEMES

Like all emissions reduction measures, baseline and credit schemes have their disadvantages. As discussed earlier, one of the main disadvantages relates to the complexity of determining what would have happened to emissions in the absence of the scheme (that is, developing baselines and determining additionality). Government will often have limited information about cost structures and other factors influencing investment in different industries. This information asymmetry gives project proponents a financial incentive to engage in gaming, such as overstating financial barriers to investment, or arguing for a relatively generous baseline (above business-as-usual) to increase the number of credits received. Professor Garnaut has previously suggested:

> *Additionality is particularly difficult in a financial context … it actually requires clairvoyance to know whether or not, on financial grounds, an investor would have made an investment. So in the end you need to use rules of thumb—which, by the nature of things, are imperfect. That does not mean to say it is not worth doing, but you are certainly working with approximations.* (Committee Hansard, Senate Environment and Communications References Committee Inquiry into the Government's Direct Action Plan, 7 March 2014, p. 4)

Information asymmetries also mean that some low-cost abatement opportunities will inevitably be missed because it is not feasible to devise methods and baselines that would credit these opportunities without also crediting many non-additional projects. For example, a firm considering two options for upgrading an industrial facility—one with high emissions and the other with low emissions—could approach the government with a proposal to undertake the low emissions option in return for a government contribution. Because the government has no way of verifying whether the firm would have invested in the low emissions option without assistance, it faces the risk of either forgoing a very cost-effective opportunity (on a dollars per tonne CO_2-e basis) or paying a relatively large sum of money for absolutely no additional emissions reductions. In the latter case, there would be less money to buy additional reductions.

The Climate Institute (2014, p. 5) has argued that state-based energy efficiency schemes have demonstrated these pitfalls.

> *The rapidity with which energy efficient technologies were taken up through the state schemes and diffused more broadly through the market meant that certain technologies became 'common practice' long before government systems were able to update their eligibility criteria. Given the breadth of activities able to reduce emissions, the Emission Reduction Fund will face an even greater challenge to ensure it credits only genuinely additional emission reductions.*

Recent research by the Authority, which draws on experience from domestic and international baseline and credit schemes, further highlights the inherent limitations and complexities in crediting emissions reductions (CCA 2014).

CONCLUSION

C 7. Domestic and international experience suggests there are inherent limitations and complexities in crediting emissions reductions. The ERF purchasing scheme will inevitably miss some low-cost abatement opportunities because it is not feasible to devise methods and baselines that would credit these opportunities without also crediting many non-additional projects.

3.3.2. EMISSIONS REDUCTION MEASURES ARE INHERENTLY COSTLY IN SOME SECTORS

Limited participation in the CFI by particular activities or sectors is not necessarily a sign that there is a problem. In fact, it can be a sign that measures to ensure environmental integrity are working. For some activities or sectors, transaction costs are likely to remain unavoidably high because their characteristics necessitate relatively complicated methods to ensure abatement is real and additional. In the agriculture sector, for example, there are challenges associated with measuring and verifying emissions reductions in natural systems that have high levels of local variability (CCA 2014a). These challenges are exacerbated where projects only achieve a small quantity of emissions reductions, as transaction costs can quickly become high on a per tonne CO_2-e basis.

While transaction costs can be reduced through streamlining (for example, by using modelled abatement estimates rather than direct measurement), there is only so much that can be done before the risk to environmental integrity becomes unacceptable.

Lack of participation by particular activities and sectors may also reflect that abatement options in those areas are not cost-effective. For example, analysis by researchers from the University of Melbourne suggests that few soil carbon projects are likely (based on a credit value of $24.15/t), as the land management and land use changes required to achieve a consistent and verifiable increase in soil carbon are rarely to the financial benefit of a farmer (White & Davidson 2014). The Australian Dairy Industry Council observed that opportunities for abatement from soil carbon are particularly limited in the dairy industry (sub. 1, p. 14).

To the extent an objective of the ERF is to achieve lowest-cost abatement, one would expect higher cost sectors to have low representation.

3.4. STRIKING THE RIGHT BALANCE—SCHEME PARTICIPATION AND ADDITIONALITY

Many of the changes under the ERF involve trade-offs between encouraging scheme participation and ensuring the genuine additionality of emissions reductions. For example, more standardised methods could increase the number of businesses willing to put forward proposals by reducing transaction costs, but provides less scope to consider project-specific variables.

Striking the right balance will always involve some degree of judgment and learning. The CFI placed a reasonably heavy focus on additionality and accurate measurement of emissions, and required participants to adhere to relatively prescriptive rules. In the ERF white paper, the government signalled an increased emphasis on making it easy for business to participate in the scheme through streamlined administration.

Governance arrangements will play an important role in minimising new or expanded risks under the ERF. The ERAC and CER will need to be nimble so they can respond to unexpected problems in a timely manner. Transparent processes and independent scrutiny of the scheme's progress will help promote accountability.

CFI features maintained in the ERF can help manage risks. For example, the ERAC can effectively veto methods it considers inconsistent with the offsets integrity standards. This helps protect environmental integrity from political pressure and lobbying. ERAC's regular review of methods and ability to suspend methods together provide a backstop should problems arise following the approval of a method. This will help ensure activities that have become non-additional are transitioned out of the scheme in a timely manner. (As noted in Chapter 1, the government has also stated that it will review operational elements of the ERF towards the end of 2015.)

It is important that these backstop measures do not become a substitute for rigorous method development and approval processes, as problems undermine the environmental integrity of the scheme until the government is able to close any 'loopholes'. Variations to methods will not apply retrospectively, so any non-additional projects that have entered into contracts will continue to receive funding for the period of those contracts.

The effectiveness of the ERF's governance arrangements will ultimately depend on details contained in legislative rules and final methods, as well as other factors such as the resourcing of relevant agencies, and the quality and experience of staff and committee members. Several stakeholders noted the importance of providing the Department of the Environment with adequate resources for method development.

CONCLUSION

C 8. Governance arrangements for the ERF will need to be responsive to unexpected problems and render new projects ineligible should they become non-additional.

Due to the short timeframe for this review, the Authority was unable to consider all proposed options for improving the CFI. Appendix B outlines some further issues that may warrant consideration in the future.

CHAPTER 4. THE EMISSIONS REDUCTION FUND IN THE BROADER CONTEXT

This chapter examines interactions between the ERF and other policies. It considers whether the ERF should focus on abatement or take account of the multiple environmental benefits of projects, and when it would be appropriate for ERF projects to access multiple sources of funding. It also comments on the potential contribution of the ERF to meeting Australia's 2020 target and longer-term goals.

4.1. INTERACTIONS BETWEEN THE EMISSIONS REDUCTION FUND AND OTHER POLICIES

The ERF operates in concert with a range of other government policies implemented, including the RET, energy efficiency schemes, land management and biodiversity programs and various regulations. If these other policies are sufficient to drive a project (and the associated emissions reductions), supporting them through the ERF would increase the cost to the community without necessarily providing any additional benefits. Managing these interactions is important to achieve multiple policy objectives in an efficient way.

Up to now, the CFI has managed policy interactions through the 'additionality test' and the 'negative list'. The existence of simultaneous policies has not triggered a general exclusion from the CFI, although the impact of other policies has been considered in developing methods and setting baselines (Box 2).

BOX 2 ERF INTERACTION WITH OTHER SCHEMES AND REGULATION—THE CASE OF LANDFILL WASTE

Most landfill operators are required to treat methane emissions from landfill waste in a particular way under state regulations. The current method for the capture and combustion of landfill gas must account for the emissions reductions achieved by the landfill under state regulation, and credits only the additional amount. The reduction in credits helps ensure that state regulation and the ERF operate relatively efficiently.

Some landfill operators use the captured methane to produce electricity and sell it into the grid. Many of these projects receive support under the RET. These projects displace electricity generated from other sources (particularly fossil fuels), leading to emissions reductions. The ERF does not provide credits for these emissions reductions, however, as they are already supported by the RET. In this case, an efficient outcome is achieved by separately identifying and rewarding the two distinct streams of abatement.

Under the recent amendments, the ERF 'additionality test' has been augmented by two new elements—the project must not have started prior to registration, and must be unlikely to be carried

out under another government program if not approved under the ERF. The latter helps ensure the government avoids paying for the same emissions reductions twice.

The following sections explore three dimensions of policy interactions:

- whether the ERF should focus on lowest cost abatement
- when multiple sources of funding might be appropriate
- the circumstances in which ERF is the right tool to reduce emissions.

4.1.1. SHOULD THE EMISSIONS REDUCTION FUND FOCUS ON LOWEST COST ABATEMENT?

The government's stated overriding objective is that the ERF will reduce emissions at the lowest cost over the period to 2020. At the reverse auction stage, and once bidders have passed pre-qualification tests, the only consideration of bids is with respect to price.

This approach has distinct advantages. By focusing on price only, the ERF is likely to secure a greater volume of emissions reductions. This in turn improves the scheme's contribution to meeting Australia's emissions reduction goals. A singular focus also simplifies program administration, avoiding the need for different areas of expertise and complex rules to assess and weigh up different benefits (Australian Industry Greenhouse Network Issues Paper sub. 13, p. 3). Considering outcomes in a more holistic way, however, also could have advantages. All things being equal, it is desirable to support projects that deliver more benefits for the same cost. The ERF currently has no way of assessing which projects do so. Focusing on the cheapest abatement may also miss value for money (albeit more expensive, in $/tCO$_2$-e terms) projects delivering a broader range of benefits. By way of example, some projects, particularly in the land sector, could deliver benefits such as biodiversity protection, reduced soil erosion and improved water quality, which contribute to the CFI Act objective of protecting Australia's natural environment and improving resilience to climate change (Fares Rural sub. 3, p. 2, Kimberley Land Council sub. 12, pp. 1-2, and National Native Title Council sub. 14, p. 1).

On balance, however, the Authority considers the focus on lowest cost abatement appropriate for two main reasons. First, paying for other benefits through the ERF would reduce its capacity to achieve abatement, and in turn, reduce the prospect of meeting emissions reduction targets. Second, many of the broader benefits related to ERF projects are better assessed at a local or state level, or pursued through separate national policies, such as the National Landcare Program, that specifically target these types of benefits. Where there are barriers to ERF participation, the Australian government can establish enabling policies, such as the Extension and Outreach program that builds capacity for farmers and land managers.

Rather than dilute the ERF's primary focus, the challenge for the ERF should be to interact efficiently with other programs to achieve the best overall outcomes.

4.1.2. WHEN ARE MULTIPLE SOURCES OF FUNDING APPROPRIATE?

If the ERF concentrates on lowest cost abatement, it needs to interact appropriately with other policies focused on other benefits. This could be facilitated by allowing projects to receive additional funding directed to those other benefits in appropriate circumstances.

In assessing when multiple sources of funding are appropriate, it is helpful to consider whether the additional government funding is directed towards the same outcome as the ERF. One of the main objectives of state energy efficiency programs is to reduce emissions and if projects supported under

these programs are simultaneously allowed to access the ERF, they would be paid twice for essentially the same outcome. This is obviously undesirable.

The assessment would prove more difficult where other programs have multiple objectives:

- a scheme that supports forestry projects for biodiversity benefits, for example, may also have a carbon sequestration objective. In this case—particularly if the biodiversity program provides sufficient support for the forestry projects to proceed—it would be inappropriate to allow ERF support as well.
- a landfill waste project could receive funding from the ERF and the RET. While both programs share the objective of reducing emissions, in this case ERF support could be appropriate as it supports a distinct stream of abatement (Box 2).

In contrast, some projects achieve multiple outcomes because they are able to secure support from multiple programs. The Kimberley Land Council submission highlighted the importance of co-funding to the success of the North Kimberly Fire Abatement Project:

> *This project has already successfully abated over 200,000 tonnes of carbon dioxide equivalent, while providing jobs, training, and supporting cultural aspirations for native title holders. The success of the North Kimberley Fire Abatement Project has been the result of a number of factors, including the strong relationships between project partners, investment in governance and business planning processes and prioritisation of training and capacity building for Traditional Owners. This success has been made possible through access to support from multiple channels, including Working on Country and [Indigenous Protected Area] programs, the Biodiversity Fund and the sale of carbon credits.* (sub. 12, p. 2)

These examples highlight the need to test whether the project would have proceeded on the basis of support from the other program. One of the new elements of the ERF additionality test—that the ERF will not support activities that are likely to go ahead under another government program—is likely to prove helpful. The draft ERF rules elaborate on this test, listing specific government programs such as the 20 Million Trees Programme and various state energy efficiency schemes (DOE 2014b, s. 20). Projects that receive support from these schemes would be ineligible for ERF support. This should help enhance the cost-effectiveness of the ERF.

Further, by assessing additionality at the program level (rather than on a project-by-project basis), the new approach should reduce transaction costs and improve predictability. Consultation with the relevant program administrator(s) will be important to identify programs that provide sufficient support for their participating projects to proceed. While it is possible that allowing ERF support to some individual projects may enhance abatement outcomes, this program-listing approach should provide a reasonable guarantee of additionality with relatively streamlined administration. The list of excluded programs will need to be reviewed and updated periodically to avoid creating perverse outcomes.

Finally, where other policies share the ERF's objective of reducing emissions, the government could consider establishing a mutual recognition arrangement. This would allow certificates from one scheme to be sold into the other (and then cancelled). This would avoid double-paying for reductions, but would also give project proponents the flexibility to access both schemes. Linking schemes in this way would require an assessment of the eligibility, measurement, reporting and verification arrangements, as well as the administration and objectives of the respective schemes, to ensure they are compatible. While this assessment would take some time and resources, it could expand options for project developers, and (by broadening and deepening the set of participants) may also make the ERF (and the linked schemes) more efficient.

4.1.3. CHOOSING BETWEEN THE EMISSIONS REDUCTION FUND AND REGULATORY APPROACHES

Determining when the ERF is preferred to regulatory approaches, such as minimum standards or disclosure obligations, is difficult. The choice principally comes down to when incentives are more effective at unlocking emissions reduction opportunities. If the benefits of lower emission activity clearly outweigh the costs, the costs are fairly evenly spread across the sector, and the government has sufficient information to craft efficient rules, regulation may be more appropriate. If the costs and benefits vary greatly across the sector, or the government has little information, ERF incentives may be more effective. Depending on the circumstances, the best approach may be incentives provided by the ERF, regulation or a combination.

To illustrate, the Minimum Energy Performance Standards (MEPS) specify standards that appliances must meet before they can be offered for sale. The government has based the standards on solid information about the performance levels of appliances in a way that does not impose a big burden on any particular producers or purchasers. In this case regulation is suitable (see Commonwealth of Australia 2014c, p. 40).[1]

On the other hand, the costs and associated benefits of many forestry and agriculture opportunities vary greatly from location to location and the government does not possess good information about them. Applying a regulatory standard for these activities would impose greater costs on some landholders than others, and the government would have difficulty in setting appropriate standards. Applying incentives through the ERF still requires a level of knowledge to set methods and measure projects; in this case, however, landholders can decide for themselves whether to (voluntarily) participate. Incentives in this case are likely to be more cost-effective in driving abatement than regulation.

The example of landfill waste is illustrative of a case where the choice is not clear cut. To date, many larger landfills have participated in the CFI (and are expected to participate in the ERF). This might indicate that the costs of implementing methane capture and flaring equipment are relatively low and even and, combined with the government's increased knowledge about the landfill sector, may be suited to a stronger regulatory approach.

The ERF may be more effective in combination with other policies. The Commercial Building Disclosure Program, for example, requires owners to disclose the energy use of commercial buildings. This makes valuable information accessible to building users and to the government, and in turn makes it easier to identify when ERF support is appropriate, and might enhance participation in building energy efficiency projects.

There is a risk that ERF incentives may discourage other levels—and areas—of government from pursuing other policies. If the national government funds an activity, the state government may be reluctant to regulate it, as it secures the desired outcome without any effort. That said, policies are typically implemented for a variety of reasons, and the ERF may not be a major consideration. Good coordination within and across government would help minimise this risk.

Regular assessments would help to maintain a reasonable balance between incentives through the ERF and regulation. The pattern of costs and benefits of an opportunity might change, and the information held by the government might improve over time. While regular reviews of methods by the ERAC will help identify whether activities are still additional, they will not answer the broader question of whether the ERF is and remains the right tool for the job. On-going independent periodic

[1] Government policy is that regulation should not be adopted as the default position; rather the policy option offering the greatest net benefit should be pursued (Commonwealth of Australia 2014).

reviews could determine whether an ERF method is still the best approach for unlocking the opportunity, or whether another approach might achieve abatement at lower cost. Such reviews should consider a broad range of policy instruments.

RECOMMENDATION

R.2. The ongoing appropriateness of the ERF for achieving emissions reductions in particular situations should be monitored and subject to independent and periodic review.

4.2. THE EMISSIONS REDUCTION FUND IN THE CONTEXT OF THE 5 PER CENT TARGET

The ERF is the centrepiece of the government's Direct Action Plan to reduce Australia's emissions, and the primary measure to achieve the minimum 5 per cent target by 2020. In assessing the ERF, it is therefore appropriate to consider how much abatement it is likely to deliver in its current form—including its current budget of $2.55 billion—and taking account of the government's intention that the safeguard mechanism will prevent emissions growing beyond business-as-usual levels.

As noted at the outset, these are still early days for the ERF. The government has not published any modelling of the likely emissions reductions under the ERF. It plans to purchase emissions reductions at the lowest cost through reverse auctions or other purchasing processes. 'Official' estimates of the likely price and quantity of emissions reductions could influence bidding behaviour and increase the price of emissions reductions, so it is understandable the government is reluctant to release such data (Commonwealth of Australia 2014b). The Authority has, however, considered publicly available material on Australia's abatement opportunities and the potential impact of the ERF.

4.2.1. AUSTRALIA'S EMISSIONS REDUCTION CHALLENGE AND OPPORTUNITIES

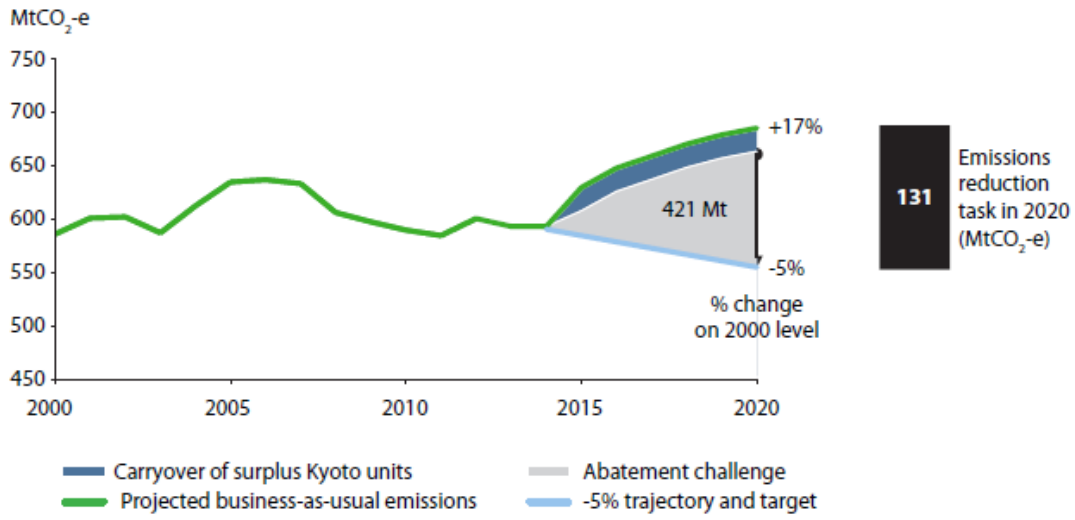
Australia's abatement challenge to 2020

While Australia has made an international commitment to unconditionally reduce its emissions by 5 per cent compared with 2000 levels by 2020, and by up to 15 or 25 per cent if ambitious international action is agreed (Commonwealth of Australia 2013, DOE 2014a), the government has recently focused only on meeting the minimum 5 per cent target (DOE 2014c, p. 1). It has also indicated it plans to use Australia's carryover of an estimated 131 Mt CO_2-e under the Kyoto Protocol toward meeting this target (Commonwealth of Australia 2014a, p. 15).

Official estimates of the abatement task to meet a 5 per cent target have been declining in recent years. In 2012, official projections suggested the task was a cumulative 754 Mt CO_2-e over the period 2013–20 (DCCEE 2012). In 2013, the Authority estimated the task to be 593 Mt CO_2-e (CCA 2014a, pp. 132-133). Taking account of the carryover under the Kyoto Protocol, and the emissions reductions achieved by two years of the fixed carbon price, the current government estimate suggests 421 Mt CO_2-e of cumulative abatement over the period 2015–20 (including 131 Mt CO_2-e in 2020) would be required to meet the 5 per cent target (Figure 16). This estimate assumes existing

policies (including energy efficiency schemes, the RET and some existing projects under the CFI) would remain in place.

FIGURE 16: AUSTRALIA'S ABATEMENT CHALLENGE TO 2020



Source: Commonwealth of Australia 2014a, p. 7.

Several factors, and particularly falling electricity demand projections, suggest that the next official estimate of the abatement task to 2020 will be lower again. Frontier Economics estimates the cumulative abatement task to 2020 is closer to 225–279 Mt CO_2-e, assuming there is no change to the RET (Frontier Economics 2014). On the other hand, any further relaxation of land clearing laws, and/or any changes to the RET would add to the abatement task.

As discussed in Chapter 2, as at 3 December 2014, 10.6 million CFI credits had been issued. The highest contributions have come from landfill gas flaring and avoided land clearing projects. This abatement has been driven by a carbon price of $23 in 2012–13 and $24.15 in 2013–14. This indicates that activity under the ERF would need to be scaled up, substantially relative to the CFI performance, to meet the 2020 target.

Australia's emissions reduction opportunities to 2020

The Authority has conducted a detailed assessment of Australia's emissions reduction opportunities (CCA 2014a). This highlighted substantial opportunities across the Australian economy in the electricity, energy efficiency, transport and land sectors. These opportunities vary considerably in scale, reflecting each sector's proportion of Australia's total emissions and its responsiveness to incentives (Table 4).

TABLE 4: AUSTRALIA'S EMISSIONS REDUCTION OPPORTUNITIES

SECTOR	OPPORTUNITY
Electricity	Electricity offers the largest opportunity for emissions reductions by lowering the emissions intensity of generation, including through the continued deployment of wind and solar technologies, energy efficiency improvements, and retrofitting of existing fossil fuel-fired plant and equipment.
Direct combustion, fugitives and agriculture (export driven sectors)	Sectors that are primarily driven by export demand—direct combustion, fugitives and agriculture—present the greatest challenge. Emissions growth is projected for these even with a high carbon price. Direct combustion emissions could be reduced through improvements in emissions intensity—such as increased gas turbine and machinery efficiency—and a switch to alternative lower emissions energy sources, such as biofuels. Fugitive emissions could be reduced through a shift away from higher to lower emissions mines, and the deployment of additional pre- and post-mine drainage, where gas could be flared or used to generate electricity. Agriculture emissions could be reduced by improved manure management, animal feed supplementation, feedlot finishing and pasture improvements. Most technologies and practices for reducing livestock emissions are still in development and not ready for commercial use.
Transport	Transport emissions can be reduced in three ways: increasing vehicle efficiency reducing the emissions intensity of fuels improving demand management through mode shift from road freight to rail or shipping, and from private vehicles to public transport and physical activity (cycling and walking).
Industrial processes	Industrial process emissions are projected to be highly responsive to an incentive. Emissions could be significantly reduced through the use of nitrous oxide conversion catalysts for nitric acid production and the destruction and replacement of synthetic greenhouse gases.
Forestry	Greater reforestation and afforestation activities, avoided deforestation and improved land management could deliver emissions reductions from the land sector.
Waste	Waste emissions reductions are still available through the expansion of alternative waste treatment facilities to reduce waste volumes being sent to landfill.

Source: Climate Change Authority, based on Targets and Progress Review (CCA 2014a, Chapter 11)

Similar results are evident in other studies. ClimateWorks (2010) conducted a comprehensive analysis identifying the 54 lowest-cost opportunities across the economy; ClimateWorks estimated that adoption of all these opportunities would be sufficient to achieve a 25 per cent reduction in Australia's emissions below 2000 levels by 2020. The opportunities were identified across six key sectors of the economy—power, forestry, industry, buildings, agriculture and transport (Figure 18).

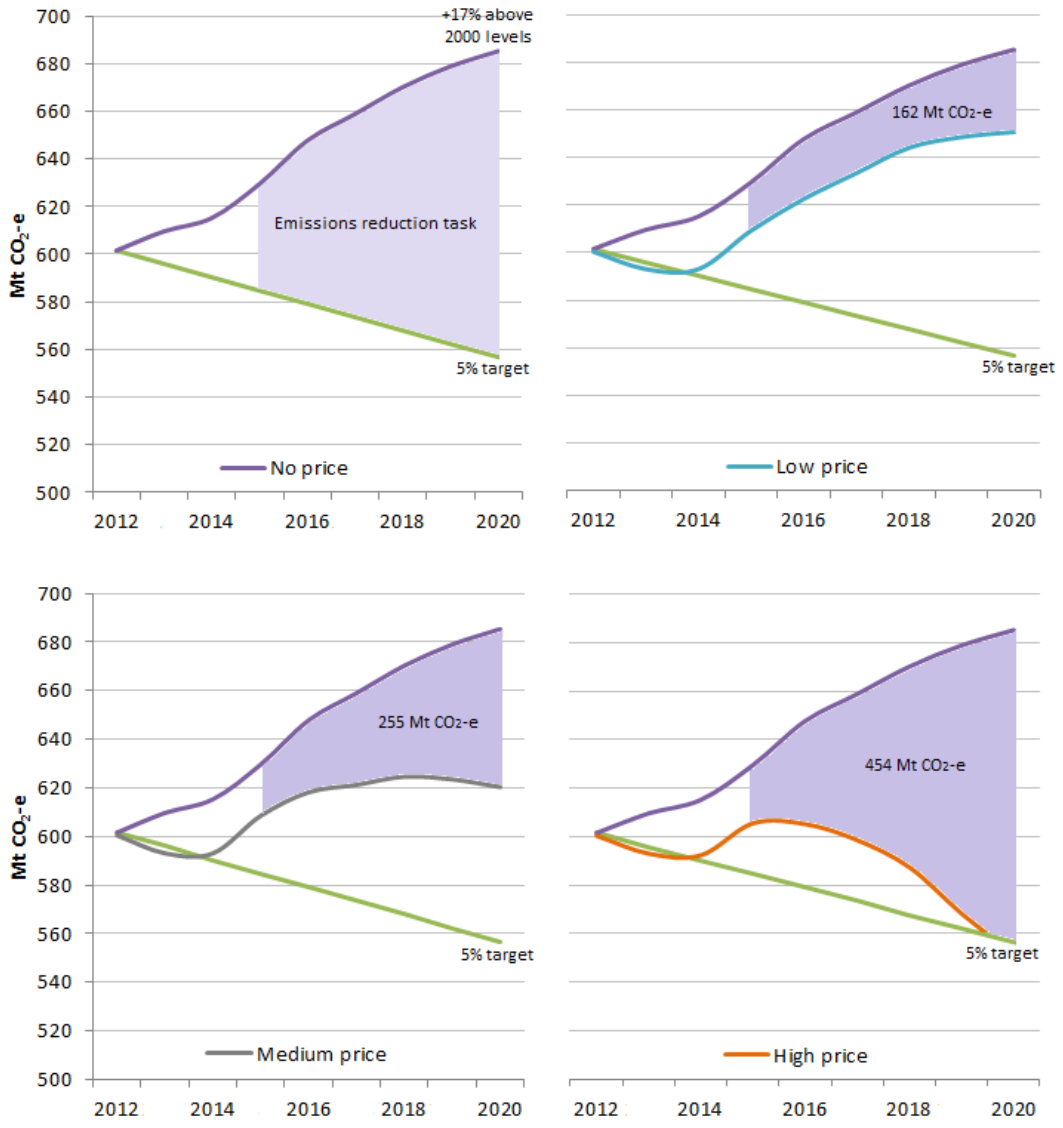
4.2.2. POTENTIAL SCALE AND COSTS OF EMISSIONS REDUCTIONS TO 2020

A number of studies have examined the scale of available emissions reduction opportunities, and their potential cost.

The Authority's Targets and Progress Review showed how much abatement a broadly applied, mandatory carbon price in force from 2013 might deliver (CCA 2014a, pp. 139-140). It examined three different carbon price levels. The low price scenario, with a carbon price rising to around \$6/tCO_2-e in 2020, was projected to drive 162 Mt CO_2-e of domestic abatement over the period 2015–20. A high price, growing to \$65/tCO_2-e in 2020, was projected to drive sufficient domestic emissions reductions to meet the 5 per cent target (CCA 2014a, pp. 140, 151; Figure 17).

The ERF scheme is likely to drive fewer emissions reductions at any given price. This is because the ERF is voluntary, can only deliver abatement where and when the necessary methods are in place and projects are approved, and involves transaction costs in registering and verifying all abatement. Further, it will only support emissions reductions at the project and facility level, rather than change incentives at the sector- and economy-wide level. Many of the emissions reductions in the Targets and Progress Review scenarios are not suited to project-based crediting—for example, changing the generation mix in the electricity sector toward low-emission generators, or making less-gassy coal mines more attractive to develop than more-gassy mines. Only a subset—such as improving the energy efficiency of an industrial facility, or capturing and flaring methane from a coal mine—will be well-suited to the ERF. For these reasons, the likely abatement under the ERF could be expected to be less than the modelling-generated volumes shown in Figure 17.

FIGURE 17: POTENTIAL EMISSIONS REDUCTIONS AT DIFFERENT CARBON PRICES, 2015–20



Note: The modelling underpinning this figure applied a carbon price from 2013. The potential emissions reductions arising under different carbon price incentives are calculated from 2015 to align with the current government estimate of 421 Mt CO_2-e over the period 2015–20. All scenarios start from a carbon price of $5.49, with the low price rising to $6/t$CO_2$-e in 2020, the medium price $27/t$CO_2$-e and the high price $65/t$CO_2$-e.

Source: Climate Change Authority, based on modelling undertaken as part of Targets and Progress Review (CCA 2014a)

The ClimateWorks analysis tells a broadly consistent story. Its results are presented in a marginal abatement cost curve (Figure 18). The width of each box on the curve represents the potential scale of the opportunity in 2020 compared to a business-as-usual scenario. The height of each box represents the average cost for each tonne of abatement; this does not include policy-related transaction costs that would be needed to realise the opportunities. If abatement is purchased up the cost curve to meet the minimum 5 per cent target, ClimateWorks' analysis suggests a marginal price of $25 per tonne would be required. This assumes that all of the energy efficiency and half of the land sector abatement would be purchased, and no abatement opportunities would be missed.

FIGURE 18: CLIMATEWORKS INVESTOR COST CURVE, 2020

Note: The cost curve shows the cost (or return) to the investor for various opportunities across the economy, with opportunities stacked from the least expensive on the left to the most expensive on the right.

Source: ClimateWorks 2011, p. 3

In summary, these studies suggest low incentives are unlikely to deliver sufficient emissions reductions to meet a 5 per cent target. Other appropriate policy drivers will be required. Even if the abatement task was significantly smaller, a substantial incentive might still be required.

4.2.3. WHAT CAN THE EMISSIONS REDUCTION FUND ACHIEVE BY 2020?

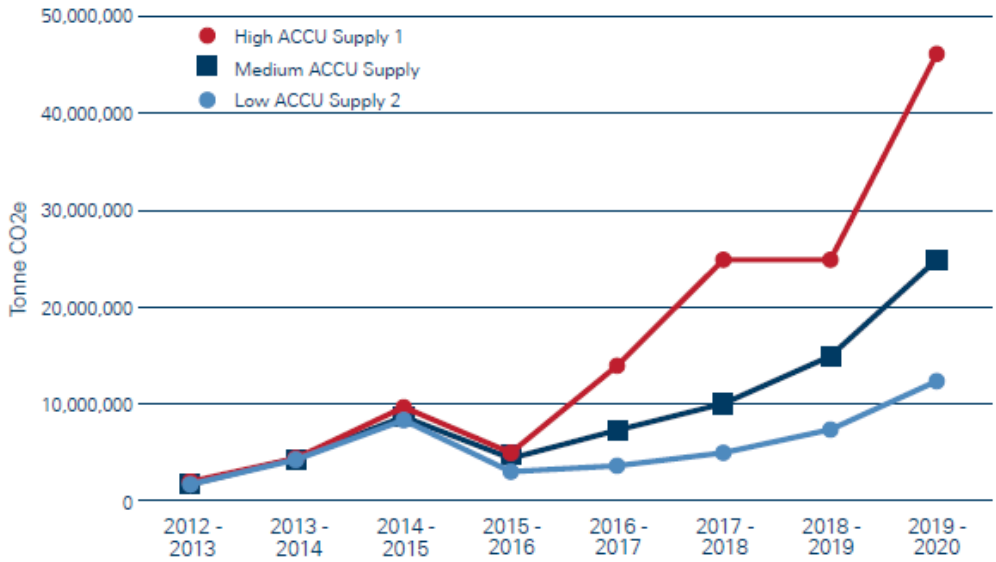
While the Authority modelling and ClimateWorks analysis point to possible emissions reduction opportunities, they do not attempt to estimate how many of these opportunities are likely to be captured by the ERF. Other studies have tried to address this question, in the absence it has to be said, of any practical experience with the ERF (no reverse auctions have been conducted, and methods for newly covered sectors are yet to be approved); the studies, therefore, involve many

assumptions. That said, these published studies suggest that, based on the current funding provision, ERF purchasing alone will not achieve emissions reductions of the scale required to reach the minimum 5 per cent target.

RepuTex has been estimating possible ERF activity throughout 2014 and in its November 2014 update (released after the CFI amendment legislation had passed the Senate) it concluded (Figure 19):

> *[T]he ERF as currently funded will purchase between 40 and 130 million ACCUs cumulatively by 2020. This range is highly dependent on the price of abatement paid by the government, primarily influenced by the benchmark price set to cap abatement bids.* (RepuTex 2014, p. 8)

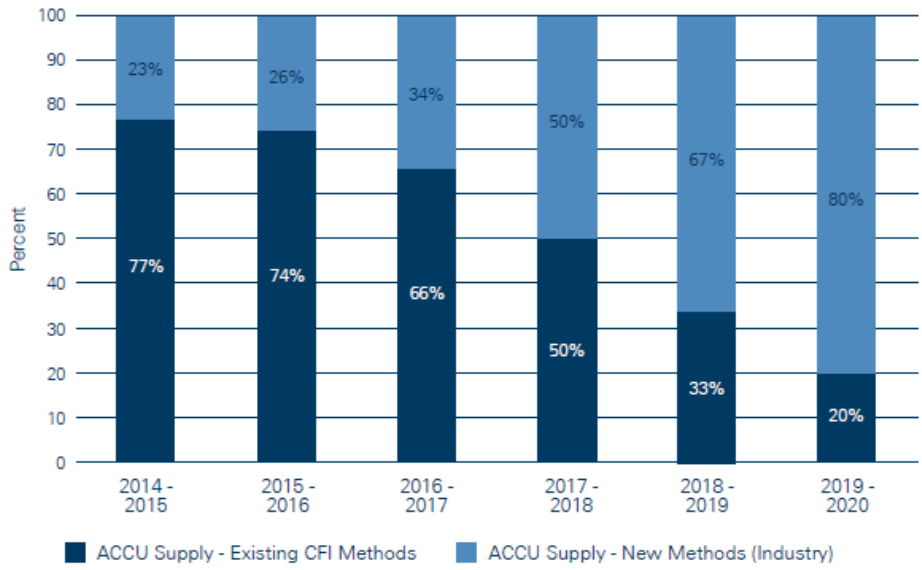
FIGURE 19: REPUTEX ERF CREDIT SUPPLY FORECAST, 2013–20



Source: RepuTex 2014, p. 8

The RepuTex projections are based on assumptions about reverse auction rules, possible benchmark prices and expected early bidders but do not include the safeguard mechanism. They also project that existing CFI participants are likely to be advantaged at the beginning of the ERF before this trend is reversed as projects ramp up under new methods. By 2020, RepuTex projects approximately 80 per cent of all credits purchased will come from high-emitting companies (Figure 20).

FIGURE 20: REPUTEX ESTIMATES OF SHARE OF CREDITS BID INTO ERF UNDER EXISTING AND NEW METHODS, 2015–20



Source: RepuTex 2014, p. 9

In its July 2014 study, Bloomberg New Energy Finance forecast that the ERF may contract 51–178 Mt CO_2-e of abatement in an efficient market, or as little as 23 Mt CO_2-e if there is limited participation or the market is gamed (because of the auction design) (Bloomberg 2014a and 2014b). Bloomberg speculated that auction design will encourage participant bids to deviate from the cost of abatement, increasing the unit costs paid under the scheme.

The Climate Institute has calculated that the ERF and other policies could realise emissions reductions of around 180 Mt CO_2-e in the period 2015–20 (The Climate Institute 2013a; based on modelling by SKM–MMA and Monash University Centre of Policy Studies). This forecast was made in August 2013, prior to the detailed development of the ERF. It assumed the ERF was implemented in accordance with the government's election commitments (including a safeguard mechanism using historical baselines) and that the RET continued unchanged. At the time the Institute forecast an additional $4 billion of ERF funding to 2020 would be required to achieve the minimum 5 per cent target (The Climate Institute 2013b).

In short, these studies suggest that the ERF's contribution to reducing emissions is likely to fall some way short of what is required to meet Australia's minimum 2020 target.

Buying up the cost curve—limitations of the Emissions Reduction Fund

Australia can achieve its emissions reduction goals at lowest cost to the community by undertaking the cheapest opportunities first and unlocking more expensive opportunities over time.

The ERF is likely to unlock some low-cost opportunities such as industrial energy efficiency, better waste management, industrial building retrofitting and waste coal mine gas capture (ClimateWorks 2013). Where sector-wide change or long-lived investment is required, however, the ERF is likely to be less effective. Activities like increasing the share of lower emissions electricity generation are more likely to benefit from a sector-wide policy, rather than project or facility-level incentives. Policy uncertainty and limited ERF contract periods may deter some long-lived projects such as

reforestation and afforestation. Even some of the cheapest opportunities may prove hard to unlock (ClimateWorks' cost curve suggests transport fuel efficiency is the cheapest abatement opportunity in Australia; the Authority investigated options to improve vehicle efficiency and identified mandatory standards as the best approach (CCA 2014b, pp. 31-38)).

Some other factors that could reduce the ERF's ability to purchase abatement efficiently up the cost curve include:

- Additionality concerns will mean some low-cost abatement opportunities will be missed. Some genuinely additional commercial forestry and waste coal mine gas projects, for example, are likely to be excluded from the ERF because they are hard to distinguish from non-additional projects. At the same time, it is likely that some non-additional abatement, which would have occurred without ERF support, will be purchased, reducing the funds available to purchase genuine emissions reductions.
- Some companies will choose not to participate because of the cost and complexity of the scheme. The ERF's voluntary nature makes it less effective at picking up all abatement opportunities relative to a compulsory approach.
- Uncertainty regarding prices and likely demand may affect participation. It may take a number of auctions before participants can form reasonable expectations for ERF contract prices. Prices for any purchasing outside the ERF auctions (for example, through make-good or safeguard provisions), and the extent of market demand beyond the government contract period, are also highly uncertain at this time.
- CFI experience shows that it will take time for the ERF to achieve large-scale emissions reductions. Early emissions reductions have resulted from well-established technologies and activities, and pre-existing projects that transitioned into the scheme. Similarly, the Greenhouse Gas Abatement Program (a $400 million national program to purchase abatement) also experienced significant take-up problems, mainly due to a lack of competitive proposals and the termination of approved projects (ANAO 2010, p. 85). While the ERF has made significant improvements on earlier schemes, the inherent limitations of project-based baseline and credit schemes (discussed in Chapter 3) remain.

These limitations mean that the ERF will not pick up all the lowest-cost opportunities—only a subset of opportunities are likely to be realised. It is likely that the scheme will leave gaps along the cost curve where projects are excluded, opportunities are not taken up and methods do not exist. The scheme will also take some time to deliver actual emissions reductions.

Ultimately, scheme impacts will be determined by the budget allocation (see Grattan Institute 2014, p. 4), currently set at $2.55 billion, with possible further funding to be considered in future budgets. Based on the most recent official estimate, the abatement task to the 5 per cent target in 2020 is 421 Mt. For the ERF to meet the target with only its current allocation, and without other policies, it could only spend an average of $6/t$CO_2$-e. While the abatement task appears to be shrinking, even if it halved to 210 Mt CO_2-e the average price could only be $12/t$CO_2$-e. These are very low prices. Existing state energy efficiency schemes in New South Wales and Victoria have paid an average of $14-35/t$CO_2$-e (NSW Government 2014, p. 10, DSDBI 2014, p. 20) to capture some of the lowest cost opportunities available in the economy. To the extent that some of the tonnes purchased are non-additional (which is not an unrealistic assumption) and some of the abatement is delivered after 2020 (which is likely given that contract periods will extend beyond 2020), the number of purchased credits actually contributing to the 2020 target would be reduced.

More emissions reductions could be purchased if the government provided additional funding to the ERF in future budgets but this is not assured. The safeguard mechanism could drive additional reductions beyond those purchased by the government through the ERF but again there is no

certainty on this front—the mechanism is still being designed, and will only apply to facilities with direct emissions over 100,000 tonnes a year (about 130 companies covering 52 per cent of national emissions; Commonwealth of Australia 2014a, p. 52).

The safeguard mechanism has the potential to complement ERF purchasing by driving emissions reductions below business-as-usual levels, but even if that potential is tapped, the existing RET and other policies (including the possible purchase of international credits) are likely to be necessary to achieve the minimum target. The Authority has previously recommended international emissions reduction units be used to help meet stronger 2020 targets (CCA, 2014a). International units could also play a role in closing any gap between domestic reductions achieved, and the minimum 5 per cent target.

4.3. THE EMISSIONS REDUCTION FUND IN THE CONTEXT OF LONGER-TERM GOALS

The preceding discussion has focused on the role of the ERF in meeting Australia's minimum 5 per cent target by 2020. In an earlier report the Authority expressed its view that not only was the minimum 5 per cent target inadequate, but that even with a somewhat stronger 2020 target Australia would need to pursue deeper cuts beyond 2020 if it were to play its part in combatting the dangers posed by climate change. This raises the question of the possible role of the ERF in this longer-term endeavour.

The government supports the global goal of limiting warming to less than two degrees, and will consider a longer-term target for Australia in 2015 (DFAT 2014). The Authority's previously recommended set of targets for Australia comprised a minimum target of 15 per cent below 2000 levels by 2020 (rising to 19 per cent with the carryover from the Kyoto Protocol), a target range of 40–60 per cent below 2000 levels by 2030, and a national emissions budget of 10,100 Mt CO_2-e for the period 2013–50. The Authority considered these goals to be consistent with Australia's contribution to meeting the overall goal of keeping global warming below two degrees. Its recommendations were based on the latest climate science and the actions of other countries, and took account of the cost of meeting the targets (CCA 2014a, pp. 10-11).

Adopting stronger longer-term targets necessarily means the abatement task will become larger each year as the gap between business-as-usual emissions reductions and the target trajectory widens over time. As the cheapest opportunities are taken up, the cost of unlocking the next opportunities on the cost curve also increases on a per tonne CO_2-e basis (possibly offset to some extent by advances in relevant technologies). This combination of greater emissions reductions and higher unit cost implies that funding for the ERF would need to increase steeply year after year, if it were to remain the central policy in reducing Australia's emissions.

This exposes the limitations of government-funded models like the ERF in achieving longer-term targets. As the abatement task grows, the scale of the budget outlays required becomes unrealistic. On the basis of modelling for its Targets and Progress Review the Authority indicated that a marginal carbon price of \$65/tCO_2-e would be required in 2020 to meet a 5 per cent target through domestic abatement; if the projected 2020 abatement task of 131 Mt CO_2-e was purchased at this price it would require spending of \$8.5 billion in 2020 alone. In short, it is not feasible for governments to buy their way to decarbonisation.

As discussed in Chapter 3, project-by-project crediting against business-as-usual baselines has its inherent limitations, which have been demonstrated through international experience. The Clean Development Mechanism is a project-based baseline-and-credit scheme that encourages emissions reductions in developing countries. That scheme's documented problems with scalability have meant that is has become widely regarded as an introductory mechanism, to be complemented or

supplanted eventually by more effective mechanisms as the level of development of the host country increases.

Ultimately, if Australia is to decarbonise its economy, credible long-term price signals will be needed to change behaviours and investment decisions. Government purchasing arrangements will always struggle to provide such signals that are credible, comprehensive and long-term.

The Authority has recently been tasked to conduct a special review under section 59 of the Climate Change Authority Act over the next 18 months. This review will consider future national emissions reduction targets, emissions trading and other measures relevant to Australia pursuing its post-2020 goals. The Authority will undertake extensive public consultation throughout the review.

CONCLUSION

C 9. The size of Australia's abatement task to 2020 is unclear, and it is difficult to estimate precisely the amount of emissions reductions the ERF purchasing scheme will deliver. It is clear, however, that by itself and as currently funded, the scheme is unlikely to deliver sufficient emissions reductions to reach even Australia's minimum 2020 target of 5 per cent below 2000 levels. A range of complementary actions will be required, now and beyond 2020.

APPENDIX A PUBLIC CONSULTATION

The Authority is required to conduct public consultation for all of its reviews. Throughout this review, the Authority consulted with a wide range of interested parties, including carbon farming participants, industry and government.

On 17 October 2014, the Authority released an issues paper, which can be accessed on the Authority's website. As part of the issues paper submissions process, the Authority received 17 stakeholder submissions. Three submissions were confidential.

Table 5 lists the individuals and organisations that provided submissions. These submissions are available on the Authority's website at: http://www.climatechangeauthority.gov.au/submissions/submissions-received.

The Authority also held a stakeholder roundtable in Canberra on 25 November 2014. This roundtable tested the review's preliminary conclusions with 24 stakeholders.

In addition to specific consultation activities, the Authority conducted less formal consultation with interested parties and government agencies. The Authority held 20 one on one meetings with stakeholders over the course of the review.

TABLE 5: SUBMISSIONS RECEIVED

RECEIVED FROM	SUBMISSION NUMBER	RECEIVED FROM	SUBMISSION NUMBER
Australian Dairy Industry Council	1	Greenhouse Gas Consulting Services	17
Australian Industry Greenhouse Network	13	Growcom	10
Australian Forest Products Association	9	Kimberley Land Council	12
Clear Environment	6	LMS Energy	2
Country Carbon	7	National Farmers' Federation	5
Fares Rural	3	National Native Title Council	14
Government of Western Australia	4	RAMP Carbon	15

APPENDIX B ISSUES FOR FUTURE REVIEWS

This appendix summarises issues raised that were not considered in this review, but that could be considered in future reviews.

B.1 25-year permanence option

Under the CFI, sequestration projects were subject to a 100-year permanence obligation. Several stakeholders noted that this obligation acted as a barrier to participation for some types of projects, in part due to concerns about the potential adverse effects on future generations of landholders.

To address this concern, the ERF includes a 25-year permanence option. The number of credits issued for projects that take up this option will be discounted by 20 per cent relative to 100-year projects. This discount reflects the potential cost to government of replacing carbon stores if 25-year projects are later discontinued.

Although several stakeholders supported the 25-year permanence option, there are issues to consider:

- Discount calculations are very sensitive to assumptions about future carbon prices, and the probability, timing and pace of reversal (Macintosh 2012). The appropriateness of the 20 per cent discount depends on whether these underlying assumptions are reasonable, given available information, and the level of financial risk the government (and public) is willing to accept.
- Using a uniform discount of 20 per cent reduces administrative complexity but may not reflect differences in risks across different types of projects.
- Without a binding cap or an obligation for future governments to replace any carbon stores that are reversed, the environment may ultimately bear the cost.

B.2 Deductions for risk of reversal and leakage

Under the CFI, a risk of reversal buffer of five per cent was applied to all sequestration projects, meaning that for every 100 tonnes of carbon stored by a project, 95 credits were issued. This risk buffer was to account for some carbon stores being temporarily lost, for example through bushfire. The risk of reversal buffer is unchanged under the ERF.

Fares Rural (sub. 3, p. 6) submitted that the risk of reversal buffer should be set at a lower level based on the real incidence of fire and other reversal in Australia.

Under the CFI, methods can apply a deduction to credits for leakage, which refers to the risk that the project will trigger an increase in emissions from sources, or reduction in removals by sinks, that occurs outside the project boundary. In practice, no CFI methods included a deduction for leakage.

As noted in Chapter 2, leakage can be influenced by various factors (including commodity prices) and can occur at different spatial scales and over time. Consequently, it is difficult to estimate.

B.3 Project aggregation

The ERF aims to support aggregation in the land sector by relaxing the requirement that project developers need to own the land (or hold another relevant property right).

The National Farmers' Federation noted there are benefits and risks associated with participation in an aggregated project; risks include that individuals could be misled into participation by

unscrupulous aggregators. To address this risk, National Farmers' Federation proposed a consumer protection framework similar to the model used for residential tenancy (sub. 5, pp. 2-3).

RAMP Carbon advocated the development of a dedicated mechanism to promote aggregation, similar to the programmatic approach under the Clean Development Mechanism or accredited certificate provider under GGAS/ESS. To the extent this is not feasible in the short term, RAMP Carbon suggested an interim step would be to create flexibility within the legislative rules to allow less stringent audit requirements for project aggregators (sub. 15, p. 4).

B.4 Negative list

Poorly designed projects can lead to perverse outcomes (for example a forest project may put excessive pressure on water resources). Like the CFI, the ERF manages negative impacts through requirements to:

- hold required water, planning and environmental approvals
- take account of regional natural resource management plans.

It also excludes projects that could pose social and environmental risks (via the 'negative list').

In principle, where the concerns apply generally (and are not unique to ERF projects) other policies should address them. For example, an afforestation project under ERF could draw up large volumes of water, thereby degrading local wetlands and/or depleting water resources available to towns or irrigators. This problem could arise with any afforestation project—not just one supported by the ERF. An appropriate response would be to have a general policy that included, for example, a requirement for forest plantations in particular areas to buy a water licence. ERF and non ERF projects would all have to comply with this requirement.

In practice, however, such general policies are not always in place. As a result, the ERF could reasonably play a role in mitigating negative impacts, either by making some types of projects ineligible or by putting obligations into methods. This should be the exception rather than the rule.

B.5 Improving transparency

The ERF includes a number of measures to promote transparency and provide opportunities for public input to methods and reviews. Stakeholders identified some opportunities for improvement, including:

- reviewing the outcomes achieved and the effectiveness of the Carbon Farming Futures – Extension and Outreach program (National Farmers' Federation, sub. 5, p. 1)
- publishing the Minister's final decisions on methods, along with the ERAC's advice
- publishing the reasons for prioritising or not prioritising particular methods, along with any accompanying analysis
- formalising arrangements for individuals outside the technical working groups to contribute to method development (Law Council of Australia 2014, p. 5).

GLOSSARY

TERM	DEFINITION
additionality	Emissions reductions that are additional to what would have occurred in the absence of a policy-induced project or activity.
Australian carbon credit unit (ACCU)	A type of emissions unit issued for verified emissions reductions under the Carbon Farming Initiative and the Emissions Reduction Fund, and held in the Australian National Registry of Emissions Units.
baseline	A counterfactual scenario of future emissions that would have been expected to occur without the emissions-reducing activity.
business-as-usual	Emissions that would occur without any additional policy intervention.
baseline and credit scheme	Type of scheme that identifies measures and provides incentives for activities that reduce emissions below a baseline. This general name covers a large variety of schemes.
Carbon Farming Initiative (CFI)	An Australian emissions offset scheme that credits emissions reductions from certain sources, such as forestry and agriculture, which were not covered by the carbon pricing mechanism.
carbon pricing mechanism	An emissions trading scheme that put a price on Australia's greenhouse gas emissions. It was introduced under the Clean Energy Act and applied to Australia's biggest emitters (called 'liable entities'). It was repealed in July 2014.
coverage	Which entities would be eligible or required to participate in a scheme, and which emissions would be included.
Direct Action Plan	The Commonwealth Government's policy to reduce greenhouse gas emissions and establish a clean-up and environment conservation program. A central element of the plan is the Emissions Reduction Fund.
Domestic Offsets Integrity Committee (DOIC)	An independent expert committee that assessed proposals for methods under the Carbon Farming Initiative and advised the Minister for the Environment on their approval.
emissions intensity	A measure of the amount of emissions associated with a unit of output; for example, emissions per unit of gross domestic product.
emissions reduction	The act or process of limiting, restricting or sequestering greenhouse gas emissions.

Emissions Reduction Assurance Committee (ERAC)	An independent, expert committee that will assess whether methods meet the requirements of the Emissions Reduction Fund and provide advice to government.
Emissions Reduction Fund (ERF)	A scheme resulting from the expansion of, streamlining and other changes to the CFI in November 2014. The ERF involves purchases of credits by the Government. It will also include a safeguard mechanism from 1 July 2015.
environmental integrity	The attribute of whether (and the extent to which) credits issued under the CFI or ERF are based on accurate measurement, are additional, permanent and do not cause an increase in emissions outside of the project (no leakage).
greenhouse gas	Any gas (natural or produced by human activities) that absorbs infrared radiation in the atmosphere. Key greenhouse gases include carbon dioxide, water vapour, nitrous oxide, methane and ozone.
Kyoto Protocol	An international agreement adopted under the United Nations Framework Convention on Climate Change in 1997. It includes binding national targets for developed countries and flexible mechanisms including the Clean Development Mechanism (CDM).
Kyoto unit	Emissions units eligible for compliance with Kyoto Protocol targets—these include assigned amount units (AAUs), certified emission reduction units (CERs), emission reduction units (ERUs) and removal units.
land use, land use change and forestry (LULUCF) emissions	Emissions associated with human-induced changes in land use, such as deforestation, afforestation and forest management.
legacy waste	Waste that is deposited into a landfill prior to 1 July 2012. Projects that reduce emissions from legacy waste were eligible for credits under the CFI.
offset scheme	A scheme, typically voluntary, that complements a policy creating a liability for emissions, such as a carbon tax or cap-and-trade scheme. Offset schemes can provide a way for liable entities to meet their carbon tax or cap-and-trade liabilities at lower cost and drive emissions reductions in a wider set of sectors.
positive list	A register of emissions reduction activities eligible to earn carbon credits under the Carbon Farming Initiative. The positive list played a role in trying to ensure that credits were only issued for additional emissions reductions. A method could not be approved for use under the Carbon Farming Initiative unless it related to an activity on the positive list.

negative list	Identifies types of projects that are likely to cause adverse impacts to one or more of the following: the availability of water, the conservation of biodiversity, the local community, and land access for agriculture production. The negative list is designed to address residual risks from CFI and ERF projects that are not addressed through existing regulations and planning regimes.
Renewable Energy Target (RET)	A Commonwealth Government scheme that places a legal obligation on electricity retailers and large electricity users to buy a certain proportion of their electricity from renewables-based generation.
safeguard mechanism	An element of the ERF that will establish penalties for large emitters that exceed a defined baseline. The safeguard mechanism is to commence in July 2016.
sequestration	The removal of atmospheric carbon dioxide, either through biological processes (for example, photosynthesis in plants and trees), or geological processes (for example, storage of carbon dioxide in underground reservoirs).
transaction costs	The costs of participating in a market. In the case of the CFI and ERF, transaction costs are all costs involved in developing, approving and administering projects apart from those costs directly associated with implementing and maintaining the project itself. Transaction costs also include costs to government and project proponents for method development, reporting and verification.
United Nations Framework Convention on Climate Change (UNFCCC)	An international treaty that commits signatory countries (Parties) to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human-induced interference with the climate system.

ABBREVIATIONS AND ACRONYMS

TERM	DEFINITION
ACCU	Australian carbon credit unit, issued under the Carbon Farming Initiative
BAU	business-as-usual
CFI	Carbon Farming Initiative
CO_2-e	carbon dioxide equivalent
DOIC	Domestic Offsets Integrity Committee, Carbon Farming Initiative methodology review body
ERAC	Emissions Reductions Assurance Committee
ERF	Emissions Reduction Fund
LULUCF	land use, land use change and forestry
Mt	megatonne (mass, one million metric tonnes)
RET	Renewable Energy Target
UNFCCC	United Nations Framework Convention on Climate Change

REFERENCES

CHAPTER 1

Clean Energy Regulator (CER) 2014, *Step 5: Surrender enough units to satisfy liability in ANREU*, CER, Canberra, viewed 8 December 2014, http://www.cleanenergyregulator.gov.au/Carbon-Pricing-Mechanism/steps-for-liable-entities/step-5/Pages/default.aspx.

Climate Change Authority (CCA) 2014, *Coverage, Additionality and Baselines: Lessons from the Carbon Farming Initiative*, CCA study, Melbourne.

Commonwealth of Australia 2011, *Securing a Clean Energy Future: The Australian Government's Climate Change Plan*, Canberra.

Commonwealth of Australia 2014, *Emissions Reduction Fund White Paper*, Canberra.

Department of Climate Change and Energy Efficiency (DCCEE) 2012, *The Carbon Farming Initiative Handbook*, DCCEE, Canberra.

Department of State Development, Business and Innovation (DSDBI) 2014, *Business Impact Assessment Victorian Energy Efficiency Target*, DSDBI, Victoria.

Department of the Environment (DOE) 2014a, *Carbon Credits (Carbon Farming Initiative) Rule 2015 (exposure draft)*, DOE, Canberra, viewed 5 December 2014, www.environment.gov.au/climate-change/emissions-reduction-fund/carbon-credits-carbon-farming-initiative-rule-2015-under-emissions-reduction-fund.

DOE 2014b, *The Emissions Reduction Fund: The Safeguard Mechanism*, fact sheet, DOE, Canberra, viewed 26 November 2014, http://www.environment.gov.au/system/files/resources/40b02d31-9e4c-4359-b812-81a86945d06f/files/erf-fs-safeguard.pdf.

DOE 2014c, *The Emissions Reduction Fund: Carbon Farming Initiative Transition*, fact sheet, DOE, Canberra, viewed 24 November 2014, http://www.environment.gov.au/system/files/resources/e202e73d-8745-468b-92dd-b549950e41c4/files/erf-fs-cfi-transition.pdf.

MacGill, I, Passey, R, Nolles, K, & Outhred, H 2005, *The NSW Greenhouse Gas Abatement Scheme: An assessment of the scheme's performance to date, scenarios of its possible performance to 2012, and their policy implications*, draft discussion paper, Centre for Energy and Environmental Markets, Sydney.

Productivity Commission (PC) 2008, *What Role for Policies to Supplement an Emissions Trading Scheme?*, Submission to the Garnaut Climate Change Review.

World Bank 2010, *10 Years of Experience in Carbon Finance: Insights from working with the Kyoto mechanisms*, Washington.

CHAPTER 2

Aboriginal Carbon Fund 2014, *Submission to the Emissions Reduction Fund Green Paper*, viewed 5 December 2014, www.environment.gov.au/submissions/emissions-reduction/green-paper/219-aboriginal-carbon-fund.pdf.

Australian Forest Products Association 2014, *Submission to the Emissions Reduction Fund Green Paper*, viewed 12 December 2014, http://www.environment.gov.au/submissions/emissions-reduction/green-paper/251-australian-forest-products-association.pdf.

Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth) (CFI Act).

Carbon Credits (Carbon Farming Initiative) Regulations 2011 (Cth) (CFI Regulations).

Clean Energy Regulator (CER) 2013, *Transcript: Landfill webinar*, CER, Canberra, viewed 27 November 2014, http://www.cleanenergyregulator.gov.au/Carbon-Farming-Initiative/events/Pages/transcript-landfill-webinar.aspx.

CER 2014a, *Register of Offsets Projects*, CER, Canberra, viewed 4 December 2014, http://www.cleanenergyregulator.gov.au/Carbon-Farming-Initiative/Register-of-Offsets-Projects/Pages/default.aspx.

CER 2014b, *Sequestration methodology: Reforestation and Afforestation*, CER, Canberra, viewed 27 November 2014, http://www.cleanenergyregulator.gov.au/Carbon-Farming-Initiative/methodology-determinations/Pages/Sequestration-methodology-Reforestation-and-Afforestation.aspx.

Climate Change Authority (CCA) 2012, *Renewable Energy Target Review*, Melbourne.

CCA 2014a, *Coverage, Additionality and Baselines: Lessons from the Carbon Farming Initiative and Other Schemes*, CCA study, Melbourne.

CCA 2014b, *Reducing Australia's Greenhouse Gas Emissions – Targets and Progress Review*, Melbourne.

ClimateWorks 2013, *Tracking Progress towards a Low Carbon Economy: 5. Land-Use & Waste*, Melbourne.

Commonwealth of Australia 2013, *Australia to move to a floating price on carbon pollution in 2014*, Townsville, viewed 27 November 2014, http://ministers.treasury.gov.au/DisplayDocs.aspx?doc=pressreleases/2013/006.htm&min=cebb&DocType.

Commonwealth of Australia 2014a, *National Inventory Report 2012 Volume 1*, Canberra.

Commonwealth of Australia 2014b, *Quarterly Update of Australia's National Greenhouse Gas Inventory: March 2014*, Canberra.

Department of Climate Change and Energy Efficiency (DCCEE) 2010, *Australia's emissions projections 2010*, DCCEE, Canberra.

Department of the Environment (DOE) 2014a, *Methodology determinations*, DOE, Canberra, viewed 17 November 2014, http://www.environment.gov.au/node/36555.

DOE 2014b, *Methodology proposals – not endorsed*, DOE, Canberra, viewed 17 November 2014, http://www.environment.gov.au/node/36677.

Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) 2013, *Carbon Farming Initiative: Guidelines for Calculating Regulatory Baselines for Legacy Waste Landfill Methane Projects*, DIICCSRTE, Canberra, viewed 27 November 2014, http://www.environment.gov.au/system/files/resources/c4762a93-bde4-444e-9980-f508460472cd/files/regulatory-baseline-guidelines.pdf.

Domestic Offsets Integrity Committee (DOIC) 2012a, *Reasons for Refusal to Endorse Methodology Proposal—Addition of feed additives to reduce methane emissions from enteric fermentation in ruminants*, DOIC, Canberra, viewed 28 November 2014, http://www.climatechange.gov.au/sites/climatechange/files/files/reducing-carbon/043FE2012-DOIC-statement-of-reasons-PDF.pdf.

DOIC 2012b, *Reasons for Refusal to Endorse Methodology Proposal—Management of large feral herbivores (camels) in the Australian rangelands*, DOIC, Canberra, viewed 28 November 2014, http://www.environment.gov.au/system/files/pages/28f29237-22e3-4a92-bcb8-8c28989abeea/files/001fa2011-doic-statement-reasons.pdf.

DOIC 2012c, *Reasons for Refusal to Endorse Methodology Proposal—Reduction of emissions of methane through the application of a feed supplement to dairy cows*, DOIC, Canberra, viewed 28 November 2014, http://www.climatechange.gov.au/sites/climatechange/files/files/reducing-carbon/027LD2012-DOIC-statement-of-reasons-PDF.pdf.

DOIC 2012d, *Statement of reasons,* letter to Parliamentary Secretary for Climate Change and Energy Efficiency, 11 December 2012, DOIC, Canberra, viewed 11 December 2014, http://www.environment.gov.au/system/files/pages/9086508c-e449-41b3-8b0c-13d05c4af4e1/files/doic-advice-letter-positive-list-20121211.pdf.

DOIC 2013a, *Reasons for Refusal to Endorse Methodology Proposal—Avoided Deforestation Methodology*, DOIC, Canberra, viewed 28 November 2014, http://www.climatechange.gov.au/sites/climatechange/files/files/reducing-carbon/Web%20update%202013-01-31%20-%202012AD030%20-%20statement%20reasons%20-%20pdf.pdf.

DOIC 2013b, *Reasons for Refusal to Endorse Methodology Proposal—Enhanced Carbon Sink through the Establishment of Agribelt Forests for a Coppice Harvest System*, DOIC, Canberra, viewed 28 November 2014, http://www.climatechange.gov.au/sites/climatechange/files/files/reducing-carbon/Web%20update%202013-01-31%20-%202012RF038%20-%20statement%20reasons%20-%20pdf.pdf.

DOIC 2013c, *Statement of reasons,* letter to Parliamentary Secretary for Climate Change and Energy Efficiency, 12 March 2013, DOIC, Canberra, viewed 11 December 2014, http://www.environment.gov.au/system/files/pages/9c89b543-4c37-4376-add1-f9b1d3eaccb6/files/advice-organic-fertilisers-130312.pdf.

DOIC 2014, *Advice to the Minister,* letter to Minister for the Environment, 4 July 2014, DOIC Canberra, viewed 11 December 2014, http://www.environment.gov.au/system/files/pages/9c89b543-4c37-4376-add1-f9b1d3eaccb6/files/doic-advice-letter-not-suitable-20140704.pdf.

Macintosh, A 2012, *The Carbon Farming Initiative: removing the obstacles to its success*, Working Paper Series 2012/3, Australian National University Centre for Climate Law and Policy, Canberra.

Macintosh, A 2013, *Chipping away at Tasmania's future: Alternatives to subsidising the forestry industry*, Institute Paper no. 15, The Australia Institute, December 2013, Canberra.

Perkins, F, & Macintosh, A 2013, *Logging or carbon credits: Comparing the financial returns from forest-based activities in NSW's Southern Forestry Region*, Technical Brief No. 23, The Australia Institute, June 2013, Canberra.

Productivity Commission (PC) 2011, *Carbon Emission Policies in Key Economies*, Research Report, Canberra.

RepuTex 2014, *Unlocking Land Sector Abatement: Outlook for the Emissions Reduction Fund*, RepuTex, Melbourne.

Sinclair Knight Mertz (SKM) 2012*, Benefit of the Renewable Energy Target to Australia's Energy Markets and Economy*, Report to the Clean Energy Council, August 2012.

Treasury and the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (Treasury and DIICCSRTE) 2013, *Climate Change Mitigation Scenarios,* modelling report provided to the Climate Change Authority in support of its Caps and Targets Review, Treasury and DIICCSRTE, Canberra.

Warburton review (Expert Panel) 2014*, Renewable Energy Target Scheme: Report of the Expert Panel*, Canberra.

CHAPTER 3

Aboriginal Carbon Fund 2014, *Submission to the Emissions Reduction Fund Green Paper*, viewed 5 December 2014, www.environment.gov.au/submissions/emissions-reduction/green-paper/219-aboriginal-carbon-fund.pdf.

Clean Energy Regulator (CER) 2014*, Audit in the Emissions Reduction Fund: Risk-Based audit framework, November, Version 1.0.*, CER, Canberra, viewed 5 December 2014, www.cleanenergyregulator.gov.au/Emissions-Reduction-Fund/Want-to-participate-in-the-Emissions-Reduction-Fund/step4/Pages/default.aspx.

Climate Change Authority (CCA) 2014a, *Coverage, Additionality and Baselines: Lessons from the Carbon Farming Initiative and Other Schemes*, CCA study, Melbourne.

CCA 2014b, *Renewable Energy Target Review*, CCA, Melbourne.

Commonwealth of Australia 2014, *Emissions Reduction Fund White Paper*, Canberra.

Department of the Environment (DOE) 2014a*, Carbon Credits (Carbon Farming Initiative) Rule 2015 (exposure draft)*, DOE, Canberra, viewed 5 December 2014, www.environment.gov.au/climate-change/emissions-reduction-fund/carbon-credits-carbon-farming-initiative-rule-2015-under-emissions-reduction-fund.

DOE 2014b, *Emissions Reduction Fund Methods*, DOE, Canberra, viewed 5 December 2014, www.environment.gov.au/climate-change/emissions-reduction-fund/methods.

DOE 2014c*, Emissions Reduction Fund Update*, newsletter, November 2014, Canberra.

DOE 2014d, *The Emissions Reduction Fund: Emissions Reduction Methods*, fact sheet, DOE, Canberra, viewed 5 December 2014, www.environment.gov.au/system/files/resources/a3938f6b-be31-496b-a34a-0027439b0332/files/erf-fs-method-development.pdf.

Garnaut, R, *Government's Direct Action Plan, Senate: Environment and Communications References Committee: Official Committee Hansard,* 7 March 2014.

White, R, & Davidson, B 2014, *Submission on the Carbon Farming Initiative component of the proposed Emission Reduction Fund*, University of Melbourne.

The Climate Institute 2014, *Submission to Emission Reduction Fund Green Paper*, February 2014.

CHAPTER 4

Australian National Audit Office (ANAO) 2010, *Administration of Climate change policies*, Audit report No.26 2009-10, ANAO, Canberra.

Bloomberg New Energy Finance (Bloomberg) 2014a, *Why Australia's Emissions Reduction Fund may not work*, Bloomberg, Melbourne.

Bloomberg 2014b, *Australia's Emissions Reduction Fund passes Senate*, Bloomberg, Melbourne.

Climate Change Authority (CCA) 2014a, *Reducing Australia's Greenhouse Gas Emissions – Targets and Progress Review*, Melbourne.

CCA 2014b, *Light vehicle emissions standards for Australia*, CCA study, Melbourne.

ClimateWorks 2010, *Low Carbon Growth Plan for Australia*, ClimateWorks, Melbourne.

ClimateWorks 2011, *Low Carbon Growth Plan for Australia – 2011 update*, ClimateWorks, Melbourne.

ClimateWorks 2013, *Submission to the Emissions Reduction Fund Terms of Reference*, viewed 10 December 2014, http://www.environment.gov.au/climate-change/emissions-reduction-fund/terms-reference.

Commonwealth of Australia 2013, *Australia's sixth national communication on climate change—a report under the United Nations Framework Convention on Climate Change*, Canberra.

Commonwealth of Australia 2014a, *Emissions Reduction Fund White Paper*, Canberra.

Commonwealth of Australia 2014b, *Senate Standing Committee on Environment and Communications Legislation Committee*, Question on notice no.80, 10 June 2014, viewed 9 December 2014, http://www.aph.gov.au/~/media/Committees/ec_ctte/estimates/bud_1415/Environment/answers/q80.pdf.

Commonwealth of Australia 2014c, *The Australian Government Guide to Regulation*, Canberra

Department of Climate Change and Energy Efficiency (DCCEE) 2012, *Australia's emissions projections*, DCCEE, Canberra.

Department of the Environment (DOE) 2014a, *Australia's emissions reduction targets*, DOE, Canberra, viewed 12 December 2014, http://www.climatechange.gov.au/climate-change/greenhouse-gas-measurement-and-reporting/australias-emissions-projections/australias.

DOE 2014b, *Carbon Credits (Carbon Farming Initiative) Rule 2015 (exposure draft)*, DOE, Canberra, viewed 5 December 2014, www.environment.gov.au/climate-change/emissions-reduction-fund/carbon-credits-carbon-farming-initiative-rule-2015-under-emissions-reduction-fund.

DOE 2014c, *Reducing Australia's Emissions*, DOE, Canberra, viewed 10 December 2014, http://www.environment.gov.au/climate-change/emissions-reduction-fund/publications/reducing-australias-emissions.

Department of Foreign Affairs and Trade (DFAT) 2014, *Climate change*, DFAT, Canberra, viewed 11 December 2014, http://www.dfat.gov.au/issues/climate-change/.

Department of State Development, Business and Innovation (DSDBI) 2014, *Business Impact Assessment Victorian Energy Efficiency Target*, DSDBI, Victoria.

Frontier Economics 2014, *Can Australia still meet its emissions target with changes in the RET?*, Frontier Economics, Melbourne.

Grattan Institute 2014, *Submission to the Emissions Reduction Fund Green Paper*, viewed 11 December 2014, http://www.environment.gov.au/climate-change/emissions-reduction-fund/green-paper.

NSW Government 2014, *Review of the Energy Savings Scheme: Issues Paper*, NSW Government, Sydney.

RepuTex 2014, *The ERF in Focus – Who Dares, Wins in FY15*, RepuTex, Melbourne.

The Climate Institute 2013a, *A Review of Subsidy and Carbon Price Approaches to Greenhouse Gas Emissions Reduction*, The Climate Institute, Sydney.

The Climate Institute 2013b, *Coalition Climate Policy and the National Climate Interest*, The Climate Institute, Sydney.

APPENDIX B

Law Council of Australia 2014, *Submission to Senate Standing Committees on Environment and Communication, Carbon Farming Initiative Amendment Bill 2014*, 27 June 2014.

Macintosh, A 2012, *The Carbon Farming Initiative: removing the obstacles to its success*, ANU Centre for Climate Law and Policy Working Paper Series 2012/3.