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Relative cost and performance of Australia's Emissions Reduction Fund (ERF)

Reflecting transaction costs in bottom-up MAC estimates and the merit order of competing abatement projects

EXECUTIVE SUMMARY

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metá - (prefix)*: sense of change of position or condition, behind or after, beyond, of a higher order …*

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Executive summary

A core test of any national GHG abatement mechanism (or set of mechanisms) is its ability to deliver an emissions target at least cost. Opportunities to reduce emissions are spread throughout the economy, they differ across businesses and households and they can change over time. In the literature, these are depicted in marginal abatement cost (MAC) curves. These describe how the cost of achieving increasing levels of emission reduction differs between activities.

Transaction costs are an overlay on abatement costs. While abatement costs indicate how much it will cost to cut or do without a quantity of greenhouse gas emissions, transaction costs reflect how much it costs to identify and describe that opportunity, measure the emissions and abatement associated with it, achieve sign-off for it and (if necessary) verify the anticipated savings afterward. For the ERF, they are the add-on expenditures incurred in securing and delivering on a contract.

The Emissions Reduction Fund (ERF) is a Commonwealth greenhouse gas abatement program with a $2.55 billion budget that requires participants to demonstrate compliance with published estimation methodologies, submit bids into an auction process and, if successful, enter contracts for the delivery of abatement over the period to 2020 (or longer in some cases). Project reporting and verification responsibilities also apply. These costs influence its effectiveness and bear comparison with a mandatory price based approach such as a carbon tax or emissions trading system.

Magnitude and implications of transaction costs

Imposing transaction cost on abatement opportunities reduces their commercial viability and changes their merit order from a buyer perspective. High transaction costs tend to have a bigger influence on merit order, and small projects – which have less opportunity to spread transaction costs across their emission base – are affected most. This can be important for the Emissions Reduction Fund (ERF) because it relies on project proponents coming forward to sell their abatement on a competitive basis. Activating low cost abatement opportunities ahead of high cost opportunities is fundamental to delivering efficient economy-wide outcomes.

Some evidence on the magnitude of transaction costs is available from the 2 year operation of the now-abandoned Carbon Pricing Mechanism (CPM), and is emerging for the ERF.

The CPM was designed to impose mandatory carbon obligations on bigger emitters and suppliers of emission intensive products (eg. energy, refrigerants, etc). The compliance costs of downstream consumers such as small businesses and households was likely to be negligible (because they bear no reporting or verification burden), although these entities did see the impact of the carbon price on the cost of goods and services. Survey results on reporting costs have been published by the Tax Institute.

The cost of participating in the ERF can differ according to the type and location of abatement activity. Some methods are more straightforward than others and requirements for audits and 'ground truthing' can vary. Land based abatement (consistent with methods established under the Carbon Farming Initiative) has dominated successful ERF contracts to date. Indicative on-costs for these types of projects have been reported. They include:

Project development costs

- initial registration - $10,000 per project
- monitoring/ sampling - $3.500 per project, per year
- reporting - $5,000 per project per report

Audit costs

- for cattle projects: $13,250 (initial audit) + $9,000 (subsequent audit) + $1,000 (site visit fee)
- for savanna & sequestration: $11,250 (initial audit) + $9,000 (subsequent audit) + $1,000 (site visit fee).

They estimated the total on-costs for a typical cattle project (with a 7 year contract life) at around $100,000 and that for a typical avoided land clearing/ managed regrowth project (with obligations over 25 years) at about $150,000.

Australia has not had a fully fledged emissions trading system in place, but compliance costs are likely to be similar to that of the CPM - with the addition of extra costs associated with carbon trading between parties. The cost of individual trades should approximate brokerage fees currently observed in the marketplace, and the level and direction of trades would reflect allocation decisions for emission permits (ie. Australian Carbon Credit Units – or ACCUs).

Our analysis applies the schedule of transaction costs listed in Table ES.1. These apply to big and small (ie. households, and businesses with turnover less than $200,000 per year) projects and, in a competitive bidding program such as the ERF, can affect the amount that program owner must recover in order for the abatement project to be commercially attractive.

Table ES.1 Assumed MACtrax transaction costs for big and small projects under alternative abatement regimes

Abatement regime	Empirical evidence	Assumed trx costs per project in 2020* - SMALL	Assumed trx costs per project in 2020*- BIG
Hypothetical ideal	Assume full informational and transparency. Assume zero transaction costs apply	$0	$0
ERF (project & contract based)	Land based projects $100,000 to $150,000 per project. No evidence on industrial projects (likely to be less)	$13,500	$20,000
Carbon Pricing Mechanism (CPM)	start-up costs of $402,000, recurrent costs of $54,000 pa (Big emitters only). Carbon Farming Initiative (CFI) transaction costs similar to ERF – minus competitive bid requirement.	$0 CFI: 0.7 x ERF	$100,000^ CFI: 0.7 x ERF
National ETS (based on CPM model)	Similar to CPM, large emitter focus (trades & brokerage affected by pattern of permit allocation)	$0 CFI: 0.7 x ERF	$110,000^ CFI: 0.7 x ERF

*assume ERF transaction costs annualised over an average 5 year project horizon, and CPM over 10 years (assuming a need to reprise start up costs). ^ Applies to approx. 400 big businesses on a mandatory basis.

These costs have been reflected in the MACtrax model, which has been developed by Meta Economics using publicly available bottom up estimates of abatement potential and costs within the Australian economy. The model examines the theoretically 'ideal' combination of abatement activities needed to deliver a 126 $MtCO_2e$ abatement outcome in 2020 (consistent with Australia's current international emissions target – according to published official estimates), and compares the likely costs and distributional implications of the ERF and ETS (modelled on the CPM) against this benchmark.

Key results

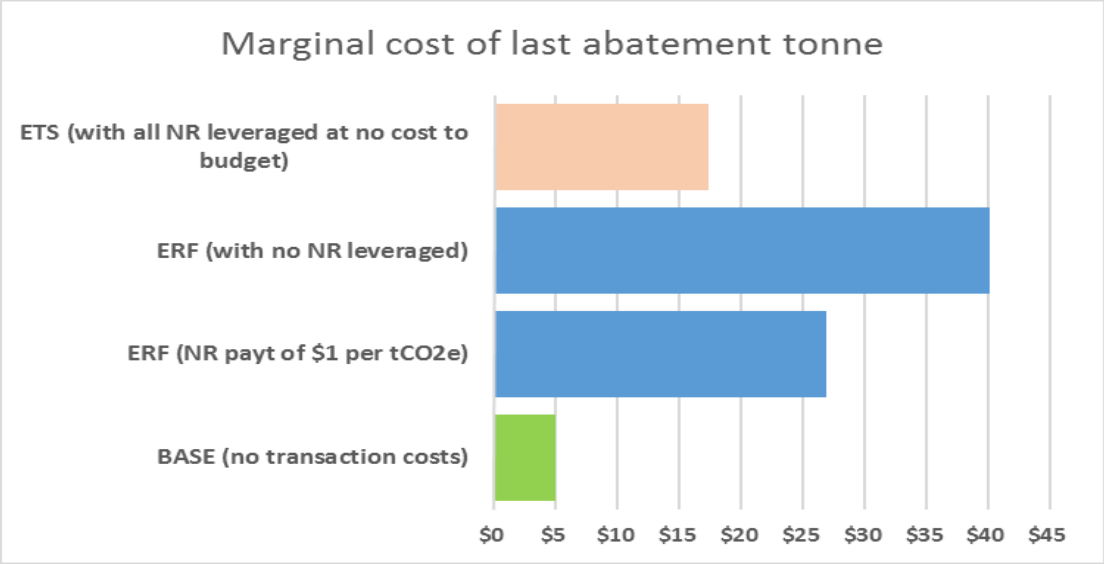
The model demonstrates that policy measures with low transaction costs are likely to produce a lower cost abatement outcome.

Figure ES.1 shows the estimated marginal cost of abatement under Ideal, ERF and ETS approaches. Measures with higher participation costs face reduced access to low cost abatement and must draw on higher cost abatement in order to reach the 2020 target.

In an ideal situation of zero transaction costs (eg. no contractual, monitoring, reporting or verification requirements), the modelling suggests that all the necessary abatement can be generated at a cost of no more than $5.00 per tonne CO2e., with a potential pool of 'no regrets' efficiency gains available within the economy worth about $10.3 billion (in NPV terms).

The transaction costs associated with the ERF drive up the marginal abatement costs faced by participants under the program. If the ERF does not pay for or leverage any 'no regrets' abatement, it faces marginal abatement costs rising to just over $40 per tCO2e. If it could mobilise this abatement at a cost of only $1 per tonne, the final tonne of abatement needed to achieve the 2020 target is estimated to cost around $26.91.

Figure ES.1 Marginal cost of delivering a 126Mt abatement outcome ($/tCO2e)



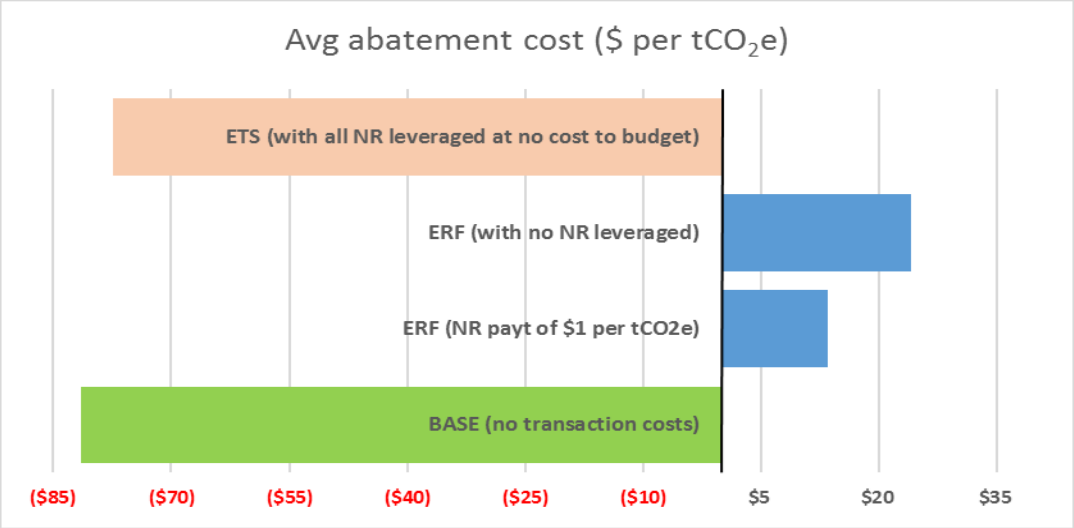
Lower project and entity level transaction costs lead to greater abatement activity under an ETS - which harnesses the incentives provided by a carbon price. It enhances the economic incentives for 'no regrets' abatement and imposes lower costs on those wishing to participate in carbon credit trading arrangements. The market price established under an ETS reflects the marginal cost of abatement, and this acts as both a cost incentive for emission reduction and a profit incentive for the sale of excess emission entitlements.

The modelling suggests that the marginal cost of delivering the 126 MtCO2e of abatement under an ETS would be around $17.36.

Figure ES.2 shows the average cost per tonne of abatement action, taking into account the net cost of all abatement that contributes to achieving the target. The analysis indicates that in theory, if all no regrets abatement could be activated at no additional cost, Australia's 2020 GHG emissions could be reduced by 126 MtCO2e at a negative cost. That is, on average, each tonne of abatement would deliver a financial benefit to the project owner of $81.40 (and an overall benefit from reduced inefficiencies of around $10.3 billion – in NPV terms). Although involving some level of transaction costs, the far reaching abatement incentives of an ETS could deliver an average cost outcome of

around -$77.41. It too would be likely to support a net benefit, on average, across emitters (totalling around $9.7 billion – assuming that 'no regrets' action is effectively mobilised by the broad-based impact of a carbon price).

Figure ES.2 Average cost of delivering a 126Mt abatement outcome ($/tCO2e)



Both variants of the ERF approach (differentiated by the level of 'no regrets' abatement leveraged, and the cost paid) return positive cost estimates. The high leverage variant (which effectively purchases 'no regrets' abatement at $1 per tonne) delivers an average cost for the 126 MtCO2e target of $13.46, and a net cost overall of around $1.7 billion. The low leverage variant (where minimal amounts of 'no regrets' abatement are induced or paid for by the ERF) delivers an average abatement cost of $23.98 per tCO2e, and a net cost overall of about $3.0 billion. These outcomes would be commensurate with an average cost per tonne across all the abatement generated by the ERF of between -$5.20 and +$23.98.

However, according to these indicative bottom up abatement estimates, even with zero transaction costs, there is not enough 'no regrets' abatement in the economy to fully meet the abatement target. Making up the shortfall will entail some net costs. The total of these costs is reported in Figure ES.3.

Under ideal (and theoretical) conditions, the analysis suggests that delivery of 126Mt of abatement across the Australian economy could be achieved with a net expenditure (after no regrets options are exhausted) of around $58.9 million. By comparison, and with the introduction of transaction costs, an ETS would require net expenditures of $475.9 million to achieve the same level of emission reduction. Further, the market approach implicit in an ETS would see a total value of $643.9 million placed on this abatement, implying that over-compensation (ie. a 'producer surplus' or profit) of up to $168 million could be associated with the sale of this abatement (ie. surplus emission permits) by its owners at full market prices.

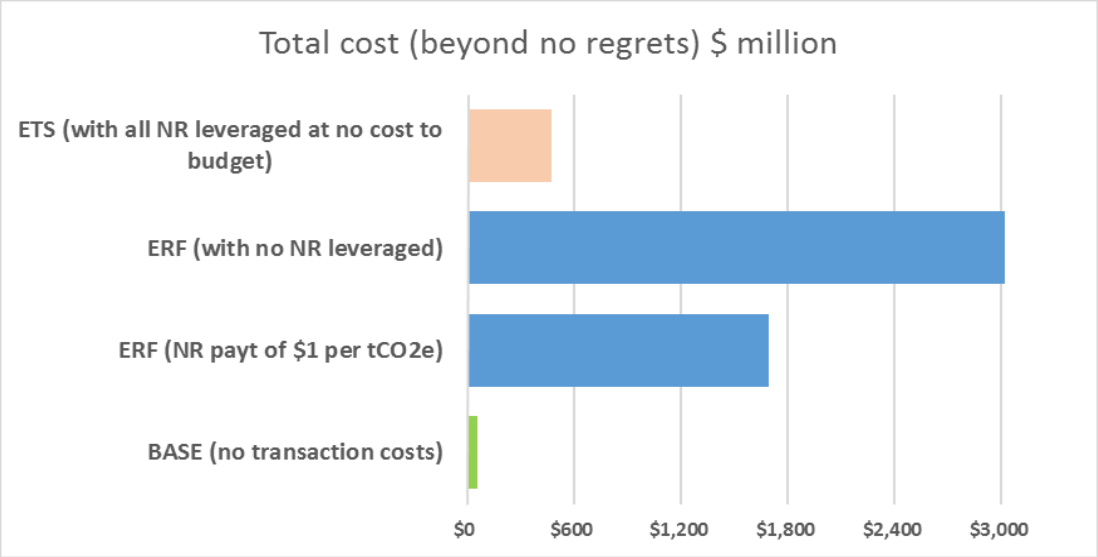
The ERF would entail expenditures of at least 2.6 to 4.7 times those likely to be required by an ETS. The expenditure estimate for the ERF, assuming purchase of 'no regrets' abatement at $1 per tonne, is $1,696.5 million and the expenditure estimate for the ERF approach if 'no regrets' options were not leveraged by the program is $3,021.4 million. Further, under the ERF, net expenditures are borne by the Commonwealth government.

It is noteworthy that the current ERF budget allocation of $2.55 billion lies just beyond the midpoint of these estimates. Further, the model prediction of the average price to emerge from ERF auctions to date is $1.61 - if 'no regrets' action is coming forward and being funded, and $16.75. – if it is not.

The different approaches also have different distributional consequences. Under the theoretical ideal, a wide range of abatement activities contribute to the national abatement target. Of the 48

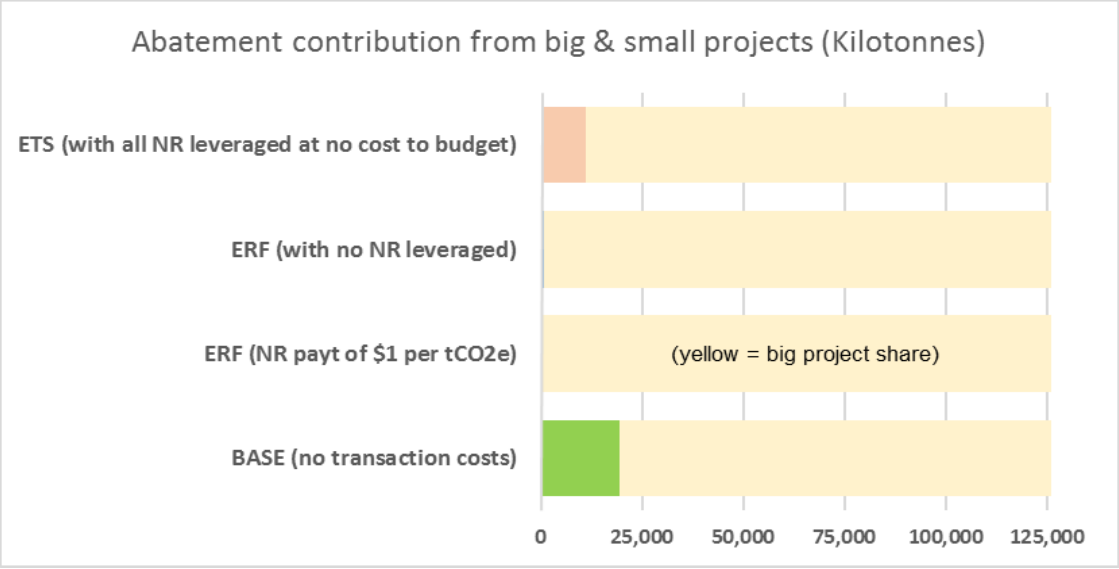
activities identified, 29 contribute to a least cost abatement solution. Activity is spread across big and small projects.

Figure ES.3 Expenditure associated with 'net cost' abatement outcomes ($m)



Project level transaction costs hit small projects hardest, and shifts the source of abatement into higher cost categories. Small projects, and activities in which they account for a higher abatement share, tend to make a diminishing contribution to the abatement task as transaction costs increase. The contribution of small projects to the national abatement target under the different policy settings is shown in Figure ES.4.

Figure ES.4 Contribution of big & small projects to the 126 Mt abatement task



If zero transaction costs applied, small projects are estimated to contribute about 15.4% of the abatement needed to deliver a least cost outcome. In the presence of transaction costs associated with obligations under an ETS, small projects are estimated to contribute only 9.0% of abatement. And under the ERF, small projects are expected to contribute less than 1% of the abatement purchased by the scheme.

Taking all savings and expenditures into account, the modelling indicates that Australia could deliver 126Mt of abatement in 2020 at a net benefit to the economy. A high proportion of this abatement could be delivered through actions that enhance the bottom line of households and businesses. An

ETS can magnify the incentives to undertake this abatement and help drive it. If successful in unlocking these profitable emission reductions, a national ETS could deliver Australia's 126 Mt abatement target while generating a net benefit to emitters that averages out at about $77 for each tonne of ($CO_2e$) emissions reduced. In contrast, the ERF is likely to deliver this abatement outcome at a net cost, averaging out at somewhere between $13 and $24 per tonne.

However, the scope of these programs differs significantly. Australians are paying a significant premium for abatement in return for an approach that does not produce incentives to reduce emissions on a consistent economy-wide basis.

Direct action versus a national carbon price

While the ERF is seeking to deliver an abatement outcome of around 236 $MtCO_2e$ between 2015 and 2020 through direct purchases and a 'Safeguards' mechanism to guard against excessive emissions growth elsewhere in the economy, an ETS could apply to around 3,438 $MtCO_2e$ over the same period (although the desirability of reliable and low cost reporting arrangements would probably result in slightly narrower ETS coverage).

Our modelling suggests that the ERF might need to spend up to $3 billion over this period to deliver on the emission target, and possibly allow up to another $10 billion in efficiency savings to languish. In contrast, an ETS would put a price on economy-wide emissions of around $17.36 and, in doing so, would value Australia's emission quota for the 6 year period (in the absence of international emission trading) at around $59.7 billion. The net expenditure associated with achieving the national emissions target under this approach would be about $0.64 billion, and economy-wide efficiency gains worth about $9.7 billion would be likely to flow from that. This implies a potential net economic cost of up to $3 billion under the ERF approach versus a potential net gain of around $9 billion under a national ETS.

An ETS mobilises resources on an economy-wide basis and crystallises the value inherent in the ability to emit greenhouse gases into the atmosphere. The ERF goes to considerable lengths to avoid this mobilisation. As a consequence, it also forestalls the economy-wide innovation and opportunities associated with it. Given the pool of low cost abatement that bottom-up models suggest is available in the Australian economy, the ERF might be viewed as a modest policy response suited to a modest emissions target. However, the costs and uncertainties associated with the ERF are likely to be substantial. This paper seeks to bring these issues to the attention of the public, industry and policymakers.

Efficient abatement mechanisms and policy frameworks are necessary to deliver Australia's best response to the prospect of deeper emission cuts in the future, and the economic challenges and opportunities that they bring.