Carbon Market Institute

RepuTex ENERGY

POTENTIAL FUTURES FOR AUSTRALIA'S SAFEGUARD MECHANISM

CMI Research, prepared by RepuTex Energy

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ABOUT THE CARBON MARKET INSTITUTE AND CMI RESEARCH

The Carbon Market Institute (CMI) is a member-based organisation that is an industry association and an independent centre of excellence for business leading the transition to net zero emissions. Its over 130 members include primary producers, carbon project developers, Indigenous corporations, legal, technology and advisory services, insurers, banks, investors, corporate entities and emission intensive industries developing decarbonisation and offset strategies.

CMI Research is a recent initiative seeking to provide evidence-based research and analysis to assist business, policy makers and the community in managing the risks and capitalising on opportunities in the transition to net-zero emissions. Research findings do not seek to represent CMI policy positions, which are determined by the CMI Board independently of its members, nor do they represent the positions of member organisations.

ABOUT REPUTEX

RepuTex is the leading provider of price information, analysis and advisory services for the Australian carbon and electricity commodity markets. Established in 1999, our market data and forecasts have been at the forefront of energy and climate thinking for over two decades.

We have over 150 subscription and advisory customers across Australia and Asia, among them the most active traders and market participants, including high emitting companies, project developers, investment funds, physical traders, and state and federal policymakers.

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EXECUTIVE SUMMARY

About this engagement

RepuTex has been engaged by the Carbon Market Institute (CMI) to undertake analysis of the current operation of the Commonwealth Safeguard Mechanism, and model scenarios to align industrial greenhouse gas (GHG) emissions with net-zero emissions by 2050.

The objective of the project is to provide stakeholders with an understanding of current Australian carbon offset market trends, and supply-demand dynamics, helping to provide a more informed basis for the design of policy settings under the Australian Labor Party's (ALP) Safeguard Mechanism framework.

Analysis accounts for policy design elements contained in the ALP's Powering Australia Plan, as described in "The Economic Impact of the ALP's Powering Australia Plan", undertaken by RepuTex. For example, a start date of 1 July 2023 is applied, with baselines assumed to reduce "predictably and gradually over time", with tailored support for industry.

Summary of conclusions

Emissions coverage and abatement task to 2030

The Safeguard Mechanism commenced on 1 July 2016, applying to facilities with direct (scope 1) greenhouse gas (GHG) emissions of over 100,000 tonnes carbon dioxide equivalent (CO2-e) per year.

In 2020-21 the scheme covered 212 facilities across the metals, mining, oil and gas extraction, manufacturing, transport, and waste industry sectors. These facilities were responsible for 27 per cent of national emissions in 2020-21, or 137 million tonnes (Mt) of CO2e.

Covered emissions are projected to grow to 140 Mt in 2030 (18% above 2005 levels) under RepuTex's business-as-usual (BAU) reference case[1], driven by liquified natural gas (LNG) production, with these emissions overtaking those of the electricity sector by 2024 to become Australia's largest source.

Over the period 2022-30 this represents a cumulative emissions reduction task of 170 Mt to align covered facilities with a net-zero emissions trajectory, which may be met via the least-cost combination of internal abatement opportunities and external offsets.

All baseline methods could create an effective signal for long-term investment in emissions reductions

Emissions baselines set in either "emissions intensity" (as a rate of GHG emissions per unit of output) or "absolute emissions" (as an absolute quantity of a facility's GHG emissions) are calculated to play a critical role in guiding the industrial sector's transition to a low-emissions future.

For the purposes of this analysis, we consider three scenarios for the design of emissions baselines that decline to net-zero by 2050: an industry emissions intensity (EI) scheme; a facility-level EI scheme; and a facility-level (absolute emissions) scheme.

Each baseline system has its strengths and weaknesses; however, none are shown to be insurmountable, and will need to be complemented by additional market rules and transition packages to support market effectiveness, and timely, Paris Agreement aligned emission reductions.

Critically, each baseline scenario is shown to provide an effective signal for long-term investment in emissions reductions, that is scalable over time. This signal delivered differently in each setting.

[1] Modelling applies RepuTex's in-house projections for industrial emissions from covered facilities. BAU projections (before new policy settings are considered) may therefore be different to the "The Economic Impact of the ALP's Powering Australia Plan", which applied the Commonwealth's emissions projections (October 2021, DISER) as a reference case, consistent with the Coalition's "Australia's long-term emissions reduction plan" (October 2021).

An ‘industry intensity scheme’ would create a carrot for decarbonisation, but rules would be required to ensure crediting of genuine emissions reductions

Under an industry intensity scheme, an economic incentive for substitution from higher to lower emissions practices is created through the crediting of facilities below an industry average baseline, while those above the baseline would be required to purchase and surrender credits.

This makes low-emissions activities cheaper, while creating an incentive for all facilities to reduce emissions – subject to the strength of the price signal. Above-average facilities would receive an incentive to reduce their compliance obligation (the ‘stick’), while those below average have an incentive to create and sell more credits (the ‘carrot’).

Like all schemes, the practical implementation of an industry intensity scheme has its challenges.

The setting of an ‘industry average’ threshold for emissions performance is a relative measure, and does not require ‘below-average’ facilities to be ‘low-emissions’ activities to be credited.

For example, in the Alumina industry, gas-fired facilities would receive below-baseline credits for being less emissions intensive than coal-fired facilities. The incentive for further emissions reductions (for example switching to green hydrogen processes) would come via the potential to create and sell more below-baseline credits if facilities transition to cleaner processes. Over time, this incentive would be supported by pressure to avoid having to buy credits as industry average benchmarks tighten.

The strength of the voluntary incentive would be dependent on the abatement price. Given the issuance of credits to below-average facilities would not need to reflect a genuine emissions reduction (e.g. credits would simply be issued to below-baseline facilities in proportion to how far their emissions intensity is below the baseline), the price incentive may initially be low.

There can be other drawbacks to an industry intensity scheme. Facilities with below-average intensity, whose production output is growing, would be able to increase their emissions without having to reduce (or offset) emissions growth. For example, at least half of all coal mines would initially be below average intensity, and could increase production by mining new seams in response to high demand and prices. This could result in large volumes of crediting, and large increases in emissions.

It will therefore be necessary for market rules to strike a balance between creating sufficient reward for below-average processes, versus ensuring crediting represents genuine emissions reductions.

For example, crediting in the pre-2030 period is expected to skew towards mostly ‘non-additional’ abatement. While this risk will decline over time, trading with above-average facilities, and the surrendering of these credits to acquit a liability, could result in net emissions reductions occurring in accounting terms only. This could jeopardise Australia’s 2030 target.

It may be straightforward for policymakers to strengthen the integrity of below-baseline crediting via the creation of a separate crediting baseline or “reference level” (at the site-level). This would create a ‘hybrid’ framework, with different baselines for crediting and compliance. We recognise that such an approach may, however, create a more complex regulation-market mechanism, with more diluted incentives. An alternative option may therefore be the design of ‘facility-level benchmarks’ for both crediting and compliance (in either intensity or absolute emissions).

A facility-level emissions intensity system would create incentives for all facilities to reduce emissions

An emissions intensity benchmark may be set for all facilities, calculated by multiplying a site-specific emissions intensity value, declining to net-zero, by the annual volume of product.

The ability to generate credits from emissions reductions relative to each facility’s baseline, combined with the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide dual incentives for all participants to transition to lower emissions processes (the ‘carrot’ and the ’stick’ for all facilities from commencement of the scheme).

This transition would reflect a gradual step down from current production intensity, making all facilities accountable for 3.6 per cent of their emissions intensity in year one, equivalent to a 96.4 per cent free allocation under a cap and trade system.

A "slow-start" (or transitional period) could therefore be embedded into the design of the system.

By applying a crediting baseline that corresponds to reported production intensity, it is more likely that a facility will be credited for genuine emissions reductions. This would reduce the risk of crediting non-additional actions, and create an appropriate price signal to incentivise investment.

Like an industry intensity scheme, there are weaknesses to a site-specific intensity framework.

Rules would be required to protect against below-baseline crediting for BAU improvements in emissions intensity (such as minimum crediting thresholds). In addition, facility-level baselines can penalise early movers that have recently implemented large-scale actions. Baselines could therefore reflect a 2-3 year average reference level, accounting for a wider variety of operational circumstances.

The return to an 'absolute emissions' system could undo recent efforts to make the safeguard scheme more flexible

Instead of an emissions intensity framework, facility-level baselines could set in terms of absolute emissions (for example in line with recent reported emissions).

This would establish a transparent cap on emissions, which is reduced each year, providing the greatest certainty in achieving Australia's interim emissions targets. Such a construct would also align Australia more closely with other global carbon markets - such as Europe, California, and New Zealand - should Australia seek to two-way link its market to international trading in the future.

In line with a 'facility-level intensity' system, the ability to generate credits from emissions reductions relative to a baseline, and the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide each facility with dual incentives to transition to low emissions processes.

While this would align Australia with the global standard, and may be supported by measures to support market stability, such an approach could undo recent efforts to transition the Safeguard Mechanism to an emissions intensity system. While the current scheme lacks ambition, an intensity system is likely to provide industry (and the market) with the necessary flexibility to manage the variable and cyclical nature of local production intensity.

Below-baseline credits (Safeguard Mechanism Credits) provide a key incentive for industry decarbonisation

Below-baseline credits, or Safeguard Mechanism Credits (SMCs), are proposed to be issued to a facility with reported emissions below its baseline. SMCs would be differentiated from Australian Carbon Credit Units (ACCUs), largely generated from land-sector though sequestration projects, and would instead be issued to industrial emission avoidance projects.

The ability to generate credits from emissions reductions relative to a baseline, combined with the pressure to avoid having to buy credits for emissions in excess of a baseline, provide critical incentives for participants to transition to lower emissions processes.

Market rules will be required to govern the use of below-baseline credits.

Although stakeholders often focus on the risk of there being not enough credit supply to support industry demand for external abatement, historically, it is the norm for new emissions markets to become over- rather than under-supplied by carbon credits (and international offsets).

Market rules will be needed to protect against this, potentially including banking/vintage restrictions and/or quantitative limits on the use of SMCs to fulfill a facility's compliance obligations (e.g., limiting SMC surrenders to 50 per cent of a facility's annual liability).

Market rules will also be required to ensure there is ongoing support (and demand for) Australia's domestic ACCU industry, which can provide significant benefits beyond GHG emissions abatement, including regional investment and job creation, and environmental co-benefits.

Australia now has a deep, liquid, cost-effective offset market – is there a need for international offsets?

Under the former Carbon Price Mechanism (CPM), access to international carbon units was critical to ensure sufficient liquidity of external abatement to support decarbonisation efforts.

However, much has changed in the past decade. Under the Paris Agreement, all countries are now expected to decarbonise. Key markets, such as the European Union Emissions Trading Scheme (EU ETS) have banned international offsets as they seek to drive domestic decarbonisation, while capturing the benefits of the low-carbon economy.

Domestically, the Australian carbon offset market has now reached scale. Over 111 million ACCUs have now been issued, up from just 1.8 million in 2012-13 (the start of the CPM). Through to 2030, 104 million new ACCUs are contracted for delivery to the Commonwealth on 'fixed delivery' carbon abatement contracts (CACs), with 22 million ACCUs also contracted under 'optional delivery' CACs (126 million total). After recent changes to the Emissions Reduction Fund (March 2022), many of these units may now be made available to the wider private market, if needed.

This pool of new ACCUs represents 74 per cent of the Safeguard Mechanism's estimated cumulative abatement task to 2030 – before any internal emissions reductions by industry and below-baseline crediting, or any investment in new ACCU generating projects is factored in.

This pool of ACCUs may be available at prices above $24/t (breakeven price based on an average ERF contract price of $12/t), subject a strong enough incentive to do so[2].

Although large, this pool is limited, and is therefore unlikely to diminish the long-term signal for investment in emissions reductions. Instead, this pool of offsets can serve as a key source of cost-effective supply, supporting the early transition, before giving way to new offset projects.[3]

Unlike 2012, industry therefore has access to plentiful, cost-effective sources of domestic offset supply, accessible today via Australia's developing forwards and derivatives markets. This will enable the industrial sector to become more accountable for its emissions, while ensuring access to deep, liquid, cost-effective emissions reductions.

In combination with the inherent "soft-start" nature of the baseline framework, this raises questions over the need for international offsets in the early years of the enhanced safeguard framework. International credits may be better suited to provide liquidity where the market scales up to a more ambitious target, or to alleviate extreme pricing events.

Industry assistance is a key part of scheme design, suggesting widespread exemptions for industry may not be required

In Australia, industry assistance is currently provided to emissions intensive and trade exposed (EITE) industries under the large-scale renewable energy target (LRET).

Should current definitions be applied, over 78 per cent of covered emissions under the Safeguard Mechanism, and 56 per cent of all facilities (118), would be classified as EITE facilities.

Exemptions for these facilities, such as loosening emissions accountability, could undermine Australia's low-carbon transition, while placing a heavier burden of compliance on domestic, non-trade exposed industries (such as domestic airlines and domestic gas) – many of which are themselves from 'hard-to-abate' sectors where key technology gaps remain to reduce emissions.

Importantly, industry assistance can be embedded into scheme design.

For example, where a "site-specific" scheme is established, each facility would become accountable where its emissions are higher than its baseline. Base-year emissions would therefore be equivalent to

[2] For example, prices at $25/t would provide little incentive for project owners to exit their existing CACs, while prices closer to $40/t would be likely to trigger more widespread selling.
[3] For example, we model significant potential for newly created methods under the ERF to contribute large-scale ACCU supply, such as soil carbon, geologic Carbon Capture and Storage (CCS), plantation forestry, biomethane and 'blue carbon' methodologies, along with an integrated farm method.

the 100 per cent ‘free allocation’ of permits under a cap and trade system, stepping down to 96.4 per cent in year one (reducing by 3.6 per cent from base-year emissions).

This level of industry assistance would be higher than the former CPM, where ‘highly’ emissions intensive trade exposed activities received 94.5 per cent of their emissions for free (declining 1.3 per cent per annum), while ‘moderately’ exposed facilities received just 66 per cent for free.

Further exemptions for industry (e.g. further loosening accountability) may therefore not be required.

Moreover, exemptions may be inconsistent with corporate voluntary commitments, with 74% of facilities (83% of covered emissions) having already established net-zero targets.

A ‘cost containment scheme’ may best support internationally exposed, hard to abate sectors

While carbon leakage and competitive risks remain an important consideration, these risks are decreasing as more countries take action under the Paris Agreement.

Where competitive risks are determined to still occur, a preferable method of industry assistance may be the design of a “cost containment scheme”. This would allow the emissions reduction incentive to be maintained for all facilities, with support given to reduce compliance costs.

This may be in the form of a ‘refund mechanism’ (e.g. as a refund or tax credit) to cover a proportion of a facility’s cost of sourcing offsets. In addition, priority access may be given to funding and/or low-cost financing under the ALP’s National Reconstruction Fund (NRF), supporting on-site projects that reduce emissions and result in compliance cost savings that may otherwise not be financially attractive.

Support for on-site projects can also help to accelerate emissions reduction investment in ‘hard-to-abate’ sectors, while reducing reliance on external carbon offsets.

1. THE SAFEGUARD MECHANISM

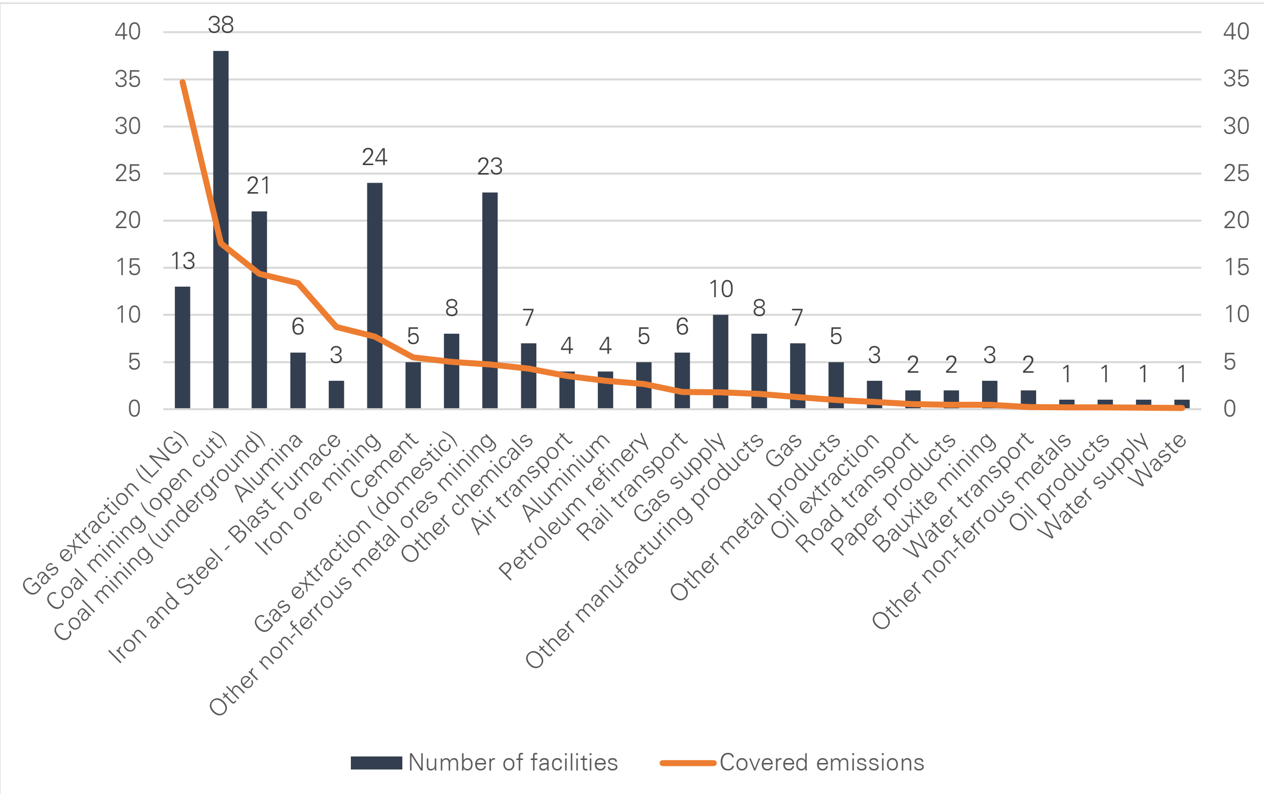
1.1 Background and emissions coverage

The Safeguard Mechanism commenced on 1 July 2016, applying to facilities with direct (scope 1) greenhouse gas (GHG) emissions of over 100,000 tonnes carbon dioxide equivalent (CO2-e) per annum. The scheme was designed to ensure that emissions reductions purchased under the Emissions Reduction Fund (ERF) were not offset by significant increases elsewhere in the economy. It sought to achieve this by requiring covered entities to keep their net emissions at or below a baseline, with facility operators given flexibility to manage any excess emissions through the use of domestic Australian Carbon Credit Unit (ACCU) offsets, and other measures - such as multi-year monitoring periods (MYMP) to allow additional time to reduce net emissions.

The industrial sector incorporates the mining, oil and gas, manufacturing, and industrial processing industries. Facilities in these industries produce emissions from the direct combustion of fossil fuels to generate heat, steam, or pressure; fugitive emissions from the extraction and distribution of fossil fuels; and non-energy related industrial processes, including emissions from hydrofluorocarbons. While electricity generators are covered under the Safeguard Mechanism, the sector is subject to a separate sectoral baseline[4]. As a result, the electricity sector is assumed to be excluded from the operation of the scheme, and is instead covered by other policy levers.

In 2020-21 the Safeguard Mechanism covered 212 facilities from the industrial sectors. Excluding the electricity sector, these facilities accounted for 137 million tonnes, or over one quarter (27%) of national emissions, representing Australia's second largest emitting segment behind the electricity sector.

Figure 1: Safeguard Mechanism coverage by number of facilities (right axis) and emissions (left axis)



Source: RepuTex Energy, derived from Clean Energy Regulator 2022

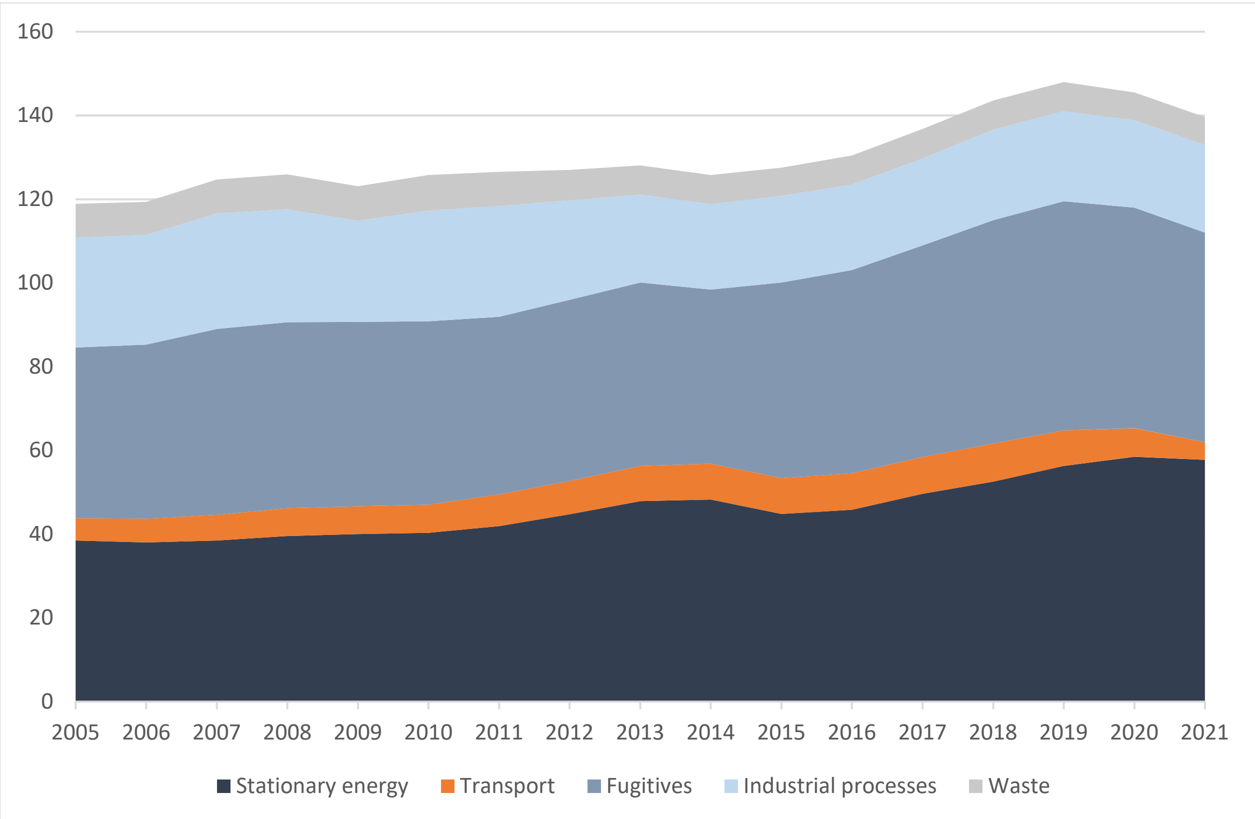
[4] A sectoral baseline of 198 million tonnes of CO2-e is applied, the high point of emissions over the FY10-14 reporting period. Reported sectoral emissions were almost 164 Mt in FY21, well below the sectoral baseline.

Covered emissions are dominated by extractive industries, with approximately one quarter (26%) of FY21 emissions derived from just 13 liquified natural gas (LNG) facilities. These emissions relate to CO_2 in reservoirs that is vented during extraction, as well as gas that is combusted for power generation and processes. A further one-quarter of covered emissions are derived from 59 coal mines (13% open cut coal mining, 11% underground). These primarily relate to fugitive emissions from the mine as well as fuel usage in the vehicles operating at the site. Other highly emitting industries include alumina (10%), iron and steel blast furnaces (6%), iron ore mining (6%) and cement (4%).

Under the initial design of the scheme, emissions baselines were set with reference to the 'high point' of each facility's reported emissions between 2009-10 and 2013-14 ("Reported Baselines"). From 1 July 2021, all facilities (excluding the electricity generation sector) were required to transition to baselines calculated using an 'emissions intensity' value, or tonnes of emissions produced per tonne of product created. Emissions baselines are not currently set to decline over time, while facilities that report emissions below their baseline do not receive a 'credit'. As a result, the Safeguard Mechanism currently operates like a "baseline and penalty" scheme (refer to Box 3.1).

In line with the 'light touch' nature of the current Safeguard Mechanism framework, industrial emissions covered by the scheme have increased by 4.3 per cent between 2016–17 and 2020-21. Growth in covered emissions has been driven by the mining and oil & gas industries, in particular the rapid expansion of LNG export capacity, combined with the design of flexible emissions baselines under the current scheme (such as baselines originally being set above reported emissions; the ability of facilities to select less stringent emissions intensity baselines, and flexibility to manage excess emissions).

Figure 2: Emissions by type covered by the Safeguard Mechanism 2005-21 (excluding electricity sector)



Source: RepuTex Energy, 2022 drawing on DISER emissions projections 2021.

1.2 Business-as-usual emissions projections

1.2.1 Our modelling approach

To understand future trends for emissions covered by the Safeguard Mechanism, we present a reference case for business-as-usual (BAU) emissions from 2022-30, utilising RepuTex's Australian Energy and Emissions Market (A-EEM) model[5]. A-EEM is comprised of three sub-sector models for the electricity (not used here), industrial, and land-use sectors. Within the industrial sector, modelling applies bottom-up analysis of facility-level GHG emissions based on estimated production and emissions intensities, accounting for the take-up of GHG emissions abatement activities in line with a diffusion model approach. The timing of the abatement varies according to assumptions about business behaviour and policy developments assumed by each policy scenario.

A BAU projection is developed as a reference case for covered emissions from 2022-30, accounting for "current policy" settings (prior to any changes to the Safeguard Mechanism framework). BAU projections account for abatement derived from current policy, natural improvements in emissions intensity and 'low hanging fruit' emissions reductions from available technologies that, for example, reduce fuel use and emissions.

1.2.2 Consideration of global export demand

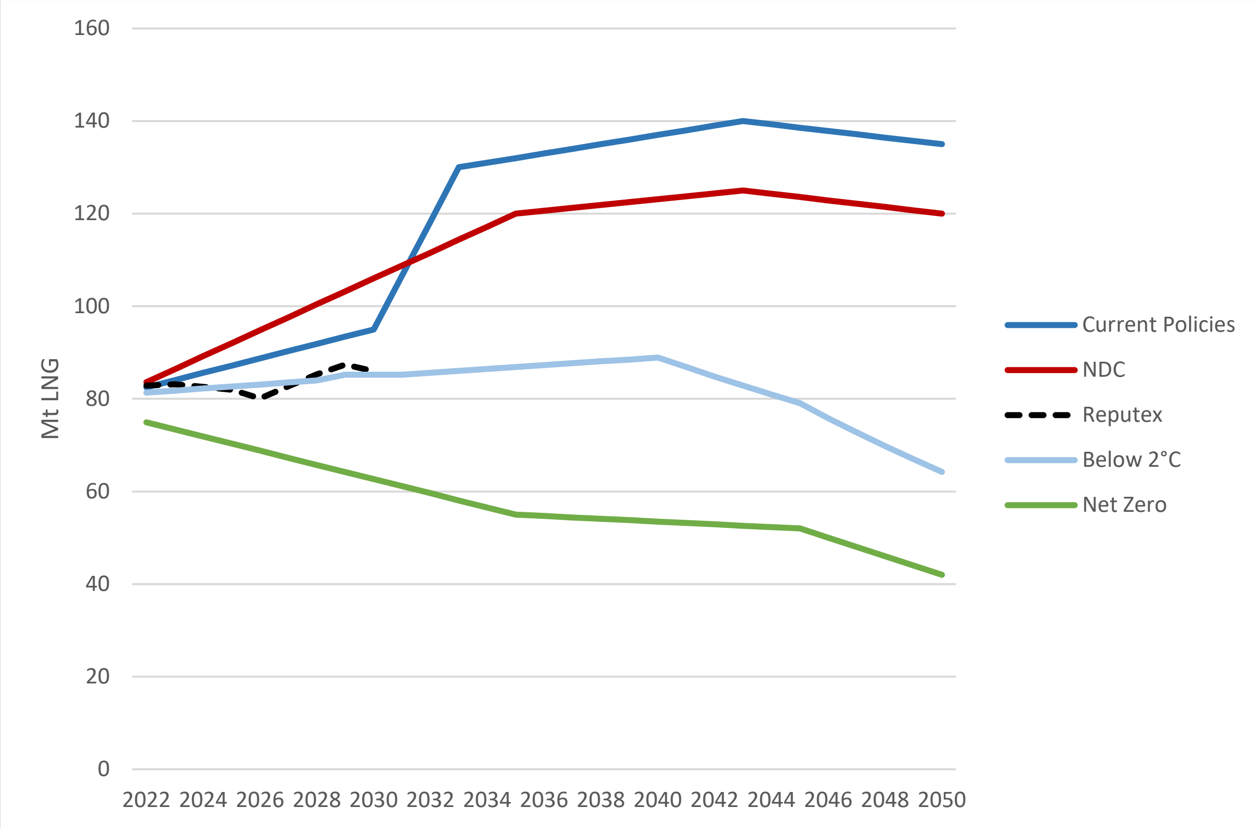
Modelling of Safeguard Mechanism emissions is particularly reactive to assumed changes in global export market conditions, specifically global demand for coal and LNG. As a reference point for possible export demand, the Reserve Bank of Australia (RBA) estimates production scenarios based on changing export demand for LNG and black coal, derived from the Network for Greening the Financial System (NFGS). Scenarios account for alternative energy transitions as Australia's major trading partners implement policies to achieve net-zero emissions. These scenarios include[6]:

- Current Policies: Accounts for currently implemented government policies in Australia's key export market. Limited progress in reducing emissions is achieved; with emissions from energy use higher than 2020 levels by 2050.
- Nationally Determined Contributions (NDC): assumes all NDCs (pledged up to December 2020) are implemented fully, and that all countries reach their 2025 and 2030 targets on emissions and energy, extrapolated out to 2050.
- Below 2°C: assumes global CO2 emissions reach net zero by 2070 (a 67 per cent chance of limiting global warming to below 2°C).
- Net Zero 2050: assumes ambitious policy consistent with a 1.5°C target. Global CO2 emissions from energy use peak in 2020 and decline to zero by 2050.

RepuTex's BAU reference case applies a pathway broadly consistent with the RBA's "Below 2°C" scenarios (Figure 3 dashed line), presented to 2030. Through to 2030 we assume Australia's LNG exports are maintained, with the Barossa field providing backfill at the Darwin LNG facility, while the Scarborough-Pluto expansion is assumed to go ahead. Late in the decade, Australia's LNG exports could grow further from announced projects like Browse and emerging gas basin developments – e.g., Beetaloo, North Bowen and the Galilee Basins - contributing to increased exports if global demand for LNG continues to increase. Australian black coal exports (Figure 4 dashed line) are assumed to remain relatively unchanged to 2030, with increases in metallurgical coal production offset by declines in thermal coal production. Outcomes are therefore consistent with the RBA's "Current Policies" scenario for coal production.

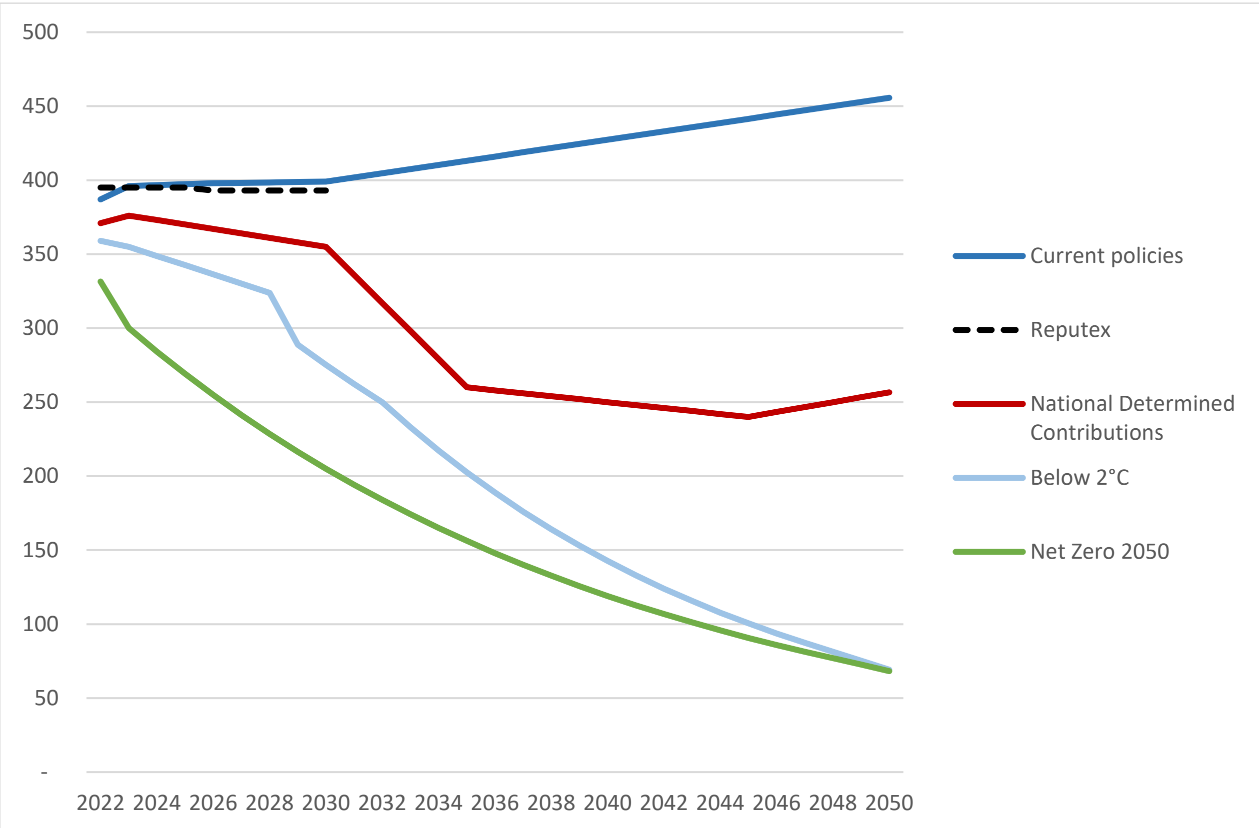
[5] Some outcomes may therefore be different to modelling undertaken for the ALP's Powering Australia Plan which applied "Australia's emissions projections" (October 2021, DISER) as a reference case BAU emissions, consistent with Commonwealth modelling of Australia's long-term emissions reduction plan (October 2021).
[6] Note, RBA scenarios do not account for recent variability of export demand following the Ukraine conflict. Variability does, however, reflect the inherent uncertainty of BAU emissions projections and the prospect of alternative pathways for export demand subject to external factors.

Figure 3: Scenarios for Australian LNG production (with RepuTex BAU assumption to 2030)



Source: RepuTex Energy 2022; RBA, Towards Net Zero: Implications for Australia of Energy Policies in East Asia, Sept 2021.

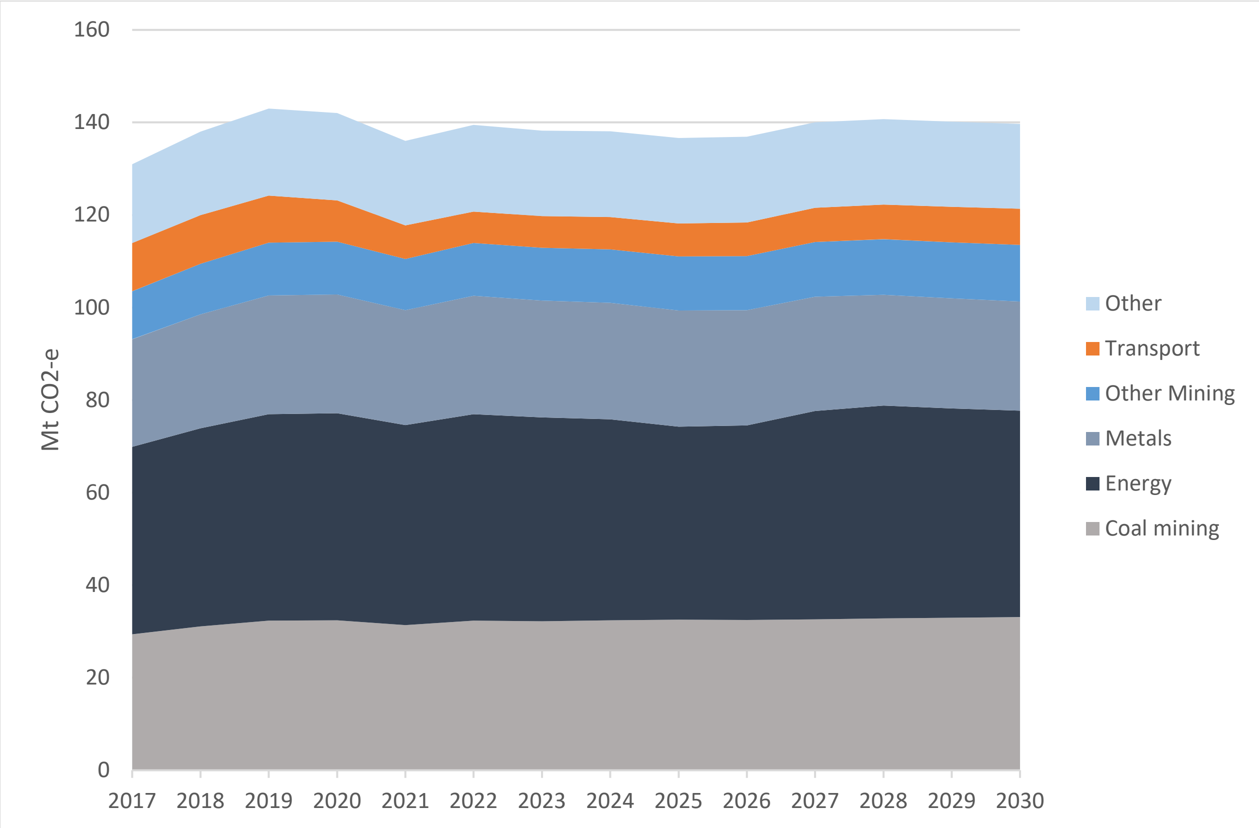
Figure 4: scenarios for Australian coal production (with RepuTex BAU assumption to 2030)



Source: RepuTex Energy 2022; RBA, Towards Net Zero: Implications for Australia of Energy Policies in East Asia, Sept 2021.

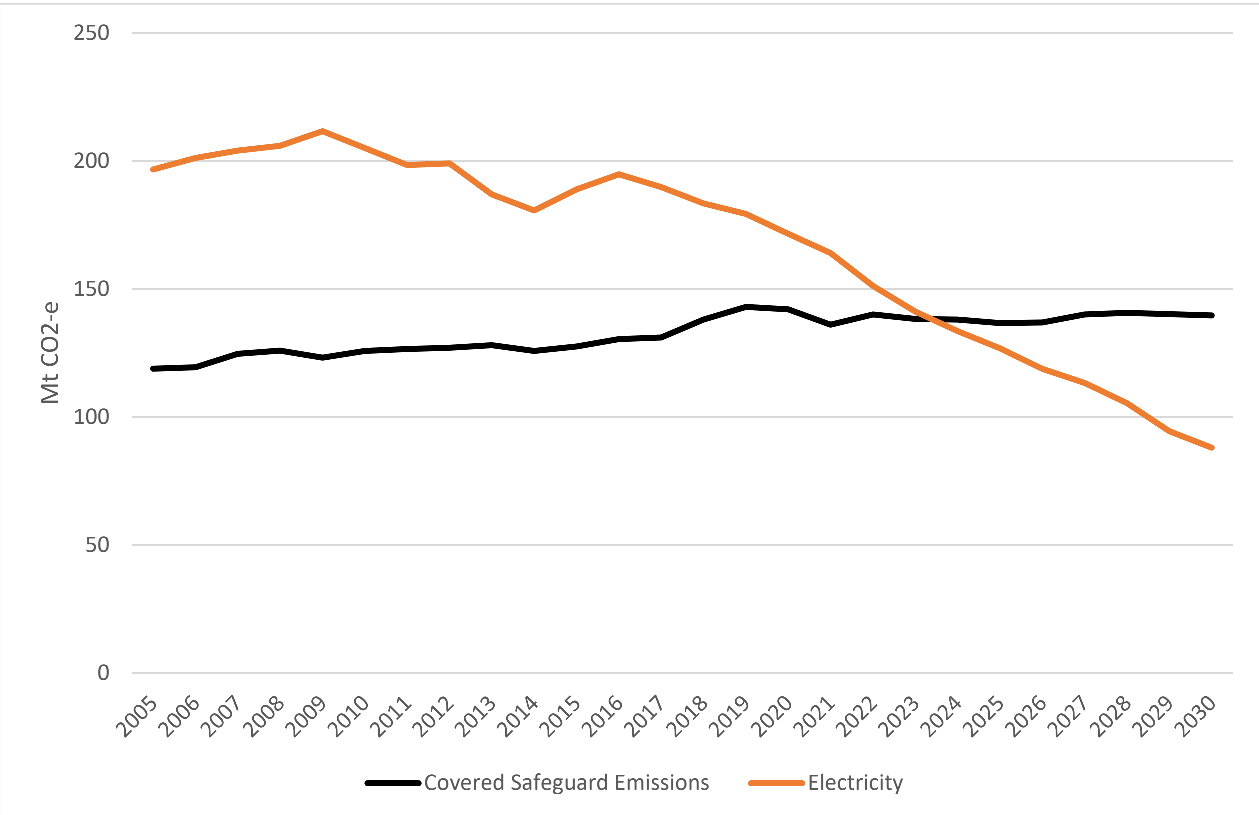
1.2.3 Reference case emissions projections to 2030

Figure 5: Safeguard Mechanism emissions – RepuTex BAU reference case



Source: RepuTex Energy, 2022

Figure 6: National emissions by key segment (business as usual)



Source: RepuTex Energy, 2022; Commonwealth Emissions Projections 2021

Under BAU conditions, emissions from safeguard covered facilities are projected to be relatively stable, growing from 137 Mt in 2021 to 140 Mt in 2030 (18% above 2005 levels). Over the period 2022-30 this represents a cumulative emissions reduction task of 170 Mt to align covered facilities with a net-zero emissions trajectory.

While key sectors of the economy have begun to decarbonise, such as the electricity sector, the relative profile of emissions under the Safeguard Mechanism under business-as-usual conditions will see the industrial sector overtake the electricity sector as Australia's largest emitting segment by the middle of the decade (Figure 6), accounting for almost one-third of national emissions by 2030. Emissions reductions in the industrial sector will therefore be critical for Australia to meet its economy-wide net zero target.

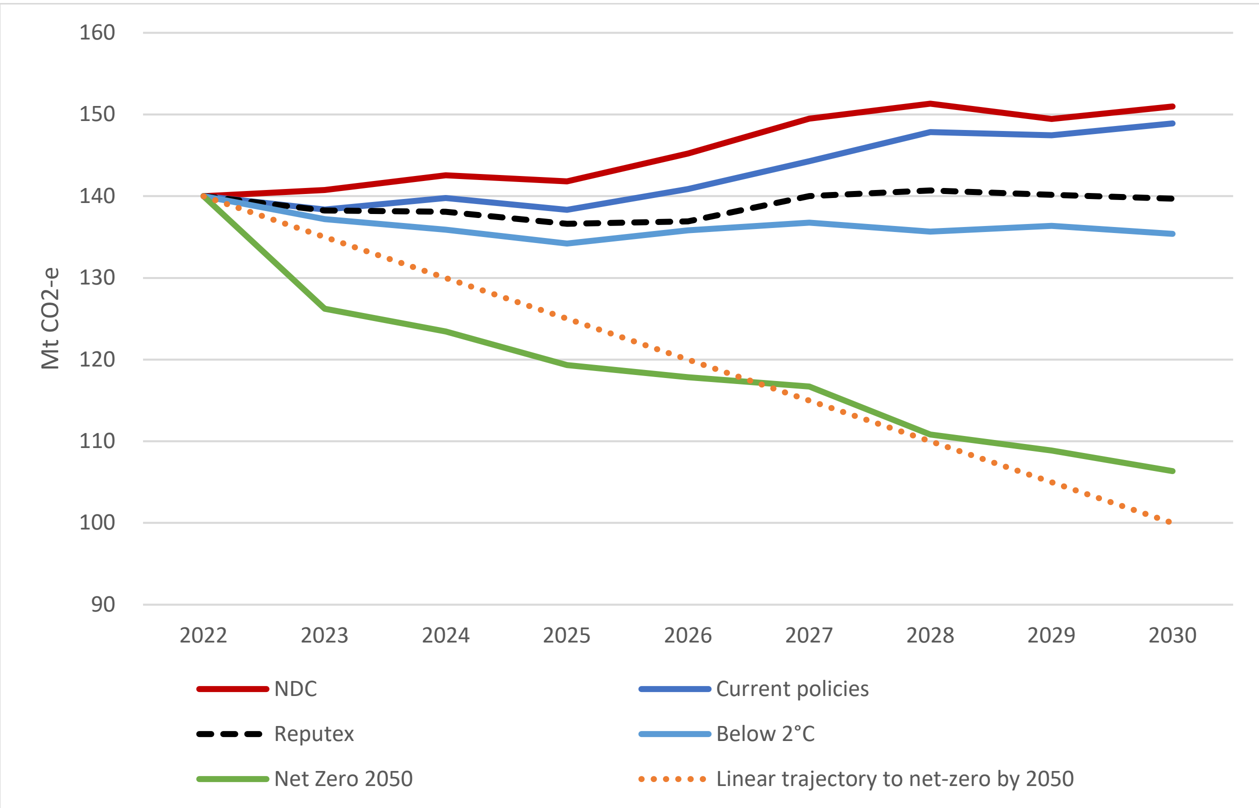
As noted, covered emissions continue to be driven by LNG production, attributed to increased production from new offshore gas fields expanding and backfilling existing LNG facilities. Meanwhile, new gas extraction and production from onshore basins also increases while associated pipeline developments and an LNG import terminal are developed. Similarly, Australia's black coal production is projected to remain relatively unchanged, while brown coal production is projected to decline.

1.2.4 Alternative scenarios for covered emissions

Given around half of emissions covered by the Safeguard Mechanism are derived from LNG and coal mining facilities, a wide range of emissions outcomes is possible, subject to changing patterns of external demand for Australia's key export sectors.

For example, under current policy settings (in our key export markets), Australian coal exports are expected to be maintained at high levels, largely in line with current output. Comparably, coal exports are shown to fall under all other scenarios, most notably under the RBA's "Net Zero" and "Below 2°C" conditions. Comparably, the outlook for LNG exports is shown to be more resilient as developing economies substitute coal for gas to reduce emissions in line with their NDC pledges. By contrast, LNG production may fall under a Net Zero scenario, led by declines in Japanese and South Korean demand.

Figure 7: Covered emission outcomes based on export demand sensitivities



Source: RepuTex Energy, 2022

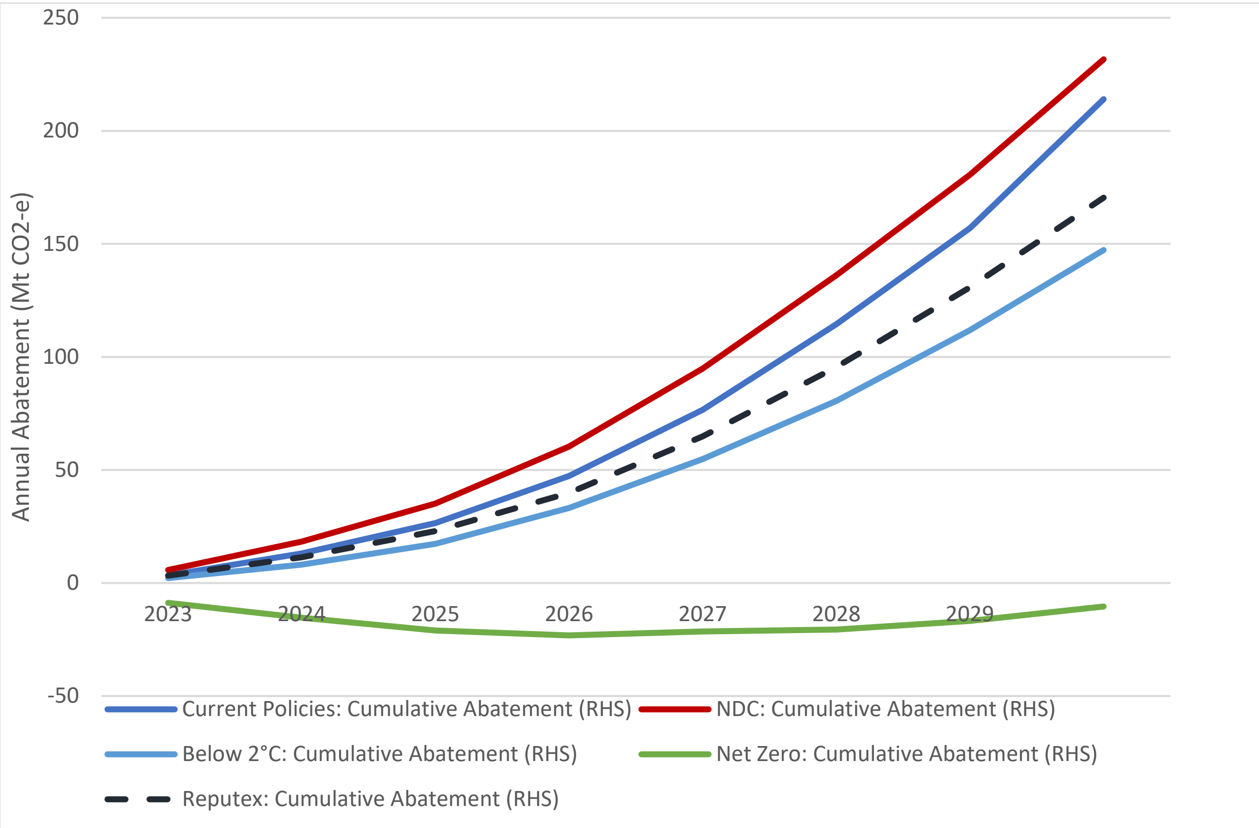
As shown in Figure 7, should LNG and coal production vary from our reference case settings, potential remains for emissions covered by the Safeguard Mechanism to be materially higher or lower based on factors external to Australian policy development.

Under an NDC pathway, underpinned by increased LNG exports and stable yet declining coal production, covered emissions are shown to increase by 8 per cent by 2030. Comparably, under more ambitious "Below 2°C" and "Net Zero 2050" scenarios, covered emissions are shown to be 3 to 24 per cent lower than current emissions by 2030, underpinned by the faster transition of key export markets away from fossil fuels. The Net Zero sensitivity suggests that these export demand settings could result in emissions covered by the Safeguard Mechanism declining faster than a linear trajectory to net-zero emissions in 2050, even before abatement efforts are factored in.

While the RBA scenarios illustrate one possible set of pathways for fossil fuel consumption, significant uncertainty remains over the speed and magnitude of the global low-carbon transition, and technological progress that may support such a transition. Scenarios do, however, provide a broader context for potential emissions development under the Safeguard Mechanism, and longer-term pressure created by changing global demand for traditional export sectors.

While sensitivities for changing export demand for fossil fuels are considered here, we also note that positive transition impacts are also expected to occur, such as the impact of global electric vehicle policy on demand for lithium production, opportunities for green steel, and so on. As a result, policymakers and market participants are encouraged to consider that, at some point, industrial output is likely to be significantly different than business-as-usual projections, with policy therefore needing to flexibly account for changing market conditions to remain ambitious and guide new industry opportunities.

Figure 8: Cumulative abatement task by emissions scenario 2023 to 2030



Source: RepuTex Energy, 2022

2. MODELLED POLICY SCENARIOS

2.1 Summary of ALP policy settings

As the primary policy mechanism for managing industry GHG emissions, a number of stakeholders have called for changes to the Safeguard Mechanism[7] to ensure that emissions from Australia's second largest emitting sector contribute towards Australia's net-zero target under the Paris Agreement.

Prior the 2022 federal election, the Australian Labor Party (ALP) released analysis of its climate policy framework, "The Economic Impact of the ALP's Powering Australia Plan", modelled by RepuTex[8], outlining policy measures for the Electricity, Industry & Carbon Farming and Transport sectors. The ALP adopted many of the proposals recommended by the Business Council of Australia (BCA) to improve the Safeguard Mechanism[9], with "emission baselines reduced predictably and gradually over time" for covered facilities.

The following policy settings were modelled by RepuTex:

- The current eligibility threshold for the Safeguard Mechanism was maintained at 100,000 tCO2 per annum (excluding electricity generation).
- The scheme was modelled to commence on 1 July 2023.
- Emissions baselines for covered facilities were "re-set" to reflect reported emissions, with baselines declining in line with an aggregate annual emissions baseline reduction of approximately 5 Mt, reaching net-zero by 2050.
- Tradable Safeguard Mechanism Credits (SMCs) were modelled to be issued where an entity "beats" its emissions baseline, while facilities would be required to surrender credits equivalent to their "above-baseline" emissions.
- Liable entities were modelled to meet their obligations for "above-baseline" emissions by surrendering SMCs and/or ACCU offsets.
- Tailored treatment was assumed to be provided to emissions intensive trade exposed industries (EITEs) based on a comparative impact principle.

The ALP therefore proposes to transition the existing Safeguard Mechanism framework in a 'baseline and credit' system (refer to Box 3.1), with the net-zero trajectory creating a gradual and transparent long-term signal for private sector investment in least-cost emissions reductions – in the form of internal emission reductions, industrial SMC trading, or ACCU offsets from the carbon farming sector.

2.2 The structure of this report

For the purposes of this report, we undertake scenario analysis on the options for aligning the Safeguard Mechanism with net-zero emissions by 2050, in line with the settings proposed by the ALP's Powering Australia Plan.

Analysis is presented in four sections:

1. Alignment of the market with a net-zero trajectory - including scenarios for the linear versus non-linear shape of an emissions constraint;
2. The setting of emissions baselines – including scenarios for the design of emissions baselines in "emissions intensity" (as a rate of GHG emissions per unit

[7] For example, the Climate Change Authority, Business Council of Australia; and Australian Industry Group (AIG).
[8] Full report available here
[9] Available here. Note: the BCA's recommendation to lower the threshold for covered facilities to >25,000 (from >100,000) and include the electricity sector in the enhanced policy framework were not adopted by the ALP.

of output) or “absolute emissions” terms (as an absolute quantity of a facility’s GHG emissions); and the treatment of new and closing facilities;

3. Managing excess emissions – including rules for the use of below-baseline credits, and the interaction between domestic and international offsets; and
4. The development of industry assistance measures – including principles for the potential treatment of internationally exposed, hard-to-abate industries.

2.3 Principles for guiding policy development

The aim of the project is to understand the advantages and disadvantages of different policy approaches, considering the design of emissions baselines and complimentary settings (such as the use of external offsets, industry assistance, and so on). The suitability of each policy approach is measured against key principles, derived in line with industry and stakeholder feedback.

Figure 9: Summary of policy principles

Principle	Summary
Principle 1: Effective and scalable	Policy must be effective in reducing GHG emissions and aligning outcomes with a national emissions reduction target in 2030 and net-zero emissions by 2050. It must also be scalable to increasing ambition over time.
Principle 2: Manageable transition	Policy must create a manageable transition for industry, rather than impose a significant change ‘overnight’.
Principle 3: Support for industry	Policy must provide tailored treatment for internationally exposed, hard-to-abate industries.
Principle 4: Fair allocation of the task	Policy must be fair in the allocation of the emissions reduction task between covered facilities. For example, it should not exempt certain industrial sectors, and therefore impose a greater task on other sectors.
Principle 5: Consistent	Policy must provide a signal for all facilities to reduce emissions, aligning the market with corporate voluntary commitments to reach net-zero emissions.

3. ALIGNING POLICY WITH NET-ZERO

3.1 Start year for declining baselines

The ALP has proposed a start date of 1 July 2023 for the enhanced Safeguard Mechanism framework. For the purposes of this analysis, an emissions base-year of 2021-22 is applied, with facility-level baselines stepping down in 2022-23. Covered facilities are therefore assumed to be accountable for their 2022-23 reported emissions.

For example, reported emissions for covered facilities in 2022-23 will be finalised after 1 July 2023 (reported by 1 November). Responsible emitters would have until 28 February 2024, to manage any excess emissions for 2022-23, in line with the current Safeguard Mechanism compliance timetable. While detailed market rules are yet to be designed, industry is assumed to have received forewarning of the policy change, with industry groups advocating for scaled-up settings to achieve net-zero emissions.

Using most recently reported emissions prior to the commencement of the enhanced scheme (2021-22) is assumed to create a more accurate and fair base-year for emissions, and subsequent reductions. Alternatively, the use of a base-year that occurs in the future can introduce a perverse signal for facilities to increase their emissions to create a higher start-point, subject to specific baseline methodologies.

3.2 Linear versus non-linear trajectory

Many different trajectories could be implemented to align the Safeguard Mechanism with net-zero emissions by 2050. The most common form of emissions reduction trajectory is a linear rate of decline, reducing consistently over time to reach a specific emissions target. This is because linear reduction targets provide a simple, transparent signal to guide long term planning and capital investment decisions, while ensuring aggregate outcomes align with specified national carbon budgets and point-in-time targets.

Linear reduction trajectories are applied by almost all leading GHG emissions markets, such as the EU ETS, where the market cap on emissions decreases at an annual linear reduction factor of 2.2 per cent over Phase 4 (2021-30). Linear reduction targets are also applied by most companies setting voluntary net-zero emissions reduction targets, with both Science-based Targets Initiative (SBTi) methods involving emissions budgets calculated from various linear reductions.

As shown in Figure 10 (over page), 157 facilities (74 per cent) have adopted a voluntary emissions reduction target consistent with net-zero emissions between 2030 and 2050, representing 83 per cent of covered emissions. While the majority of emissions reduction targets are linear in shape, in practice, 'emissions cuts' need not be implemented linearly at each facility, shown in Figure 11. Facilities are therefore given flexibility to invest in the least-cost combination of commercially viable technologies and external abatement (such as domestic ACCU offsets and/or below-baseline credits), guided by a predictable and gradual emissions reduction signal. While a linear profile is a convenient and transparent way to calculate the carbon budget over a specified period, actual annual emissions reductions are not required, not are they anticipated, to be linear.

Comparably, non-linear pathways may be established to account for the different pace at which different sectors may decarbonise. For example, the SBTi has established a Sectoral Decarbonization Approach (SDA) that allows emissions intensity targets (as a rate of GHG emissions per unit of output) to be set, accounting for sectors such as electricity to decarbonise faster, while others decarbonise at a slower pace. As noted by SBTi, however, targets set using intensity methods often lead to large increases in absolute emissions when used by fast-growing companies, and therefore do not support goals to limit global warming.[10].

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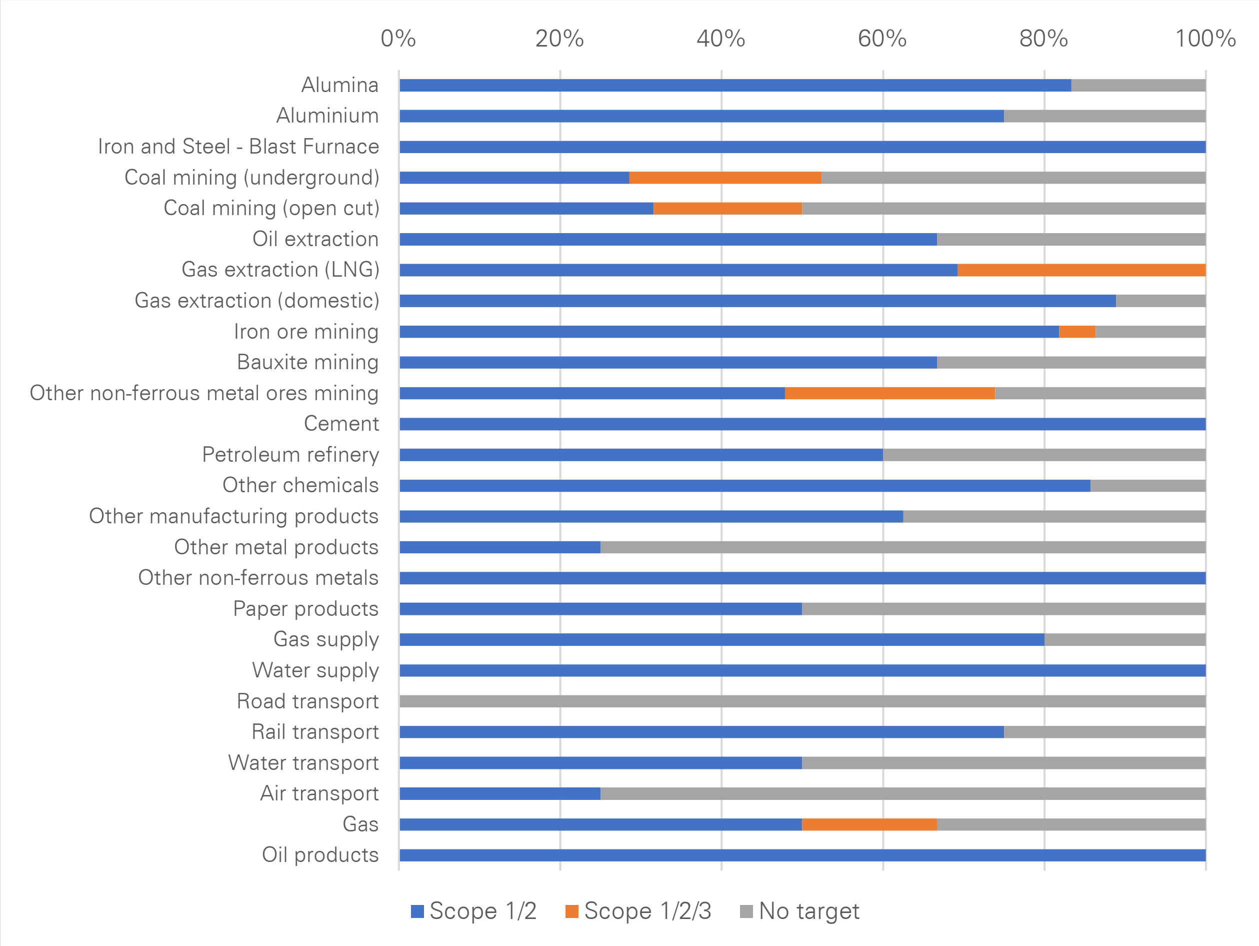
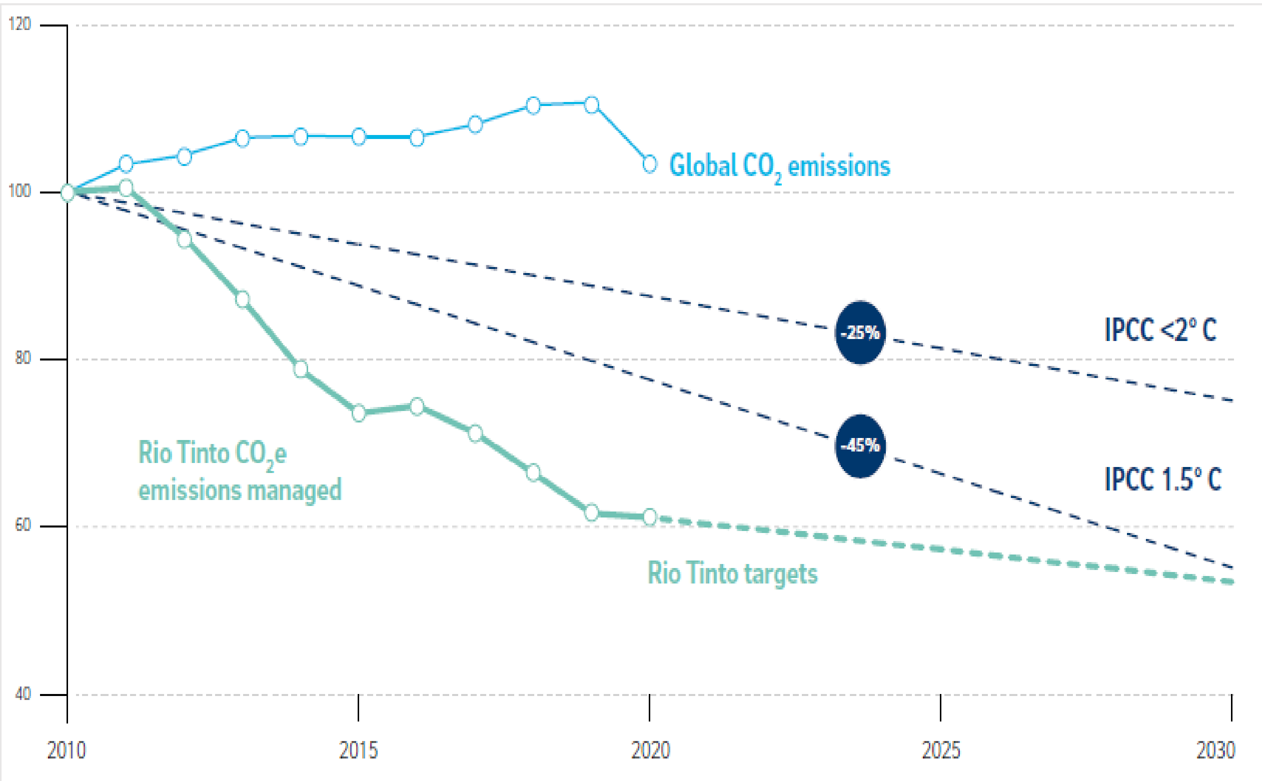
[10] https://sciencebasedtargets.org/news/understand-science-based-targets-methods-climate-action

Figure 10: proportion of companies with long-term targets by scope



Source: RepuTex Energy, 2022

Figure 11: Rio Tinto non-linear emissions reduction pathway, relative to linear signal



Source: Rio Tinto, Our Approach to Climate Change, 2020 (indexed to 2010 = 100)

In a setting where many sectors are considered hard-to-abate - like the Safeguard Mechanism - the setting of 'faster' and 'slower' rates of decarbonisation for different industries is likely to place a heavier burden of compliance on some facilities. For example, to achieve the same carbon budget, one sector's slower pace of decarbonisation would need to be balanced by faster decarbonisation in another. Emissions reductions that are 'lost' during any slower initial rate of decarbonisation must therefore be 'caught up' by more stringent emissions reductions later in the decade, ensuring that lost abatement does not undermine national targets, and carbon budgets.

For illustrative purposes, we outline four options to align covered emissions with net-zero emissions by 2050. For the purposes of this analysis, emissions baselines are assumed to be applied equally for all facilities (e.g. no allocation is made for one sector to reduce emissions faster/more slowly than another):

1. Option 1 - Linear trajectory: A base-year of 2022 reported emissions is applied, with a linear reduction to net-zero by 2050 of 5 Mt CO2-e per annum (p.a.), or 3.6 per cent p.a.
2. Option 2 - Slow-start trajectory: A base-year of 2022 reported emissions is applied, with a 2.5 Mt reduction p.a. for the first three years (half of the linear option) or 1.8 per cent p.a., increasing to 6.5 Mt p.a. (4.9 per cent p.a.) from 2025 to reach the same point as the linear target in 2030. Note this trajectory would achieve less cumulative abatement than Scenario 1 given losses in emissions (from the linear trajectory) are not recovered later.
3. Option 3 - Slow-start trajectory with 'catch-up': As per option 2, a 2.5 Mt reduction is applied per annum for the first three years (1.8 per cent p.a.), scaling up to 8.5 Mt per annum from 2025 to 2030 (6.4 per cent p.a.) to reach the same cumulative emissions reductions as Scenario 1.
4. Option 4 - Fast trajectory to net-zero emissions in 2040: A base-year of 2022 reported emissions is applied, with a linear reduction to net-zero by 2040 of 7.8 Mt CO2-e per annum, or 5.6 per cent p.a.

Figure 12: Annual decline in aggregate emissions baselines by option

Modelled option	First 3 years	2025-30 period	Average
Linear trajectory		-3.6%	
Slow-start trajectory	-1.8%	-4.9%	-3.6%
Slow-start trajectory with 'catch up'	-1.8%	-6.4%	-4.5%
Fast trajectory to net-zero emissions in 2040		-5.6%	
Current rate of voluntary action by industry[11]		-6.4%	
Required annual rate to limit warming to 1.5°C[12]		-4.2%	

As shown in Figure 12 (and Figure 13 over page, orange line), should a linear reduction trajectory be applied consistently across the market, reaching net-zero emissions by 2050, a gradual emissions reduction signal of -3.6 per cent per annum would be implemented. This is well below the current rate of progress being made by industry under voluntary emissions reduction targets, with analysis by the SBTi suggesting that companies setting science-based targets have reduced direct (scope 1 and 2) emissions at a linear rate of 6.4 per cent per year, exceeding the 4.2 per cent rate needed to limit warming to 1.5°C, according to pathways derived from climate scenarios.

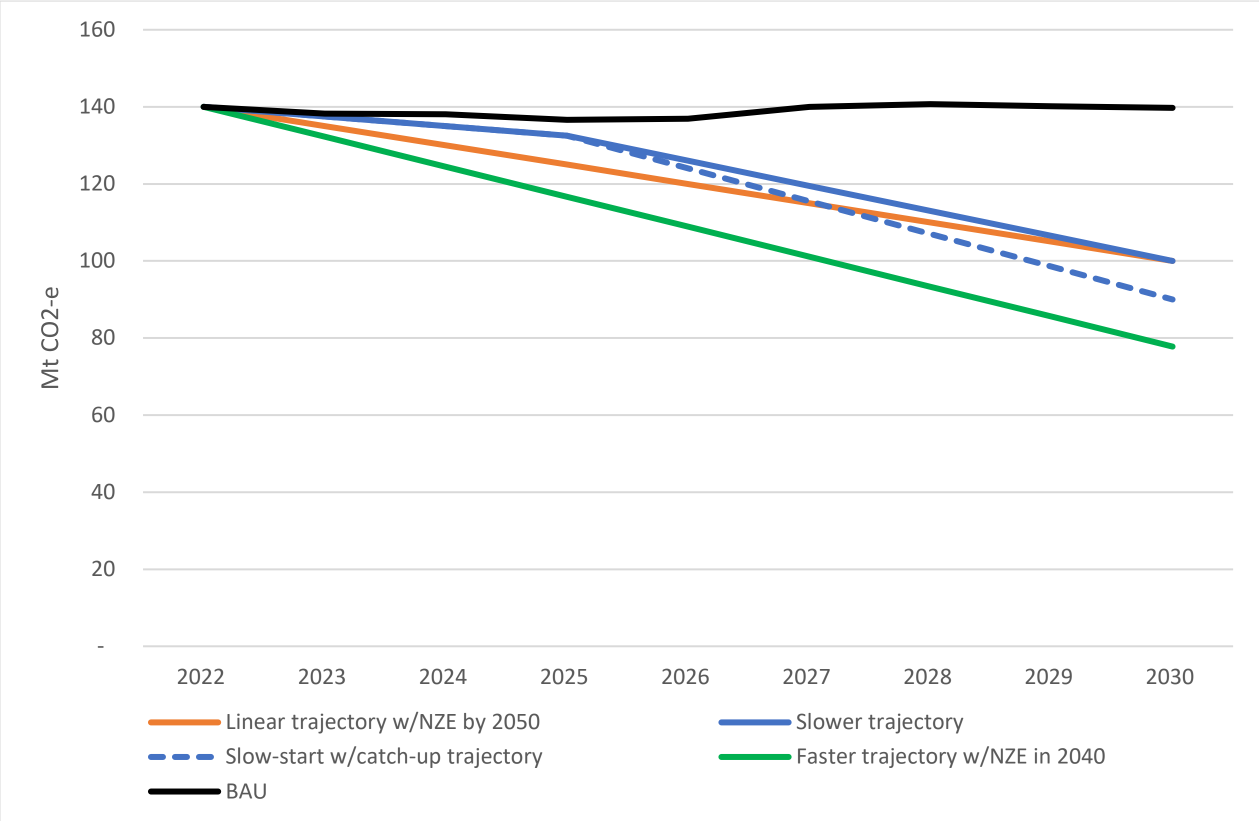
Under an alternative "slow-start trajectory" (solid blue line), all facilities are provided with a reduced emissions accountability for the first three years, equivalent to 50 per cent of

[11] Analysis of emissions for 150 global companies over 2015-2018, undertaken by the Science-based Targets Initiative, with -6.4% reflecting the median of all values https://sciencebasedtargets.org/sbti-progress-report-2020
[12] To align with the Paris Agreement goal of limiting global warming to 1.5°C, SBTi companies must reduce their emissions at a linear annual rate of 4.2% on average.

the linear reduction trajectory, before baselines are aligned to reach the same point-in-time outcome as the linear target in 2030 (100 Mt).

Should such a trajectory be applied, the slow start would translate into higher cumulative emissions (30 Mt) than the linear reduction trajectory, jeopardising Australia's 2030 target, given that losses in emissions from the linear trajectory are not recouped.

Figure 13: Options to align the Safeguard Mechanism to net-zero emissions



Source: RepuTex Energy, 2022

To achieve the same carbon budget over the period as the linear option, the 'Slow-start trajectory with catch-up' trajectory (blue dashed line) is shown to reduce emissions more quickly between 2025 and 2030, reaching 90 Mt, or 10 Mt below the linear target in 2030. The accelerated rate of emissions reductions to stay within the carbon budget would require an overall reduction of 8.5 Mt per year, 70 per cent higher than the more gradual linear option. This would be a higher annual reduction than required under the more ambitious net-zero by 2040 trajectory (7.8 Mt per year).

Even where compliance obligations do accelerate later in the decade, the 'slow start' is shown to delay initial emissions accountability, with early emissions reductions anticipated to be the cheapest and easiest abatement to achieve. Comparably, the trade-off of the slow start requires an accelerated accountability later, which is calculated to be abatement that is more expensive and harder to achieve than if early action is taken. Therefore, a more cost-effective strategy could be to act sooner to capture "low-hanging fruit" (such as fuel switching and optimising operations), even within otherwise 'hard-to-abate' sectors that face potentially high costs to eliminate their 'fugitive' and industrial process emissions. A slow- or deferred-start would therefore impose greater costs on industry given the reduced number of years to achieve the same emissions reductions.

As described in Box 3.1 (page 23), a 'slow start' or deferred emissions accountability for industry may be unnecessary, with an incremental start a key feature of a linear "baseline-and-credit" system. In contrast to traditional cap and trade systems (such as the former Carbon Price Mechanism), where facilities are accountable for all of their reported emissions, under a baseline-and-credit scheme, high emitters are made accountable for only a small percentage of their emissions in the first year – just 3.6 per cent in the linear trajectory – equivalent to the 96.4 per cent “free allocation” of carbon permits under the former CPM framework.

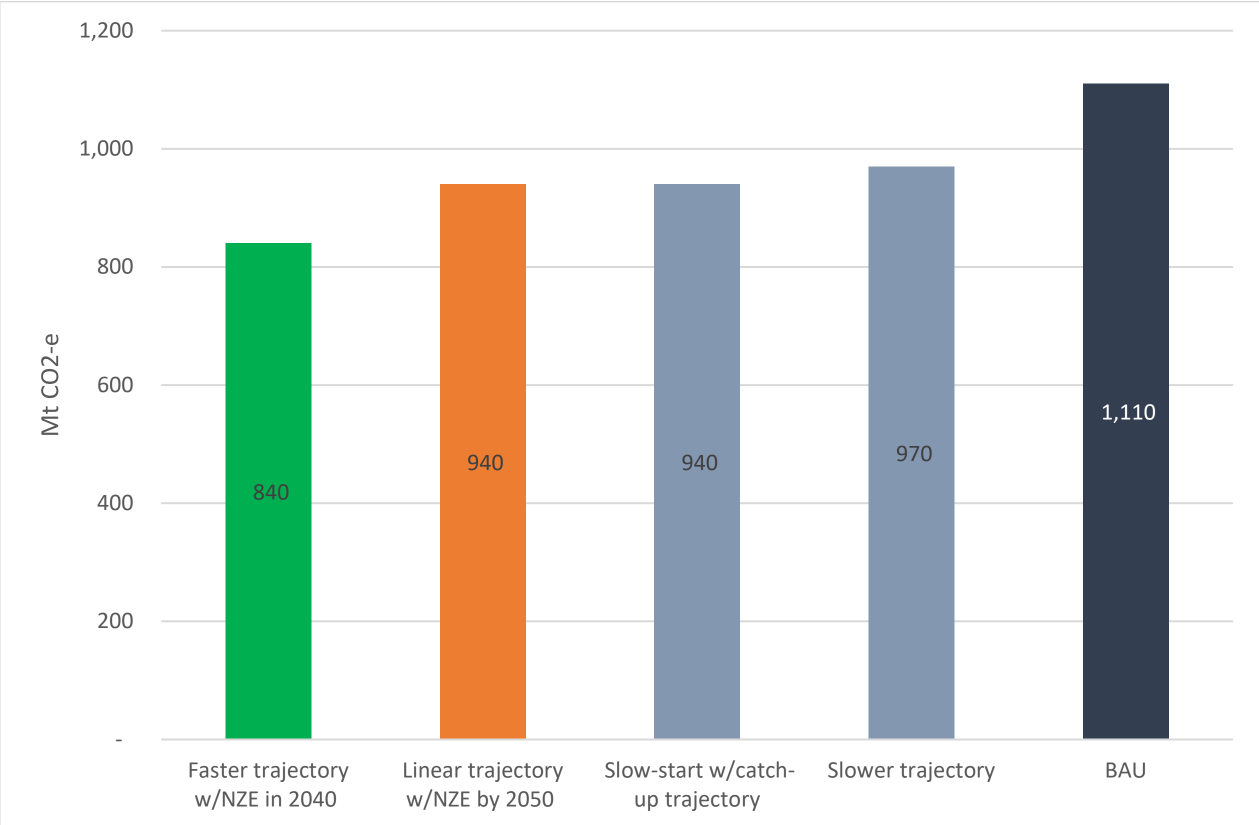
As a result, an ‘even slower’ start may be unnecessary, while reduced accountability in the immediate-term will simply create a more severe shape of decline to catch up lost abatement prior to 2030, ultimately creating a larger impost on covered facilities.

3.3 Cumulative emissions by trajectory

Analysis of cumulative emissions (or the carbon budget) between 2022 and 2030 is an effective way to compare the scale of abatement derived from covered sectors to meet a specific target, relative to projected business-as-usual levels.

A trajectory to net-zero emissions is established in line with the described options. The carbon budget for facilities covered by the Safeguard Mechanism is then measured based on the difference between projected BAU emissions and the baseline trajectory from 2021-22 to 2030, the forecast horizon for this research, shown in Figure 14.

Figure 14: Total cumulative emissions (carbon budget) between 2022-30 by option



Source: RepuTex Energy, 2022

For the purposes of this analysis, we apply a linear reduction trajectory to net-zero emissions by 2050 from a base-year of 2022, a linear reduction of 5 Mt CO_2-e p.a. or 3.6 per cent per year, subject to the setting of specific baseline allocation methodology described in the following section.

Box 3.1: Baseline and credit versus other systems

Cap and trade systems

Under a cap and trade system (regularly referred to as an emissions trading system or ETS), an upper limit on emissions is set (referred to as a cap), generally in line with a national emissions reduction target. “Permits” or “allowances” are created (corresponding to 1 tonne of CO2e emissions) to give covered facilities the right to emit which, in total, add up to the limit set by the emissions cap. Where a cap is set below reported emissions levels, and declines over time, permits become scarce, with resulting demand translating into a price set via government auctioning or secondary trading. Constraining supply relative to demand raises emission prices and incentivises behavioural change in the form of investment in emissions reduction activities.

Emissions allowances may be auctioned or distributed for free according to specific criteria. For example, greater levels of free allocation may be provided to facilities in EITE sectors. However, lowering a level of exposure will reduce that sector’s incentive for behavioural change, while affecting how compliance obligations are distributed across other sectors of the market.

ETS frameworks are the most popular market based mechanism for emissions, and are currently operable in (for example) China, the European Union, the United Kingdom, California, and New Zealand.

Baseline and credit systems

Under a baseline and credit system, covered facilities are able to emit up to a set baseline without incurring any liability. Where a facility reduces its emissions below its baseline it receives ‘credits’, which may be sold to facilities that have emissions in excess of their baseline. Unlike a cap and trade system, the emitting facility does not pay for the full cost of its emissions, because entities are liable only for emissions over their baseline. The “baseline” is therefore equivalent to the 100 per cent free allocation of permits under a cap and trade system. In practice, this reduces compliance costs for covered entities, and may reduce the need for traditional industry assistance measures.

Emissions baselines may be set in either “absolute” (as an absolute quantity of a facility’s GHG emissions), or “emissions intensity” (as a rate of GHG emissions per unit of input, output, or activity). The merit of each system is considered in the scenarios below.

Relatively few baseline and credit systems have been implemented globally due to the complexity of such systems versus traditional cap and trade markets (for example where emissions intensity baselines are set for individual activities). The Alberta Technology Innovation and Emissions Reduction (TIER) Regulation is the most recognised baseline and credit system (set in emissions intensity), yet has suffered from perverse outcomes in some sectors where absolute emissions levels have increased despite emissions intensity decreasing.

The current Safeguard Mechanism operates as a “baseline and penalty” system, with liable entities required to keep their emissions at or below a baseline set by the Clean Energy Regulator. Facilitates are given a number of options to manage their excess emissions, with civil penalties as a ‘last resort’ initially built into the scheme where facilities that do not comply with the duty to avoid an ‘excess emissions situation’[13] Facilities are not rewarded for emissions performance below their baselines.

[13] Parliamentary Library, Australia's climate safeguard mechanism: a quick guide. Link.

4. EMISSIONS BASELINE SCENARIOS

4.1 Modelled policy scenarios

A number of proposals have been made to tighten the ambition of the Safeguard Mechanism framework. Central to these is the implementation of declining emissions baselines, for crediting and compliance, to ensure that the industrial sector contributes towards Australia's emissions reduction targets.

The trading of under- and over-achievement against baselines has been long recommended by a number of organisations, including the Climate Change Authority, and the Business Council of Australia (BCA), and was adopted by the ALP's Powering Australia Plan. The key principles of below-baseline crediting are:

- Below-baseline credits are assumed to be issued where an entity "beats" its emissions baseline, while facilities would be required to surrender credits equivalent to their "above-baseline" emissions.
- Over-achievement against safeguard baselines is assumed to be recognised through a new form of tradeable unit, distinguishable from ACCUs, referred to as Safeguard Mechanism Credits (SMCs)[14].
- Below-baseline credits, like ACCUs, would be eligible for use against safeguard liabilities, and may be traded with between covered facilities;

A number of emissions baseline methodologies may be implemented to align the Safeguard Mechanism with net-zero emissions by 2050. These include utilising current baseline methodologies under the Safeguard Mechanism, or alternative design options. In the below sections, we present three scenarios for the design of emissions baselines in either "emissions intensity" (as a rate of GHG emissions per unit of output) or "absolute emissions" (as an absolute quantity of a facility's GHG emissions):

1. The setting of "industry average" intensity benchmarks - all facilities are transitioned to current default emissions intensity (industry average) benchmarks.
2. The setting of "site-specific" intensity benchmarks - all facilities are transitioned to current "site-specific" benchmarks for emissions intensity.
3. The setting of "absolute emissions baselines" at the facility level - all facilities are transitioned to baselines set in line with reported emissions.

4.2 Current operation of emissions baselines

From 1 July 2021, facilities covered by the Safeguard Mechanism transitioned to baselines calculated using an emissions intensity value. Facility baselines are calculated by multiplying a relevant emissions intensity value by the annual volume of product. There are two types of emissions intensity values:

- Default (industry) emissions intensity values: Representing the industry average emissions intensity of production over five years (set by DISER); or
- Site-specific emissions intensity values: Set by businesses, reflecting the emissions intensity of production at an individual facility.

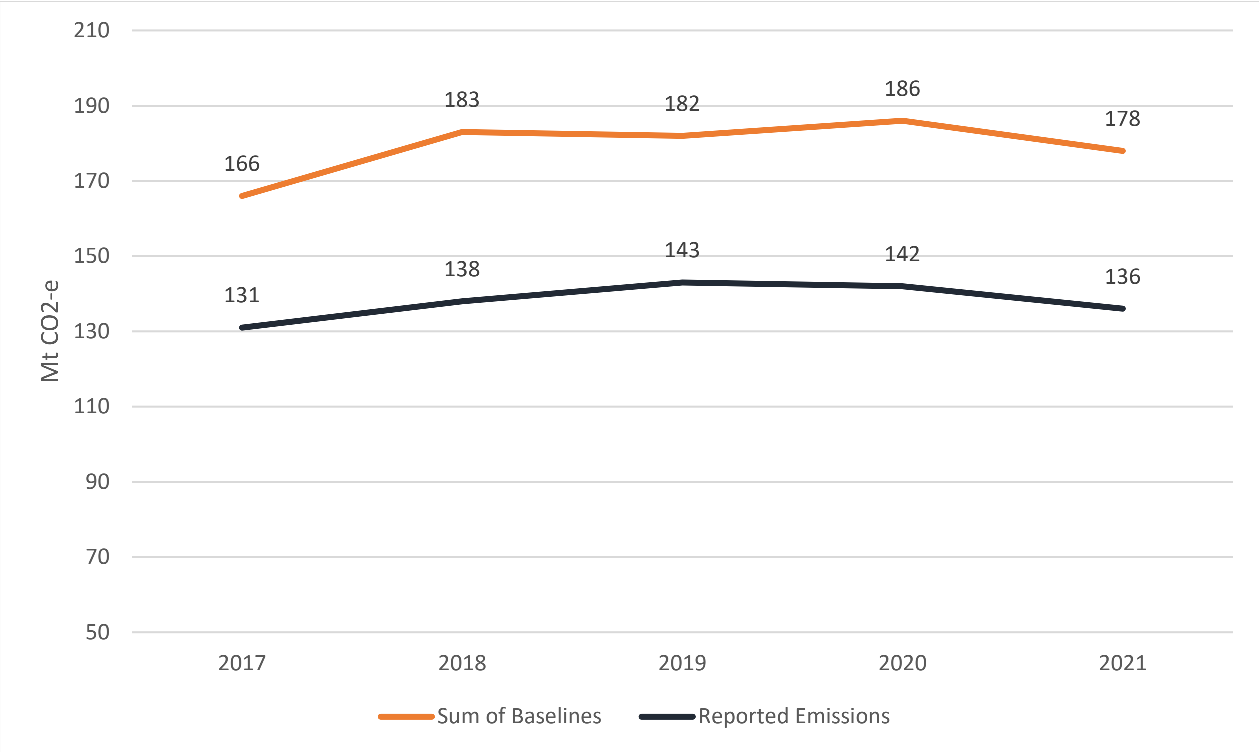
Facilities are given flexibility to select their preferred emissions intensity benchmark, and currently opt for the less stringent of the two. For example, where a facility's emissions intensity is below the industry average, it can elect to apply a more lenient "default emissions intensity value" (industry average intensity). When the facility's emissions baseline is calculated (by multiplying the industry average intensity value by the facility's

[14] Note that while Safeguard Mechanism Credits are consistent in name with former Coalition proposals, the creation of SMCs under a baseline and credit environment is different to previous policy discussion papers.

annual volume of product, the calculated limit will be above the facility's reported emissions, providing headroom to increase emissions[15]. Alternatively, where a facility's emissions intensity is above the industry average, a facility may apply a "site-specific emissions intensity value" (set by the business), ensuring that it is not constrained by the more stringent industry baseline.

In almost all cases, facilities are covered by "production-adjusted" baselines, which provides industry with flexibility to account for the variable nature of output. While production-adjusted baselines can provide a robust signal for emissions reductions (for example, where baselines decline over time to reach net-zero), under current safeguard rules, emissions baselines do not decline to reach a stated goal. Instead, flexibility is given to industry to select the most lenient emissions intensity multiplier (industry average or site specific intensity). This has led to considerable 'headroom' developing between reported emissions and emissions baselines (Figure 15).

Figure 15: Historical covered emissions versus total baselines



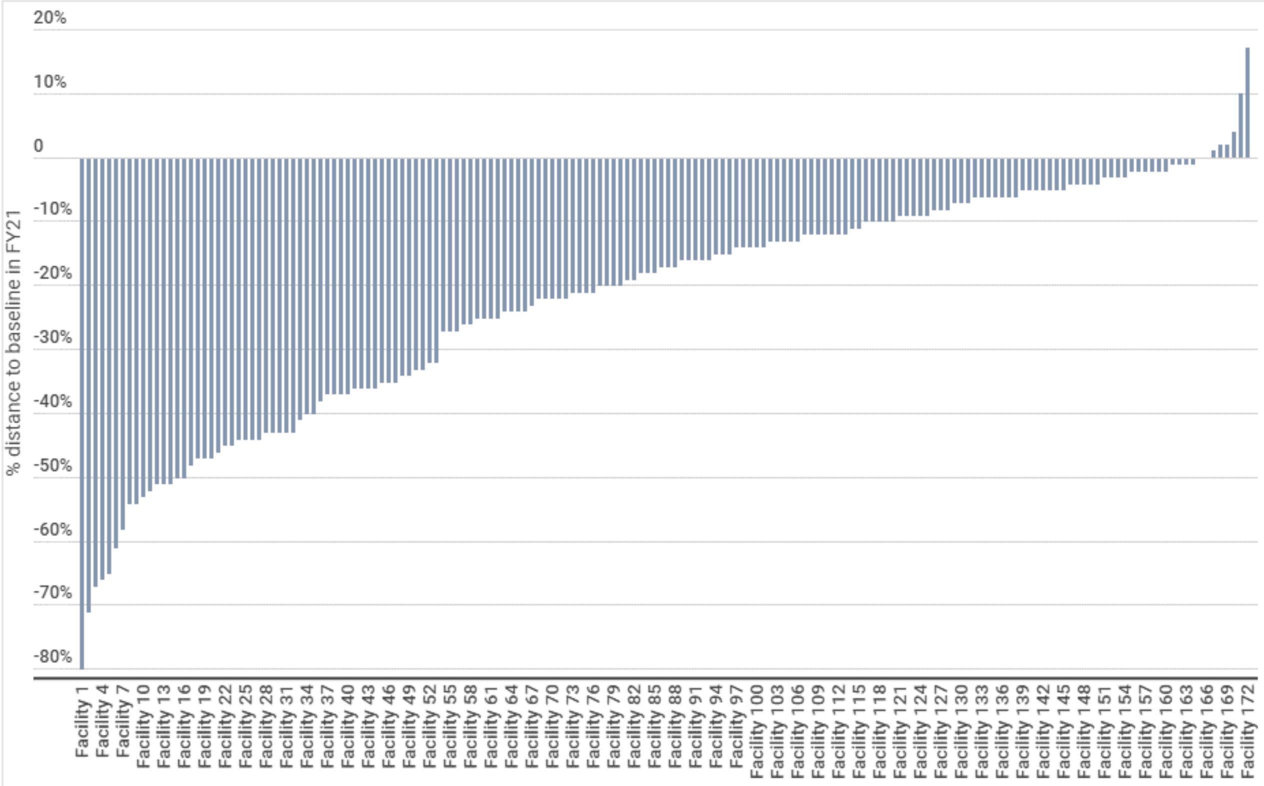
Source: RepuTex Energy, derived from Clean Energy Regulator 2022

In FY21, total 'headroom' under the Safeguard Mechanism was calculated at more than 40 Mt. Approximately 7.5 million (18 per cent) of all headroom was for aviation companies (on Reported Baselines) attributed to COVID-19 production variability. Of the 171 facilities whose baselines were disclosed in FY21 (excluding 40 facilities on multi-year monitoring periods), more than 70 per cent (121 facilities) are able to increase their FY21 emissions by 10 per cent or more before breaching their baseline – with some facilities able to more than double their emissions (Figure 16). Should current emissions baselines be used as the starting point for crediting under an enhanced Safeguard Mechanism framework, the conversion of this headroom into below-baseline credits would therefore result in the rewarding of non-additional actions.

To help lower this headroom, stakeholders such as the Grattan Institute[16] have recommended that facilities transition to "industry average" emissions intensity (default) values to set their baselines, declining over time to reach net-zero. We consider this scenario in the following section.

[15] Given default baselines are set as a five-year historical industry average, business-as-usual improvements in emissions intensity provide facilities with further headroom and flexibility to increase absolute emissions.
[16] Grattan Institute, Towards net zero: Practical policies to reduce industrial emissions, August 2021

Figure 16: Percentage distance between FY21 facility emissions and baseline (headroom)



Source: RepuTex Energy, 2022. Note: Excludes facilities not reporting baselines under multi-year monitoring periods

4.3 Scenario 1: Industry intensity benchmarks

Under the current Safeguard Mechanism framework facilities have the option to set an emissions baseline utilising a default (industry average) emissions intensity value - representing the average emissions intensity of production for each industry over five years[17]. Transitioning all facilities to industry default values would remove the current flexibility for facilities to select more lenient site-specific benchmarks, helping to reduce headroom under the current scheme.

Industry emissions intensity values may be tightened over time to meet a specific interim of long-term outcome, such as net-zero by 2050. Under such a construct, each facility would be assigned an emissions baseline via the process described in Box 4.1.

Box 4.1: Process for the calculation of a facility baseline

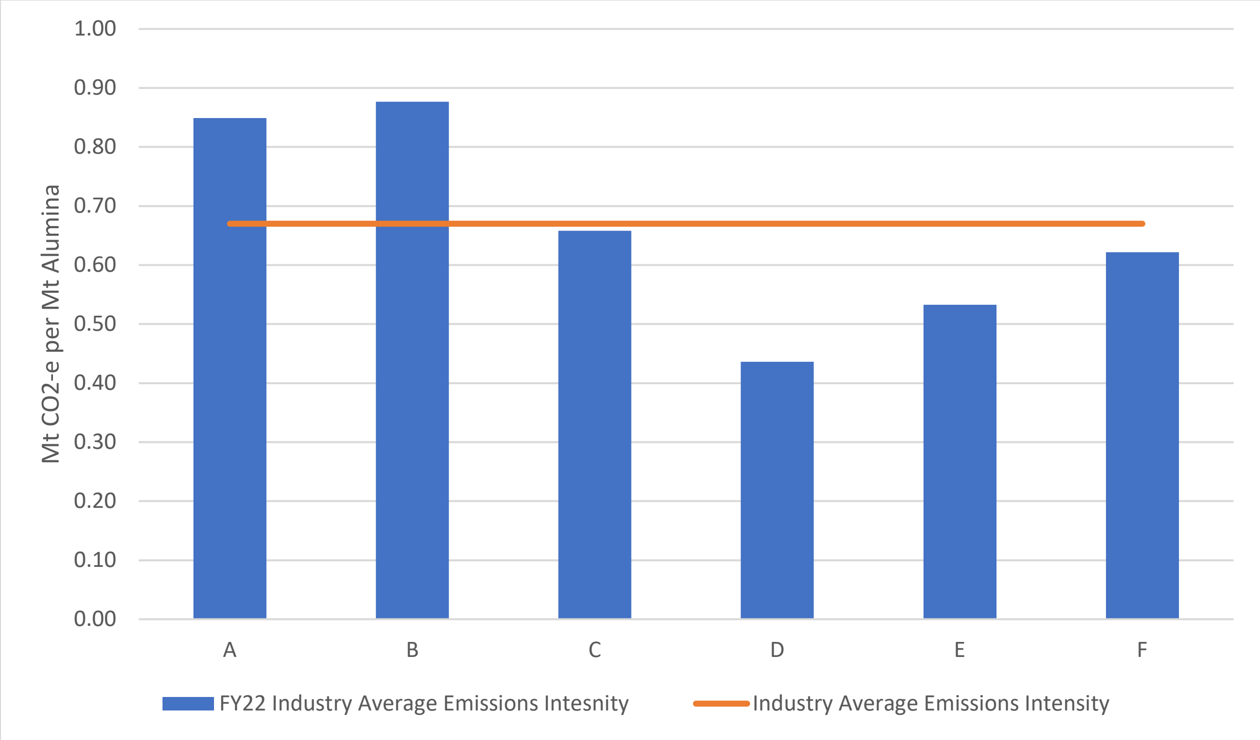
In establishing an emissions baseline using an industry average intensity benchmark, each facility would multiply its individual volume of product by the industry average intensity default value (set by DISER), reflected via the following formula:

Emissions Baseline = Σ (Facility Production x "*Industry Average*" Emissions Intensity).

A tightening rate would be applied to the industry average benchmark, reaching net-zero by 2050. To assess each facility's carbon position, the emissions baseline would be subtracted from the reported emissions of each facility. If reported emissions exceed the baseline, the facility would be required to reduce its net-emissions. Where reported emissions are below the baseline, the facility could generate below-baseline credits (SMCs) that it may trade, or bank for a future compliance (subject to restrictions).

[17] Note that if emissions intensity improves over time an average facility is anticipated to be below the historical industry average. In practice, the historical industry average removes the top and bottom 25 per cent, such that represents the average of the middle 50 per cent of historical values.

Figure 17: FY21 industry average emissions intensity for the Alumina sector



Source: RepuTex Energy, 2022

4.3.1 Compliance implications

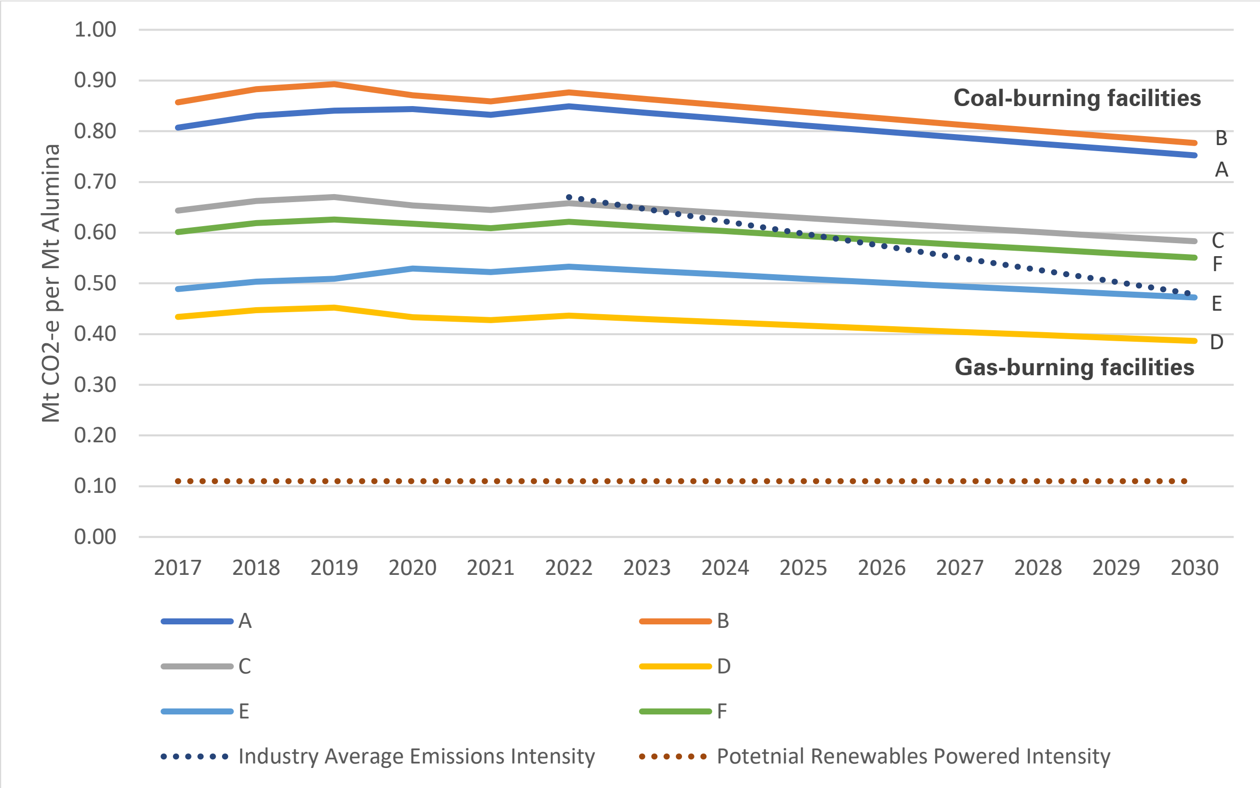
Should an 'industry intensity scheme' be established, all facilities would, by definition, be classified into above and below 'average' groups. We depict this for the Alumina refining industry in Figure 17 (with facility names removed), selected given the relatively small number of high emitting facilities, and the current opportunities for decarbonisation being studied in the industry. The emissions intensity of these facilities is shown in Figure 18, with below-average facilities shown to be C, D, E, and F, while above-average facilities are A and B (followed by Facility C by year 2)[18].

Under an industry intensity scheme, 'above-average' facilities (A and B) would be required to purchase and surrender credits, while 'below-average' facilities (D, E, and F) would be awarded credits in proportion to how far their emissions intensity is below the baseline. Below-average facilities would not be required to reduce their emissions until later in the decade, when the declining industry average intersects with the BAU intensity of each facility. Comparably, 'above-average' facilities would face greater accountability for their emissions.

This approach aims to provide an economic incentive for substitution from higher to lower emissions technologies and practices. Because facilities with an emissions intensity below the baseline would receive credits, while those above the baseline would be required to purchase credits, lower emissions facilities are rewarded, while higher emissions activities would face a cost. This makes higher emissions activities more expensive, and low-emissions activities cheaper, creating an economic incentive for all facilities to reduce emissions. For example, facilities above the industry average have an incentive to reduce their compliance obligation, while those below average have an incentive to create and sell more credits.

[18] Note that in this example, facilities A and B are larger facilities and have above average production capacity. For the purposes of our modelling, the industry average is calculated based on total annual emissions divided by total annual production within an industry. Four facilities are therefore calculated to have below average emissions intensity, while only two facilities are above average. The relative size of facilities therefore impacts how many facilities are considered above or below average.

Figure 18: FY21 industry average emissions intensity for the Alumina sector - to 2030



Source: RepuTex Energy, 2022

Like all schemes, the implementation of an industry intensity framework comes with its challenges. For example, the creation of an industry average threshold to define facility performance does not mean that 'below-average' facilities are 'low-emissions' activities - only that they are relatively cleaner than other facilities within a given industry.

Within the Alumina industry, facilities A and B (above-average) derive heat for the Alumina dissolution process from coal-fired steam boilers. Comparably, facilities C through F (below-average) use gas-fired boilers. Gas-fired facilities would therefore not be required to reduce or offset emissions (until later in the decade) and would instead receive below-baseline credits for being less emissions intensive coal-fired facilities. These facilities would, however, be incentivised to upgrade to renewable-sourced electricity in order to create and sell more below-baseline credits, subject to the price[19].

Much of this emissions reduction investment is already occurring. For example, Rio Tinto is studying the use green hydrogen to replace natural gas in the calcination process at its Yarwun alumina refinery in Gladstone[20]. In addition, Alcoa is testing the use of Mechanical Vapor Recompression (MVR) at its Wagerup refinery (both with support from the Australian Renewable Enegry Agency), which has the potential to replace fossil-fuel energy consumed in boilers, allowing the refinery to operate more efficiency using renewable-sourced electricity. These types of transformational projects would represent a step-change in emissions intensity, even where the facilities already use relatively less-emissions intensive gas-fired processes. While some projects may be deferred until the price of below-baseline credits strengthens, other facilities would be incentivised to 'future-proof' their facilities in advance of the declining industry average benchmark.

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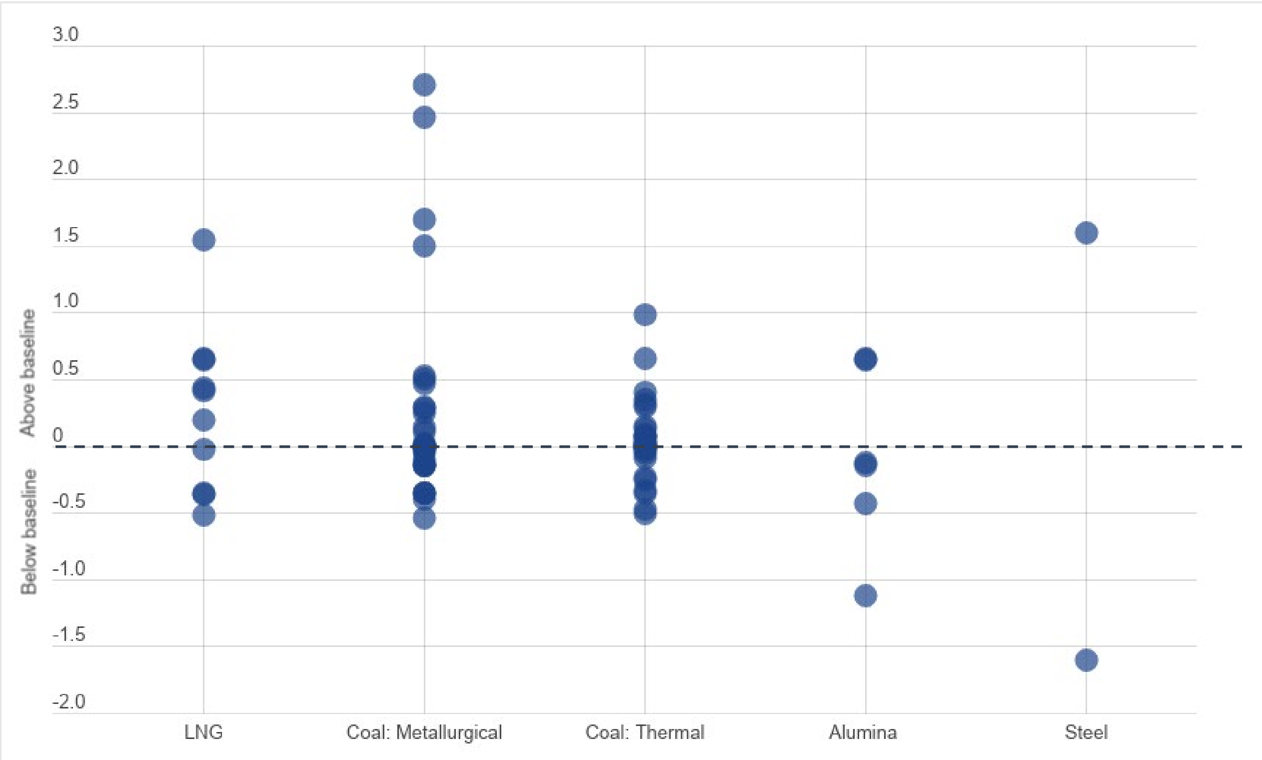
[19] While this creates a voluntary incentive for further investment in emissions reduction actions (strengthening over time as the industry average baseline tightens), this signal may be distorted by crediting in the early years of the scheme. For example, given below-average facilities would be issued credits in proportion to how far their emissions intensity is below the baseline, and would not need to implement a genuine emissions reduction project (refer to Section 4.3.2 on 'crediting implications), this price incentive may initially be low. This could erode the incentive for large-transformational projects, subject to the longer-term signal provided by the declining industry average.
[20] https://www.riotinto.com/en/news/releases/2021/Rio-Tinto-and-ARENA-to-study-using-hydrogen-to-reduce-carbon-emissions-in-alumina-refining

There can be other drawbacks to an industry intensity framework. For example, facilities with below-average intensity, whose production output is growing, would be able to increase their emissions without being accountable to reduce (or offset) their emissions growth. For example, many of Australia's coal mines do not operate at maximum capacity, meaning they can increase production (which still occurs regularly by mining new seams) in response to high demand and prices. At least half of all coal mines would initially be below average emissions intensity. This could result in both large volumes of crediting, and large increases in emissions from these facilities, potentially jeopardising Australia's 2030 target unless other sectors contribute additional abatement.

Similarly in other industries, many high emitting facilities would not be required to reduce their emissions until later in the decade. For example, in the LNG industry, large processing facilities, such as Chevron's Gorgon project, would be classified as 'below-average' intensity.[21] Despite being Australia's third largest GHG emitting facility - at over 6.2 Mt CO2e in FY21 - under an industry intensity scheme, Gorgon would face no immediate emissions accountability, and would instead receive below-baseline credits, given its cleaner profile relative to the rest of the sector.

Figure 19: Compliance obligation in year 1 by facility – Industry average (top 5 emitting industries).



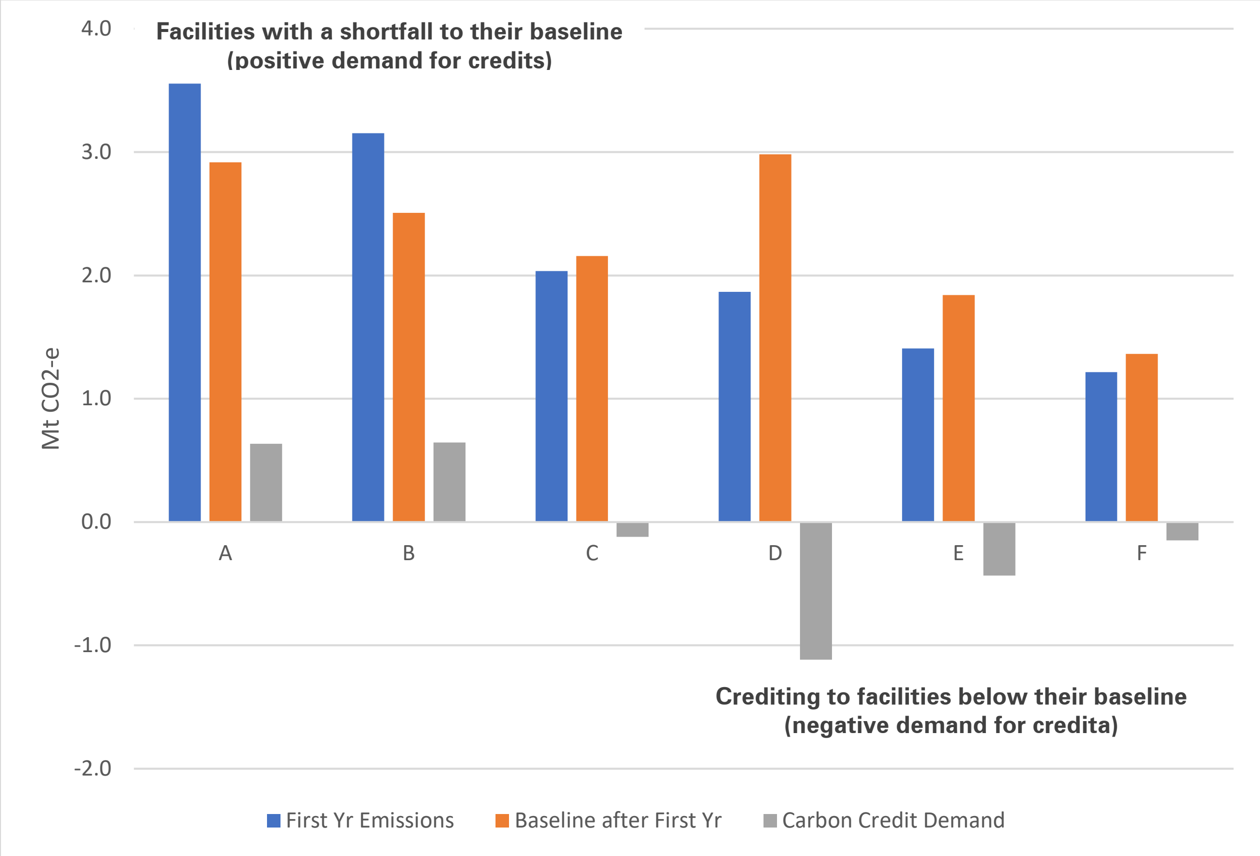
Source: RepuTex Energy, 2022. Note that y-axis reflects +/-headroom (Mt) between the facility baseline and reported emissions.

4.3.2 Crediting implications

Under an industry intensity scheme, facilities with an emissions intensity below the industry average would receive credits, awarded in proportion to how far their emissions intensity is below the baseline. This rewards below-average facilities, while above-average facilities would face an additional cost. All else being equal this makes less emissions intensive production cheaper and provides an incentive for substitution from higher to lower emissions technologies and practices. If a high price signal is maintained, this can incentivise investment in transformative projects to reduce GHG emissions.

[21] This is in part due to Gorgon's investment in carbon capture and sequestration (required as a condition of its approval) to mitigate the high concentration of reservoir CO2 that would otherwise be vented.

Figure 20: First year emissions baselines and crediting of performance for the Alumina sector



Source: RepuTex Energy, 2022

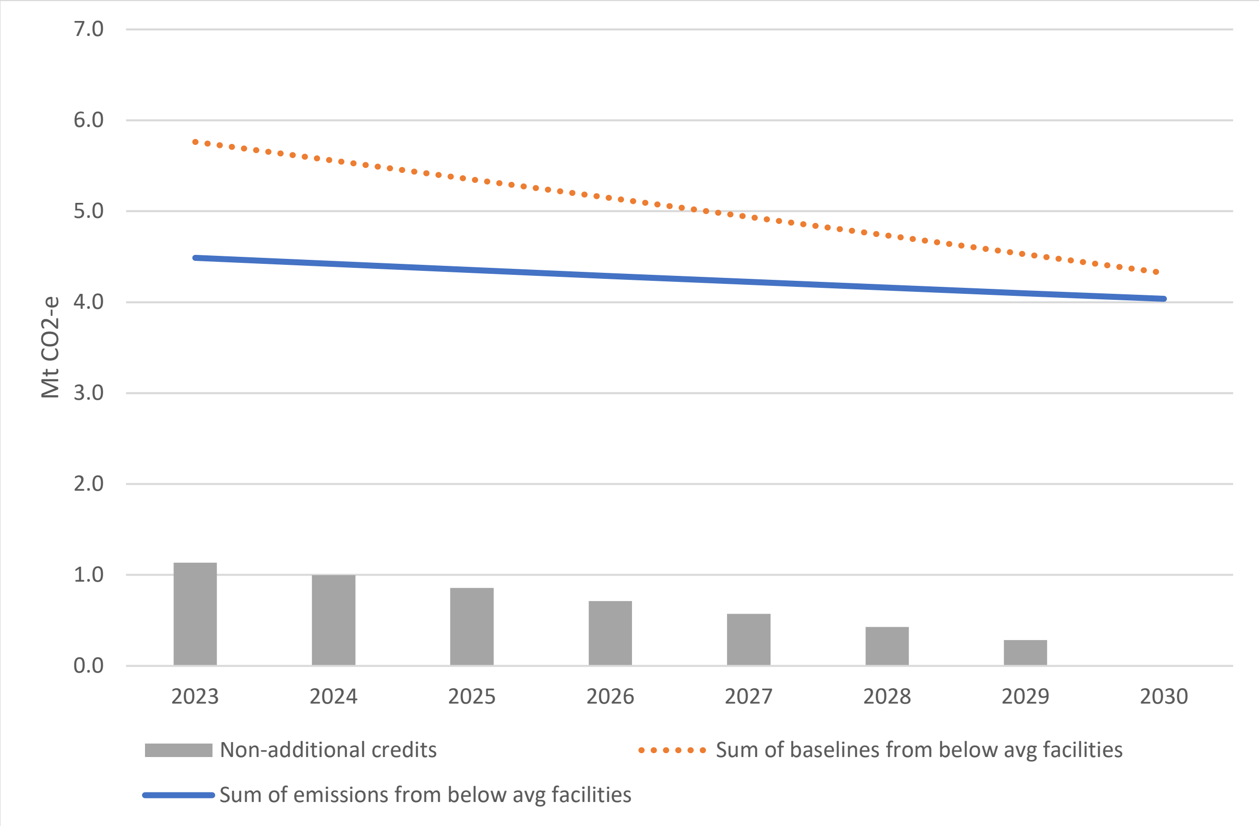
Within the Alumina sector, each facility's carbon credit demand position (reported emissions less emissions baseline) is depicted in Figure 20 (positive grey bars reflecting positive buying demand for carbon credits, and negative grey bars reflecting negative demand, or crediting of below-baseline performance). Under such a construct, automatic below-baseline crediting would be more streamlined, overcoming administrative complexity necessitating regular reporting and auditing to be issued higher integrity ACCU offsets, which represent 1 tonne of CO_2e.

The automatic creation of large volumes of below-baseline credits can highlight the risk that the local market could be in danger of becoming oversupplied with below-baseline credits (magnified if inter-annual banking is allowed). While market stakeholders regularly focus on the risk of there not being enough credit supply to support industry decarbonisation efforts, historically, it is the norm for new emissions markets to become over-, rather than under-supplied by carbon credits (and international offsets). In each of these cases, an oversupply of credits, quickly leads to low prices that can erode the effectiveness of carbon price signals, and environmental outcomes, with rules therefore necessary to maintain market stability (see Section 5).

In addition, given facilities would be rewarded for below-baseline performance, despite having undertaken no action to improve their performance, crediting in the early years is likely to represent 'non-additional' emissions reductions. This is depicted in Figure 21 (over page), with crediting to below-baseline facilities (grey bars) representing the 'headroom' between the sum of emissions from below-average facilities (blue line) and the sum of baselines from below-average facilities (orange dashed line).

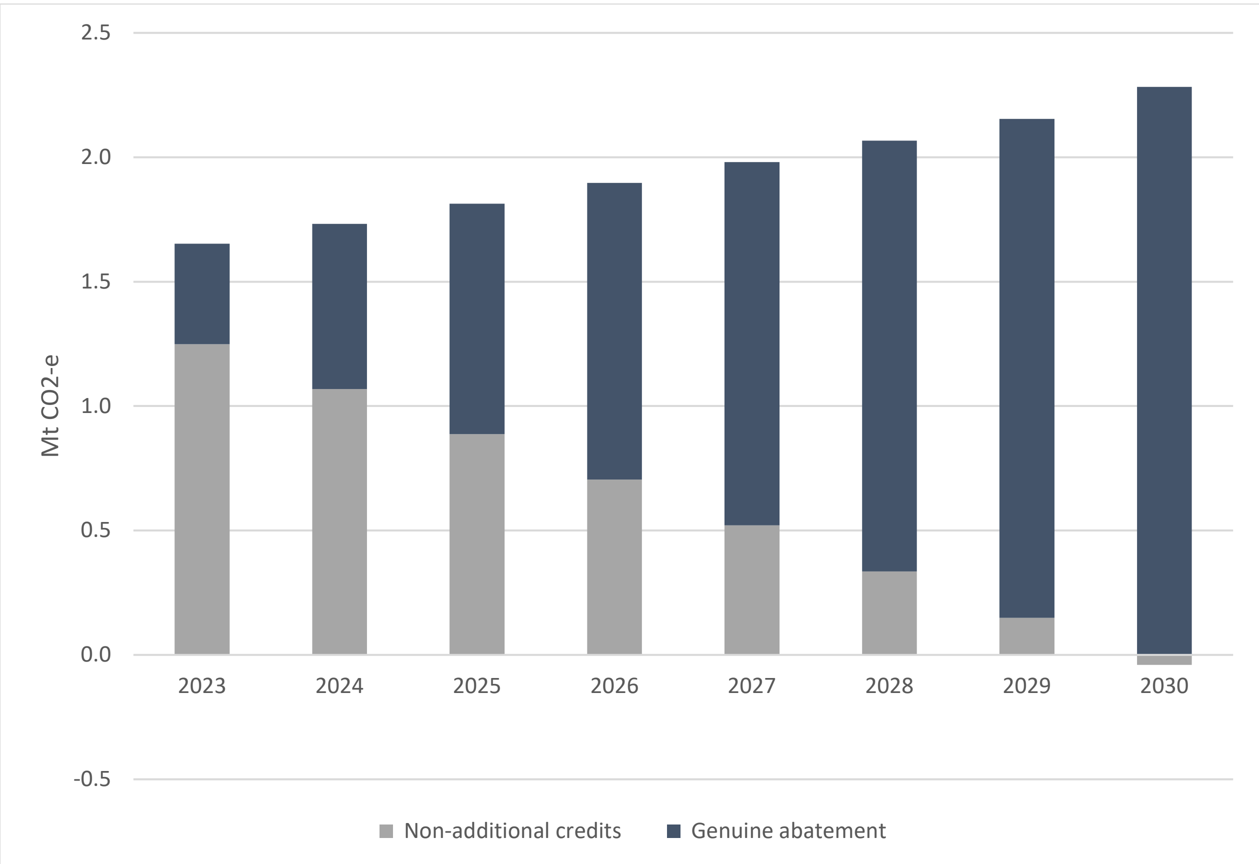
While the industry average benchmark will eventually decline far enough that this risk is reduced, it may be necessary for market rules to strike a balance between creating sufficient reward for lower emission processes, versus ensuring crediting represents genuine abatement.

Figure 21: Crediting to below-average facilities in the Alumina sector (sum of emissions versus baselines)



Source: RepuTex Energy, 2022

Figure 22: Non-additional below-baseline credits in the Alumina sector as a proportion of all reductions



Source: RepuTex Energy, 2022

Where non-additional credits are traded to facilities above the industry average, and surrendered, reported reductions in 'net emissions' would initially occur in accounting terms only, meaning real emissions would remain unchanged. As shown in Figure 22, as industry average baselines tighten later in the decade, this reduces the crediting of non-additional abatement, with all emissions reductions therefore becoming 'genuine'.

As a result, while the market would eventually become effective as the industry average tightens, the additionality of below-baseline crediting could be a concern in the early years of any scheme. This may have practical implications for Australia's 2030 emissions reduction target, given a large volume of carbon credits surrendered to reduce net-emissions would initially occur in accounting terms only.

Despite this, it may be straightforward for policymakers to overcome these concerns and strengthen the integrity of below-baseline crediting though the development of additional market rules. For example:

1. A separate crediting baseline or "reference level" could be developed at the facility-level, distinct from a compliance baseline. This may facilitate the development of a 'hybrid' framework, with different baselines for crediting and compliance. Refer to Box 4.2 for further discussion.
2. A single "site-specific" benchmark in emissions intensity or absolute emissions could be implemented for both crediting and compliance at each facility. This would automatically reset baselines to align with reported production intensity, eliminating the 'headroom' between a facility's baseline and reported emissions, while also making all facilities accountable for their emissions.

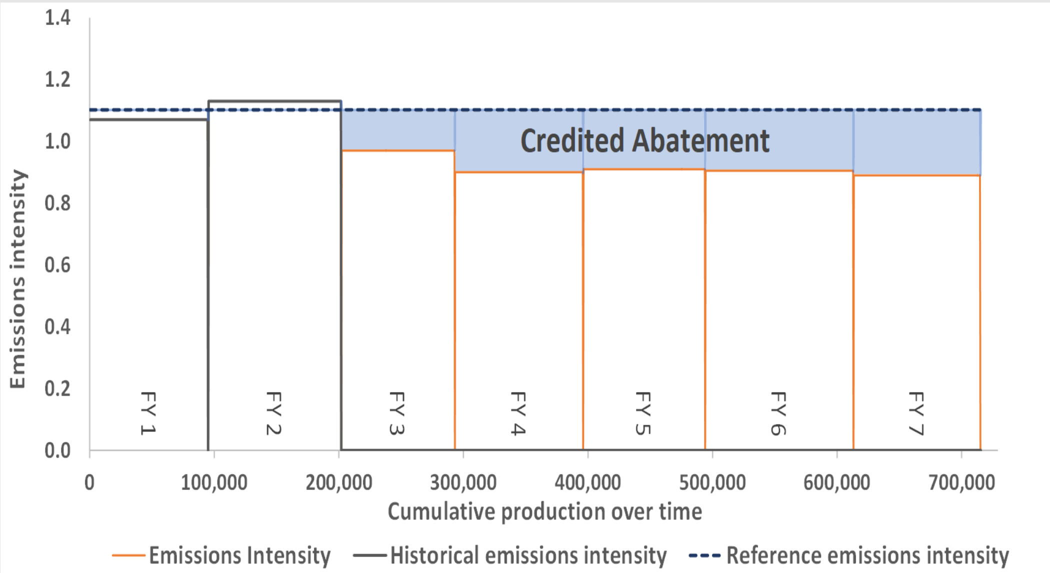
We consider these scenarios in the following sections.

Box 4.2: Set different baselines for crediting & compliance?

To prevent the 'headroom' between a facility's reported emissions and its emissions baseline from being converted into non-additional below-baseline credits, policymakers could elect to design a separate "crediting baseline", similar to the intent of the Commonwealth's "Safeguard Crediting Mechanism" (SCM), described below:[22]

- A new crediting "reference level" could be developed, distinct from a "compliance baseline" (which could still be set using default industry intensity values).
- A facility could then be credited against a more robust performance baseline, proposed by the Commonwealth (SCM discussion paper) to be a "site-specific" emissions intensity value, based on a period before the activity was implemented, or a fixed point in time.
- Where post-upgrade emissions intensity is lower than the historical reference level, the difference may be multiplied by the facility's production to provide an abatement estimate in absolute emissions terms.
- Reductions in emissions intensity would be calculated based on NGERs reporting, with credits issued the year after the reductions took place (in line with reporting).

Figure 23: Example of credited abatement under the initial SCM



Source: Commonwealth of Australia, Discussion Paper: King Review Safeguard Crediting Mechanism, August 2021. Note: In this example, reference emissions intensity is calculated using the two years before the emissions reduction activity takes place.

We recognise that such an approach may, however, create a more complex hybrid regulatory-market mechanism, creating more diluted and complex incentives. Given the development of a separate crediting "reference level" would likely be a "site-specific" emissions intensity value, an alternative design option may be the implementation of a site-specific baseline for both crediting and compliance, considered in scenarios 2 and 3.

[22] https://consult.industry.gov.au/safeguard-crediting-mechanism

4.4 Scenario 2: Site-specific intensity benchmarks

Under the current Safeguard Mechanism framework, facilities are able to set an emissions baseline by using a "site-specific emissions intensity value", reflecting their current production intensity at an individual facility (instead of an industry average).

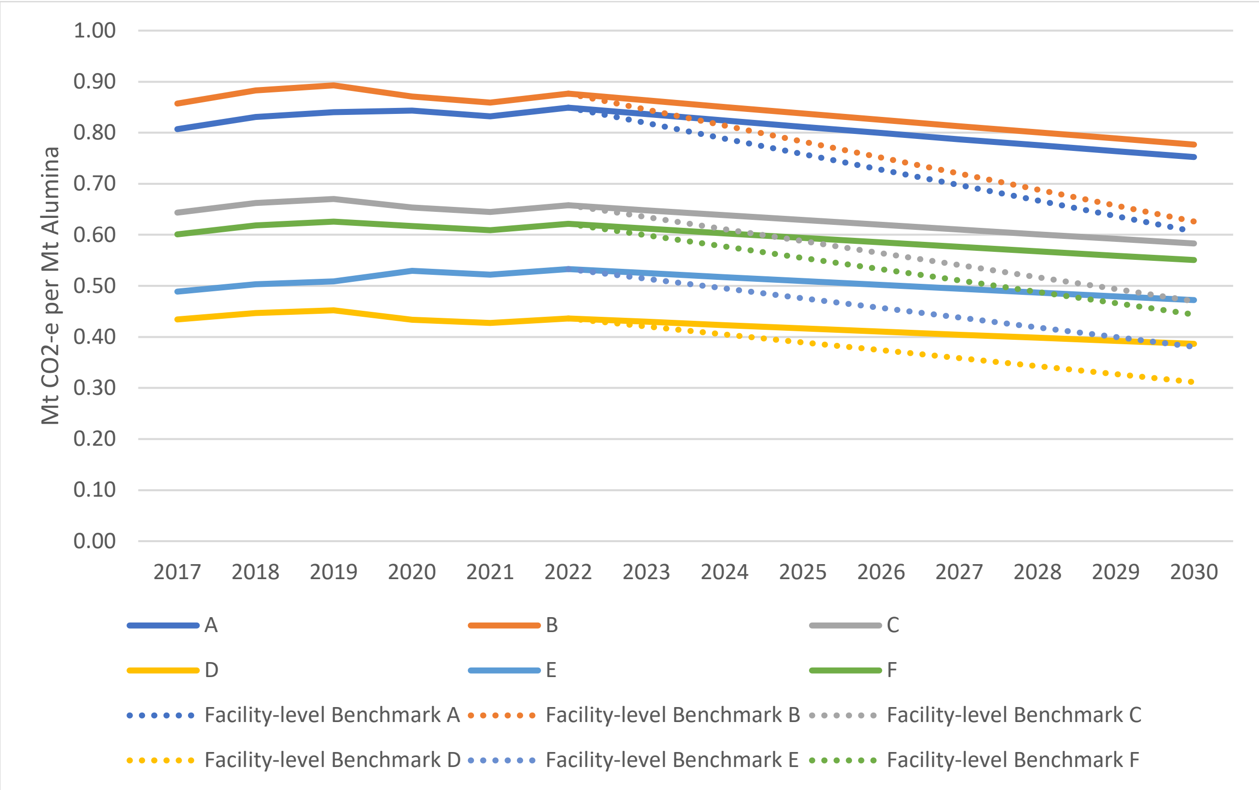
Under an enhanced Safeguard Mechanism framework, site-specific benchmarks could be established for all facilities[23], set to decline to net-zero emissions by 2050[24].

4.4.1 Compliance implications

Similar to recommendations proposed by the Commonwealth's Safeguard Crediting Mechanism Discussion Paper, the crediting of below-baseline performance would represent genuine emissions reductions, while establishing a consistent, long-term emissions reduction trajectory for all facilities (rather than just above-average facilities).

Under this framework, the ability to generate credits from emissions reductions relative to each facility's baseline, combined with the pressure to avoid having to buy credits for emissions in excess of individual baselines, provides dual incentives for all facilities to transition to lower emissions technologies and processes (from day one).

Figure 24: Facility-level emissions intensity for the alumina sector - to 2030



Source: RepuTex Energy, 2022

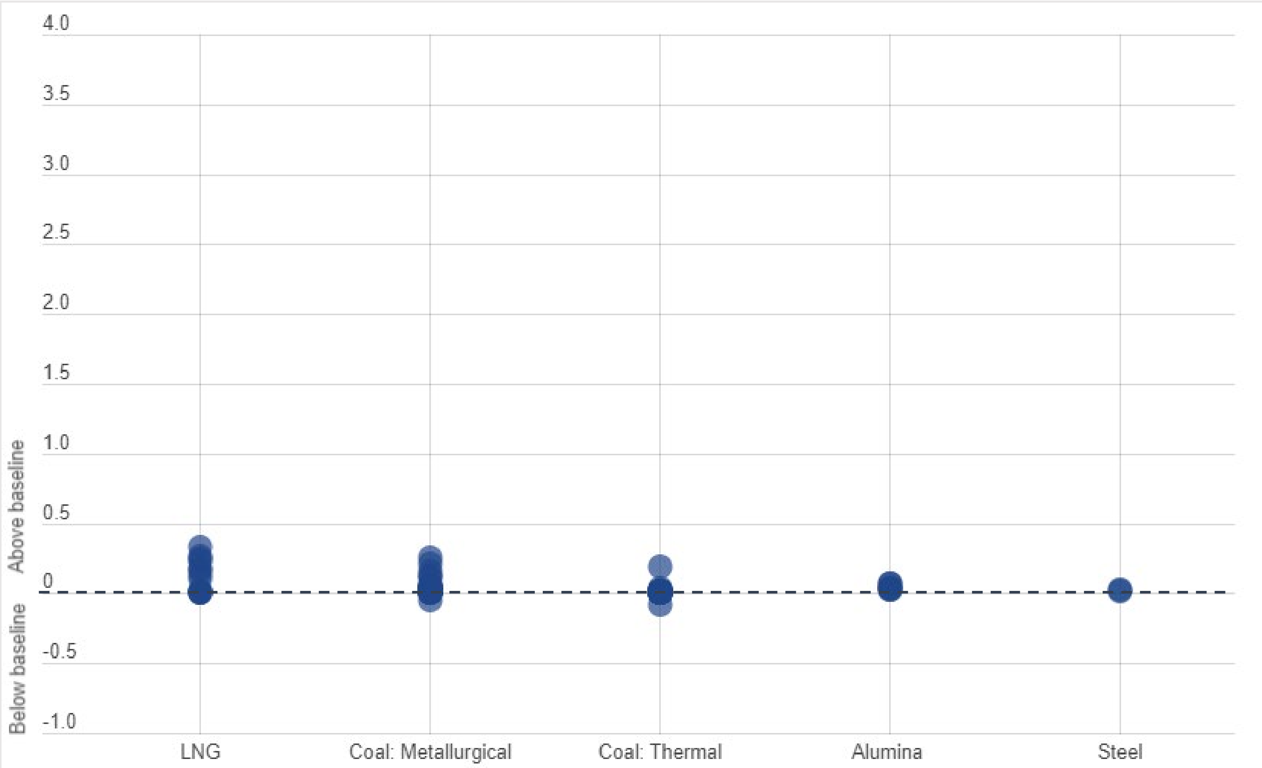
Under a 'facility-level intensity scheme', each facility's baseline would be calculated by multiplying a site-specific emissions intensity value by the annual volume of product. As depicted in Figure 24, each facility's emissions reduction obligation would decline from

[23] The transition to site-specific emissions intensity benchmarks may be aligned with current reporting under NGER and the Safeguard Mechanism, limiting administrative complexity. For example, site-specific reference levels were recommended under the Commonwealth's Safeguard Crediting Mechanism Discussion Paper, with a pilot phase proposed to commence 10 months later. Such a timeline would therefore fit the ALP's 1 July 2023 start.
[24] In establishing an emissions baseline, each facility would multiply its individual volume of product by its individual site-specific emissions intensity value. A tightening rate would be applied to the emissions intensity value, reaching net-zero by 2050. To assess each facility's carbon position, the emissions baseline would be subtracted from the reported emissions of each facility, as described for the industry average scenario.

current production intensity, creating accountability for emissions, and a gradual emissions reduction task for all facilities.

In year one, the step down from current production intensity would translate into annual emissions accountability of just 3.6 per cent from base-year emissions intensity. This would be analogous to a 96.4 per cent "free allocation" of permits under a cap-and-trade system, embedding a "soft-start" (or transitional period) into the scheme.

Figure 25: Compliance obligation in year 1 by facility – site-specific benchmark (top 5 emitting industries)



Source: RepuTex Energy, 2022. Note that y-axis reflects +/-headroom (Mt) between the facility baseline and reported emissions.

4.4.2 Crediting implications

Similar to recommendations in the Commonwealth's Safeguard Crediting Mechanism Discussion Paper (Box 4.2), under a site-specific intensity framework, each facility's initial baseline would be re-set to match its base-year production intensity. Facilities would be issued below-baseline credits for improvements in emissions intensity, measured relative to the declining intensity benchmark[25].

For example, Facility B (orange line in Figure 24) is estimated to have site-specific emissions intensity of 0.88 tonnes CO2-e per tonne of output in the base year (2022), with its site-specific baseline reducing to 0.85 in year 1; 0.81 in year 2; 0.78 in year 3; etc.; falling to 0.63 in 2030. By 2030, this increase in emissions accountability is equivalent to a 28.6 per cent reduction in emissions intensity (0.031 per annum or 3.6 per cent of the base year). This would align federal policy with industry voluntary commitments to reduce emissions. For example, Rio Tinto accounts for approximately a third of Australia's total alumina production capacity, and is targeting a 30 percent reduction in its emissions intensity by 2030[26].

Should facility B choose to invest in an emissions reduction action in year 1, its emissions intensity would be lowered, resulting in the crediting of below-baseline

[25] Flexible approaches could be considered to account for a wider array of operational circumstances, such as a period before the scheme commenced; or a fixed point in time, similar to the Commonwealth's Safeguard Crediting Mechanism discussion paper.
[26] https://bioenergyinternational.com/rio-tinto-awarded-arena-funding-to-investigate-use-of-renewable-hydrogen-at-yarwun-alumina-refinery/

performance every year until its facility-level baseline declines to intersect with its post-upgrade emissions intensity. In addition to avoiding the cost of excess emissions, the ability to be issued credits for emissions reductions provides an incentive to implement lower emission production processes earlier. The value of this reward would be proportional to the size of the emissions reduction activity via the number of credits issued, and the length of time the facility would receive the credits.

Below below-baseline credits issued in this example may have higher integrity than credits issued for below-average performance under an industry intensity scheme (given they would represent more genuine emissions reductions). This could create a more appropriate price signal to guide investment in industrial emissions reductions, supporting the initial efforts that some industrial facilities are making to study the financial viability of major emissions reduction investments.

For example, as discussed in Section 4.3, Rio Tinto is currently studying the feasibility of green hydrogen to replace natural gas in the calcination process at its Yarwun alumina refinery in Gladstone. In addition, Alcoa is testing the use of MVR at its Wagerup refinery, which has the potential to replace fossil-fuel energy consumed in boilers, allowing the refinery to operate using renewable-sourced electricity. MVR alone has the potential to reduce an alumina refinery's emissions by as much as 70 per cent. Electric calcination delivered in conjunction with MVR could reduce a refinery's emissions up to 98 per cent.

Where these technologies are successfully tested, the crediting of genuine below-baseline reductions would create a more effective price signal to guide the implementation of these projects. If successful, this would almost complete the transition of these facilities to net-zero emissions, well before mid-century. For example, should MVR be implemented, the emissions intensity of these facilities could fall to around 0.15 to 0.20 tonnes of CO2-e per tonne of output. Facilities would therefore be rewarded by the creation (and sale) of credits below their baseline, with crediting continuing until the declining facility-level baseline intersects with post-upgrade emissions intensity later in the decade (or beyond). A long-term incentive to invest in low-emissions technologies is therefore created, supporting the adoption of both incremental and transformative emissions reduction actions, by all facilities.

Like the industry intensity scheme, there are weaknesses to a site-specific intensity framework. For example, further rules would be required to protect against an oversupply of below-baseline crediting, particularly where there are technological breakthroughs. Although less likely with site-specific baselines, it may also be possible for fast-growing facilities to improve their emissions intensity, leading to both large volumes of crediting, and an increase in absolute emissions. Both of these risks are mitigated by the design of site-specific intensity baselines that decline over time, however, market rules may be required to restrict crediting in these circumstances.

Box 4.3: Do facility-level baselines penalise early movers?

In some cases, the design of facility-level emissions baselines can penalise early movers. For example, where a facility has recently implemented an emissions reduction action (before the commencement of the scheme), it would receive a lower emissions baseline, and would not be credited for its lower emissions performance. A facility that did not reduce its emissions in the proceeding period could be rewarded for undertaking a similar action after the commencement of the scheme, penalising the early mover.

While this risk is mitigated under an industry intensity scheme, other risks can arise under an industry intensity system as described (for example the crediting of below-average actions would be non-additional until baselines tighten). Under a facility-level intensity scheme, market rules could be established to support crediting where facilities are determined to have recently undertaken large emissions reduction actions.

For example, as described by the Commonwealth's Safeguard Crediting Mechanism discussion paper, an average reference level of two or three years could be used to provide a more robust emissions intensity benchmark, which takes account of a wider variety of operational circumstances.

Facilities with lower emissions intensity are also likely to benefit from a lower compliance obligation, maintaining the integrity of the economic signal to make cleaner production processes cheaper. In the above example, the implementation of MVR would reduce the intensity of gas-fired Alumina facilities to around 0.15 to 0.20 tonnes of CO2-e per tonne of output. These facilities would face an annual average reduction in emission intensity of just 0.005 to 0.007 tonnes of CO2-e per tonne of output over 26 years to reach net-zero.

4.5 Scenario 3: Absolute emissions baselines

While the Safeguard Mechanism has transitioned to an emissions intensity system, we note that baseline and credit schemes may be set in either "emissions intensity" (as a rate of GHG emissions per unit of output) or "absolute emissions" (as an absolute quantity of a facility's GHG emissions). This raises a broader question on which approach is the most suitable to the Australian context. While emissions intensity schemes have their advantages, most notably their flexibility to respond to the variable nature of local production intensity, such schemes are often subject to criticism:

- Emissions intensity schemes are complex and opaque. For example - under an emissions intensity system, an emissions intensity value is used to calculate an absolute emissions baseline, from which each facility's carbon position is determined (against reported absolute emissions). Processes behind the calculation of emissions intensity values are not fully transparent. Emissions intensity values could therefore be replaced by a more simple system which uses reported absolute emissions as the basis for measuring performance.
- Emissions intensity schemes allow absolute emissions to vary with production. As noted, a fast-growing facility could receive credits for improvements in intensity, even if its total emissions increase (if production growth outpaces improvements in emissions intensity). However, these risks are mitigated by declining emissions baselines.
- This can create uncertainty in meeting point-in-time emissions reduction targets - for example if economic output increases more than expected ahead of a target end point, as occurred in Canada in 2020.[27]
- To address climate change, absolute emissions must be reduced. Carbon markets set in absolute emissions terms (such as the EU ETS, California, New Zealand, and so on) are therefore the global standard. This is because they set a cap on emissions, which is reduced each year, providing the greatest certainty (and transparency) in achieving a carbon budget and point-in-time target.

In this scenario, we consider the alternate adoption of emissions baseline set in line with absolute emissions.

4.5.1 Compliance implications

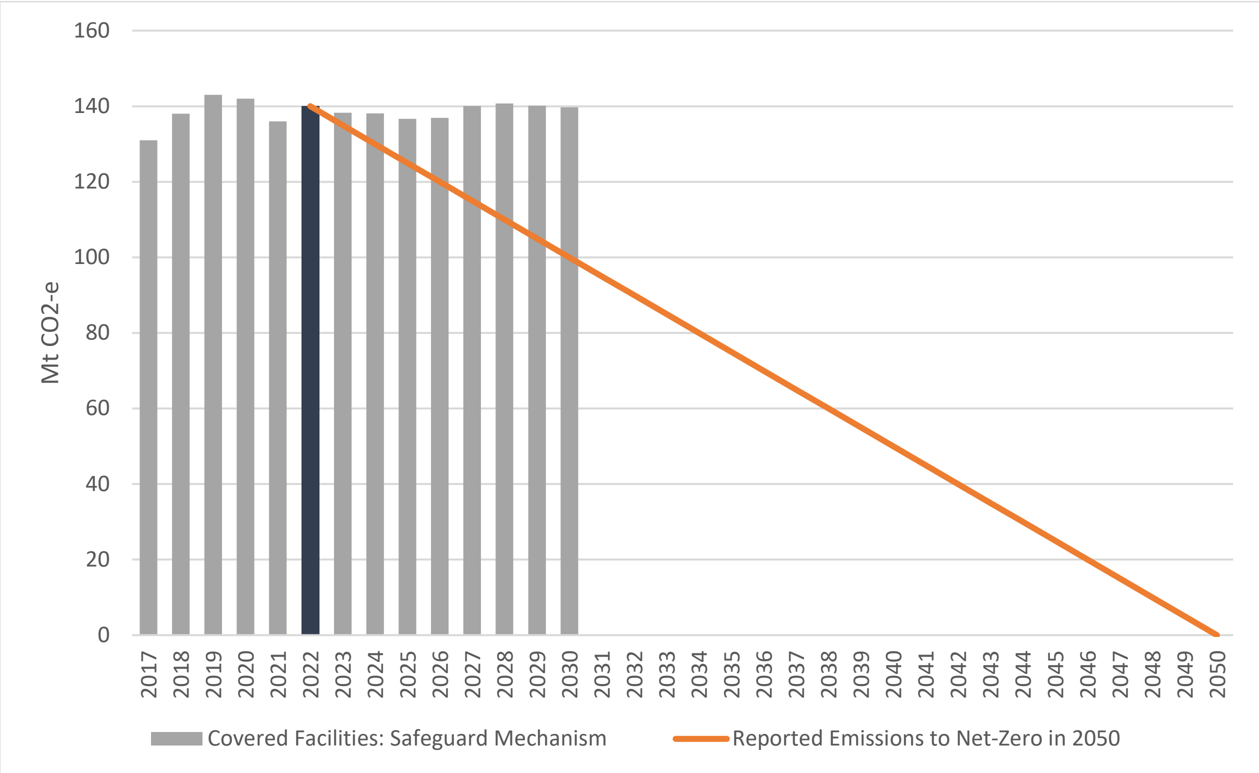
Under an absolute emissions 'facility-level' scheme, emissions limits are typically set in line with historical reported emissions for each facility, declining over time to reach a specified target. Covered facilities are able to emit up to the baseline without incurring any liability, equivalent to the 100 per cent allocation of free permits under a cap and trade system, scaling down to 96.4 per cent in year one, and so on.

[27] Canada set a target of reducing greenhouse gas emissions by 17 percent below 2005 levels by 2020, however, emissions in 2020 were almost 20 per cent above the target level. This was widely attributed to the setting of emissions intensity baselines for key export industries. For example, in 2020, Alberta's oil sands reported a 36% improvement in emissions intensity (per barrel) than in 2000, however, the total number of barrels produced grew much faster. From 1990 to 2016, total crude oil production increased 133 per cent; more than 90 per cent of this production growth occurred in Alberta's oil sands. Higher production levels translated into substantial emissions growth of over 367 per cent (note, however, that emissions intensity benchmarks are not set to decline beyond BAU improvements under Alberta's emissions reduction framework). Analysis derived from: Pembina, "Three takeaways from Canada's latest greenhouse gas emissions data"; Alberta Business Council.

Emissions baselines may be set to reflect the most recent reported year, or an average over multiple years, taking into account a wider variety of operational circumstances. Under the initial design of the Safeguard Mechanism, emissions baselines were set with reference to the 'high point' of reported emissions between 2009-10 and 2013-14 (Reported Baselines). This was intended to provide industry with flexibility by accommodating changes in production, however, the headroom to increase emissions, combined with the static nature of baselines (which were not set to decline to a target), reduced compliance pressure for industry to invest emissions reduction activities. Below-baseline performance was not credited under the initial Safeguard Mechanism framework, however facilities did receive a voluntary incentive via the ERF[28].

For the purposes of this analysis, an absolute emissions baseline (for each covered facility) is set in line with reported emissions in FY22, assumed to decline in a linear fashion to net-zero in 2050. Like Scenario 2, this would result in a consistent emissions reduction task of approximately 5 Mt per annum, depicted in Figures 26 and 27. This translates into an annual accountability of just 3.6 per cent of base-year emissions. A soft-start, or transitional period, is therefore embedded into the design of the scheme.

Figure 26: Safeguard Mechanism baseline scenario from FY22 to net-zero in 2050.



Source: RepuTex Energy, 2022

4.5.2 Crediting implications

Similar to the setting of "site-specific" benchmarks for emissions intensity, discussed in the previous section, the design of facility-level emissions baselines aligned with recent reported emissions[29] would 're-set' each facility's current headroom under the Safeguard Mechanism. This would prevent businesses from increasing their emissions to generate an artificially high start point, while reducing the risk of non-additional credits being issued for below-baseline performance.

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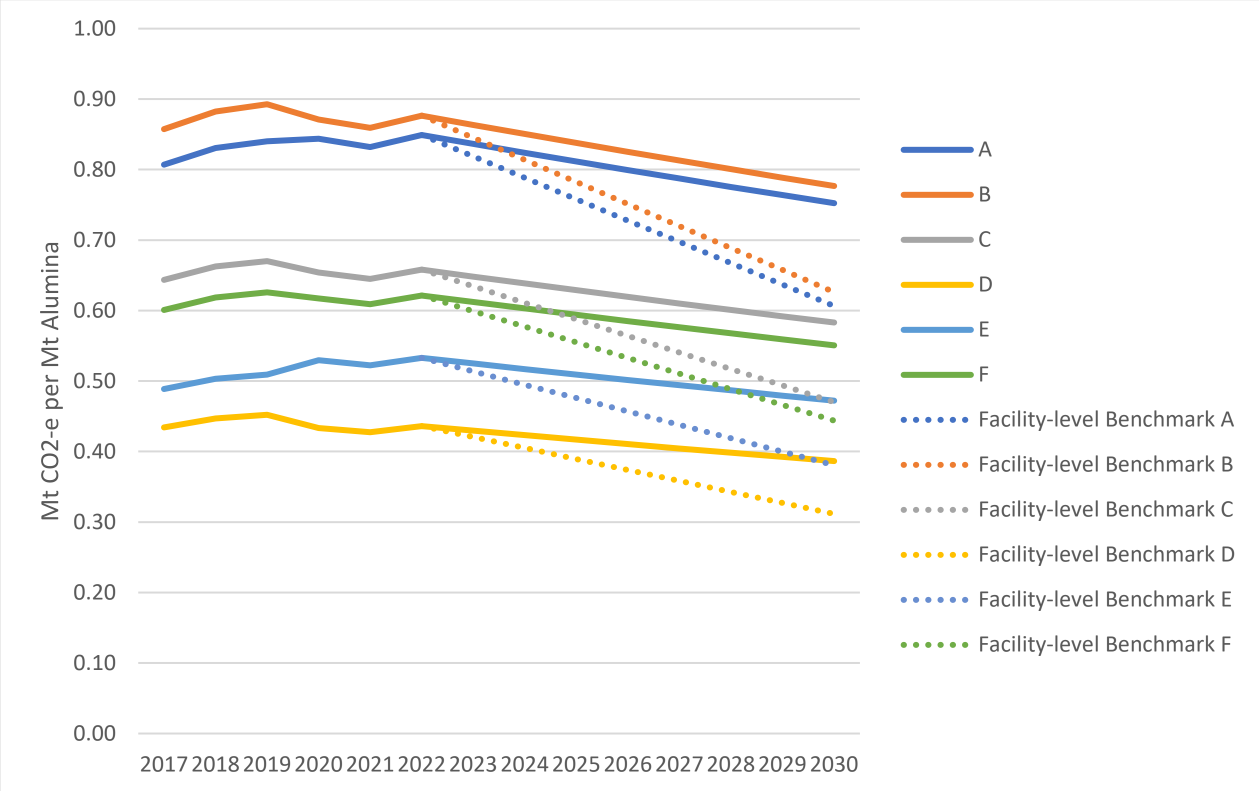
[28] In practice, this voluntary incentive was diluted by the administrative complexity of applying to register projects, audit emissions reductions, and the low price environment under the ERF framework. However, low industry participation also highlights the potential risks of schemes that provide only a 'carrot' to reduce emissions, without a robust 'stick' to create pressure to avoid having to buy credits for emissions in excess of any baseline.

[29] There may be some instances, such as an outage in production, where reported emissions may be artificially low (or high). In these cases, an alternative method may be required, such as a past fixed year or an average approach.

The ability to generate credits from emissions reductions relative to the baseline, and the pressure to avoid having to buy permits for emissions in excess of the baseline, would subsequently provide incentives for participants to transition to lower emission production processes. This is subject to the considerations below.

Figure 27: Facility-level Benchmark for the alumina sector - to 2030



Source: RepuTex Energy, 2022

Below-baseline crediting for variation in production

One barrier to the implementation of a policy framework built on 'absolute emissions' is that reported emissions are linked to facility production. Regular variation in output (such as a decline in production) could therefore trigger the issuance of below-baseline credits where output is lower than the previous year. These below-baseline credits may be non-additional if production variation is considered to be 'business-as-usual'. While these risks are mitigated where baselines are set to decline over time (whereby reductions in production that outpace the rate of baseline decline may be credited with less concern), additional rules would be required to support market stability.

The challenges created by the inherent variability of production has not limited the development of 'cap and trade' markets in other jurisdictions, where rules are designed to protect market integrity. For example, the EU ETS Directive establishes that when the level of output at a facility changes by more than 15 per cent, the level of free allocation given to a facility also changes. Local crediting baselines could also be adjusted, and/or may be assessed on the basis of a rolling average to discourage manipulation.

At an aggregate level, jurisdictions are increasingly adopting stability measures to help manage unexpected changes in economic activity, and market shocks. This provides predictable, quantitative responses to unexpected events, while helping to ensure prices (and emissions reductions) remain aligned with policy goals. For example, following the global financial crisis (GFC), the EU ETS implemented the Market Stability Reserve, which establishes pre-defined quantitative rules to release or withhold allowances from the market, protecting against supply-demand imbalances. If Australia were to adopt an absolute framework, such a mechanism may similarly be implemented, helping to maintain market stability based on pre-determined rules (refer to Box 4.4).

Box 4.4: What impact would COVID-19 have had?

The COVID-19 pandemic provides an interesting case study for how unpredictable events, and major shocks, could impact the resilience of different emissions market policies by triggering large changes in production (and emissions).

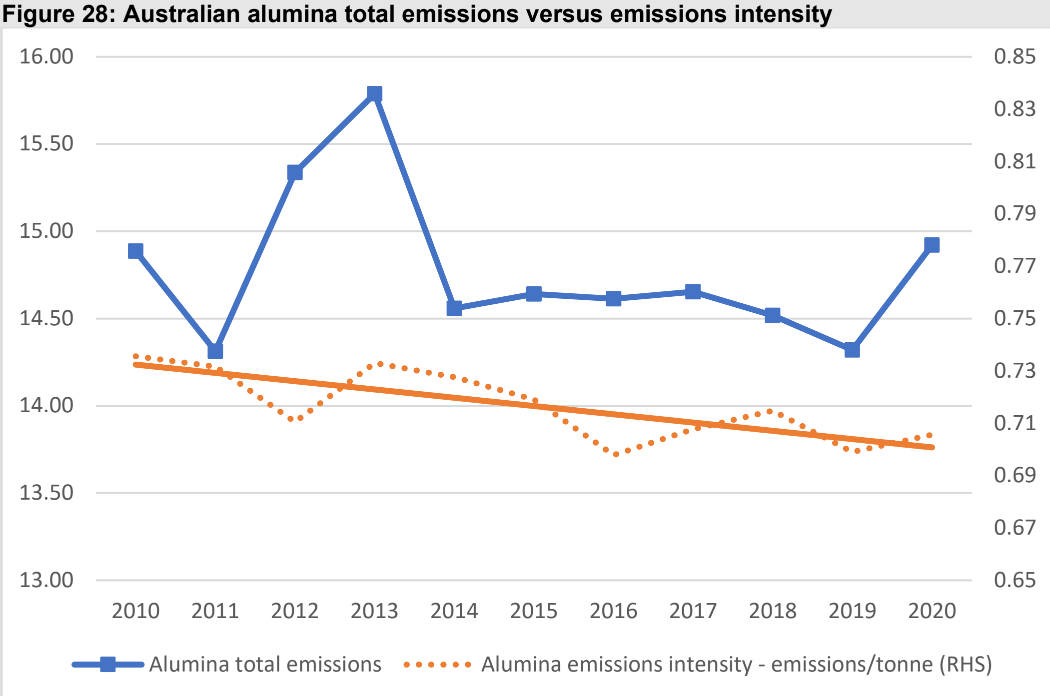
Under an emissions intensity framework (be it industry average or facility-level), emissions baselines are set by multiplying each facility's annual volume of output by an emissions intensity value (in our examples, either a default industry average, or site-specific value). Any unexpected reduction in output, such as a decline attributed to COVID-19, would lower *both* the facility's emissions baseline, and its reported emissions. The facility would therefore not receive below-baseline credits due to its lower production; it would instead need to improve its emissions intensity.

Comparably, should absolute emissions baselines be set (from reported emissions), any unexpected reduction in output would trigger the issuance of below-baseline credits. On a large-scale, such as during COVID-19 or an economic downturn like the GFC, the widespread creation of below-baseline credits, combined with lower compliance demand, could trigger an oversupply, creating a low price environment and eroding economic signals for investment in emissions reductions.

In the EU ETS, a combination of an economic slowdown during the GFC and the overuse of low-cost Certified Emissions Reduction (CER) international offsets contributed to an oversupply of over 2 billion allowances, more than total annual covered emissions. Allowance prices fell from ~€30/t in 2005 to below €3/t in 2013, triggering the EU Commission to implement the Backloading and Market Stability Reserve reforms. Following the Market Stability Reserve reform, COVID-19 did not trigger lasting impacts on the EU ETS, with prices initially declining, but recovering by June of 2020. Similar impacts were limited in California due to the design of an auction floor price. In addition, the implementation of a more ambitious emissions target within the EU ETS had an upward effect on the market, signalling a longer-term tightening of allowance supply. Rule-based stability measures were therefore able to control the quantity or price of allowances, ensuring more predictable and stable conditions.

In the alternative - where there is a large increase in output - it is possible to make progress on emissions intensity, while increasing absolute emissions. For example, over 2010-20 Alumina emissions have varied (in line with production), while intensity has improved. In 2012, reported emissions increased 7 per cent, attributed to a 10 per cent increase in production, while emissions intensity improved 3 per cent.

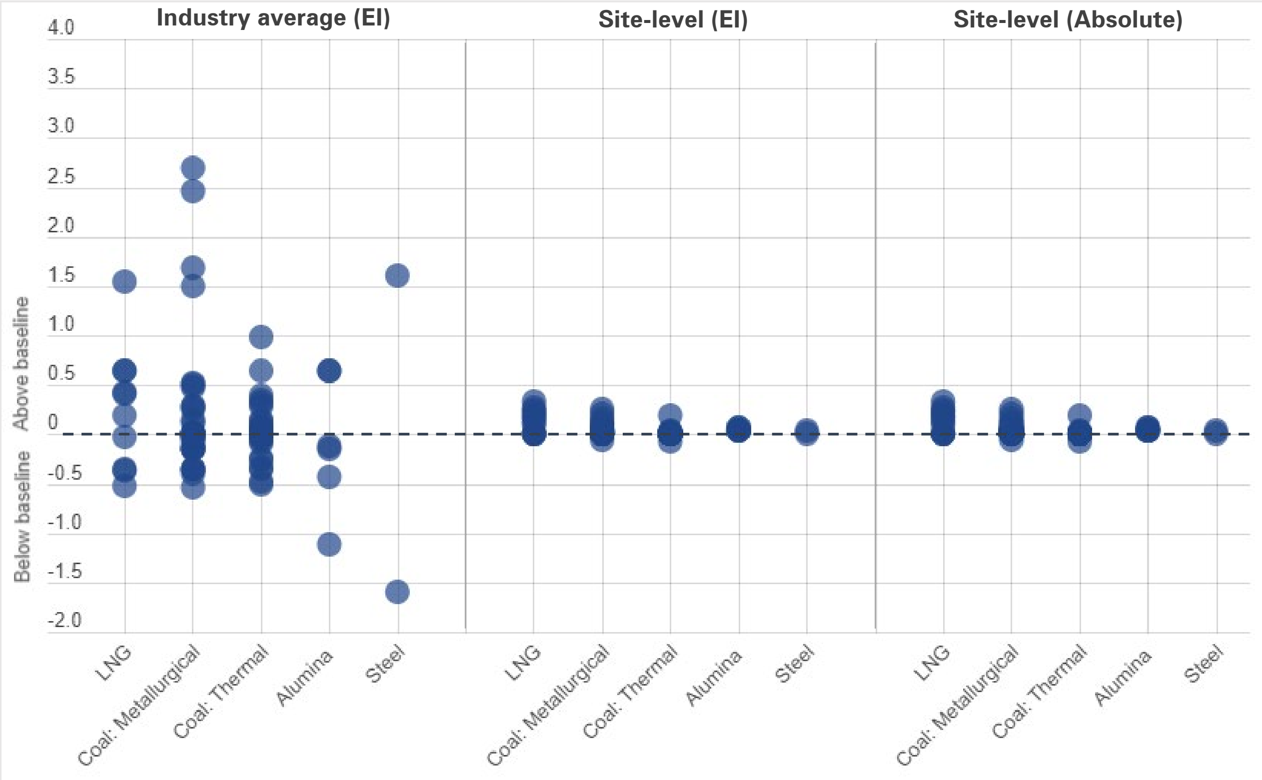
Figure 28: Australian alumina total emissions versus emissions intensity



Source: RepuTex Energy; Australian Aluminium Council, 2022

4.6 Discussion of baseline scenarios

Figure 29: Compliance obligation in year 1 by facility – all scenarios (top 5 emitting industries)



Source: RepuTex Energy, 2022. Note that y-axis reflects +/-headroom (Mt) between the facility baseline and reported emissions.

All baseline methods could create a strong signal for long-term investment in emissions reductions

Emissions baselines set in either "emissions intensity" (as a rate of GHG emissions per unit of output) or "absolute emissions" (as an absolute quantity of a facility's GHG emissions) are calculated to play a critical role in guiding the industrial sector's transition to a low-emissions future. Each baseline system has its strengths and weaknesses; however, none are shown to be insurmountable, and could be complemented by additional market rules to support market effectiveness.

Critically, each policy design option is shown to provide an effective signal for long-term investment in emissions reductions, that is scalable over time. This signal delivered differently in each setting.

An industry intensity scheme would create a 'carrot' for decarbonisation, but rules would be required to ensure crediting of genuine emissions reductions

Under an industry intensity scheme, an economic incentive for substitution from higher to lower emissions practices is created through the crediting of facilities with emissions intensity below an industry average baseline, while those above the baseline would be required to purchase and surrender credits.

Relatively 'low emissions' facilities are rewarded, while 'high-emissions' activities would face an additional cost. This makes high emissions activities more expensive and low-emissions activities cheaper, creating an incentive for all facilities to reduce emissions – subject to the strength of the price signal. For example, above-average facilities would receive an incentive to reduce their compliance obligation (the 'stick'), while those below average have an incentive to create and sell more credits (the 'carrot').

Like all schemes, the practical implementation of an industry intensity scheme has its advantages and disadvantages. For example, the creation of an industry average threshold to define emissions performance is relative, and does not necessarily mean that 'below-average' facilities are 'low-emissions' activities - only that they are relatively cleaner than other facilities within a given industry.

In the Alumina industry, for example, gas-fired facilities would receive below-baseline credits for being less emissions intensive than coal-fired facilities. The incentive for further emissions reductions (for example switching to green hydrogen or renewable electricity processes) would be voluntary, via the potential to create and sell more below-baseline credits where facilities transition to cleaner processes. Over time, this incentive would be supported by pressure to avoid having to buy credits as industry average benchmarks tighten. The strength of the incentive would, however, be highly dependent on the market price. Given the issuance of credits to below-average facilities would not be supported by a genuine emissions reduction project, this incentive may be low.

There can be other drawbacks to industry intensity schemes. For example, facilities with below-average intensity, whose production output is growing, would be able to increase their emissions without being required to reduce (or offset) any emissions growth. While these emissions would come from 'below-average' facilities, it would not necessarily be derived from low-emissions activities. For example, at least half of all coal mines would initially be below average emissions intensity, and could increase production by mining new seams in response to high demand and prices. This could result in both large volumes of crediting, and large increases in emissions, potentially jeopardising Australia's 2030 target unless other sectors contribute additional abatement.

It may therefore be necessary for market rules to strike a balance between creating sufficient reward for below-average processes, versus ensuring below-baseline crediting represents genuine emissions reductions.

For example, crediting in the pre-2030 period is expected to skew towards mostly 'non-additional' abatement. While this risk will decline over time, trading with above-average facilities, and the surrendering of these credits to acquit a liability, could result in reported net emissions reductions occurring in accounting terms only.

It may be straightforward for policymakers to strengthen the integrity of below-baseline crediting via the creation of a separate crediting baseline or "reference level" (at the site-level), facilitating a 'hybrid' framework, with different baselines for crediting and compliance. We recognise that such an approach may, however, create a more complex hybrid regulation-market mechanism, while creating more diluted incentives. An alternative design option may therefore be the implementation of a site-specific baseline for both crediting and compliance (in either emissions intensity or absolute emissions).

A site-specific intensity system would create incentives for all facilities to reduce emissions

Under a 'site-specific' intensity scheme, an emissions intensity benchmark may be set for all facilities, calculated by multiplying a site-specific emissions intensity value, declining to net-zero, by the annual volume of product. The ability to generate credits from emissions reductions relative to each facility's baseline, combined with the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide dual incentives for all participants to transition to lower emissions processes (the 'carrot' and the 'stick' for all facilities from commencement of the scheme).

This transition would reflect a gradual step down from current production intensity (either as a fixed point in time or a historical average), making all facilities accountable for 3.6 per cent of their emissions intensity in year one, equivalent to a 96.4 per cent free allocation of permits under a cap and trade system. A "slow-start" (or transitional period) could therefore be embedded into the enhanced safeguard system.

By applying a crediting baseline that corresponds to reported production intensity, this makes it more likely a facility will be credited for genuine emissions reductions, reducing the risk of crediting non-additional actions. This is also likely to create a more appropriate price signal to incentivise investment in large, transformational emissions reduction projects. Accountability for emissions, along with the crediting of genuine emission reductions, may therefore provide an efficient dual incentive for all facilities to transition to lower emissions processes.

Like the industry intensity scheme, there are also weaknesses under a site-specific intensity framework. For example, further rules would be required to protect against below-baseline crediting for business-as-usual improvements in emissions intensity (such as minimum crediting thresholds). In addition, the design of facility-level emissions baselines can penalise early movers. Market rules would therefore be required where facilities have recently undertaken large emissions reduction actions. For example, flexibility may be given to establish a reference level of two or three years (recommended by the Commonwealth's Safeguard Crediting Mechanism discussion paper), accounting for a wider variety of operational circumstances.

The return to an 'absolute emissions' system could undo recent efforts to make the safeguard scheme more flexible

Instead of an emissions intensity framework, site-specific baselines may also be set in terms of absolute emissions (for example in line with recent reported emissions). This would establish a transparent cap on emissions, which is reduced each year, providing the greatest certainty in achieving Australia's interim emissions targets. Such a construct would also align Australia more closely with other key global carbon markets, if Australia seeks to open up its domestic market to international trading in the future.

In line with a 'site-specific intensity' system, the ability to generate credits from emissions reductions relative to a baseline, and the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide each facility with dual incentives to lower emission production processes.

While such a construct would align Australia with the global standard, and may be supported by rule-based measures to support market stability, such an approach may undo recent work to transition the Safeguard Mechanism to an emissions intensity framework. While the current safeguard scheme lacks ambition, an intensity system is likely to provide industry with the necessary flexibility to manage the variable and cyclical nature of local production intensity.

The effectiveness of any baseline method will be subject to the setting of industry assistance measures

We note, however, that the environmental and economic effectiveness of any scheme is also subject to other considerations. In particular, the design of industry assistance measures that defer or loosen any carbon constraint can strongly dilute the signal for behavioural change, and weaken the scheme's ability to archive a stated target outcome. Refer to Section 6 for further discussion.

4.6.1 Effectiveness of scenarios versus design principles

The suitability of baseline methodologies may be measured against policy design principles, described in Section 2.2. Specifically, policy design must be: 'effective and scalable' (in meeting stated goals today and in the future); 'manageable' (imposing a manageable transition on industry, avoiding any large initial 'shock'); provide 'support for industry assistance' (e.g. internationally exposed, hard to abate sectors); 'fairly allocate the task' (minimise exemptions and/or imposition of greater imposts on some sectors); and 'consistent' (provide a signal for all facilities to reduce emissions).

Figure 30: Comparison of emissions baseline policy scenarios

	Emissions intensity - industry avg. benchmarks	Emissions intensity - facility benchmarks	Absolute emissions - facility baselines
Baselines aligned to net-zero target, and scalable ambition over time	🟢	🟢	🟢
Baselines set to a point-in time 2030 target / budget	🟠	🟠	🟢
Baselines impose a manageable task on industry	🟠	🟢	🟢
Baselines require all facilities to reduce emissions [1]	🔴	🟢	🟢
Baselines do not penalise early movers	🟢	○	○
Crediting below-baseline reflects genuine emissions reductions	🟠	🟢	○
Flexibility to adjust for changes in production	🟢	🟢	🟠
Resilient to major market shocks / events	🟢	🟢	🟠

Legend: 🟢 "yes" / "no risk"; ○ yes, but with other rules 🟠 possibly but sub-optimal ; 🔴 "no" or unsuitable.

[1] Under an industry average scheme below-average facilities would not be immediately required to reduce emissions. This would occur later in the decade as industry average baselines decline to intersect with site-specific baselines.

4.7 Treatment of New and Closing Facilities

4.7.1 Baselines for new facilities

The entry of new high emitting facilities into the Safeguard Mechanism has been a key driver of past industrial emissions growth, powered by the coal mining and oil & gas industries, in particular the rapid expansion of LNG export capacity.

Under the Safeguard Mechanism framework, new facilities (or facilities undertaking a significant expansion when capacity is increased by 20 per cent) can apply for a calculated emissions baseline, set by multiplying the high-point of estimated annual production by the estimated emissions-intensity of production (t CO2-e per unit of production). Up to 2020, baselines for new investments were based on an audited emissions forecast provided by the facility operator, with a true-up against actual performance at the end of the forecast period. Historically this approach has resulted in new facilities increasing total covered emissions..

After 1 July 2020, baselines set in line with “best practice” are required for new or significantly expanding facilities. These are referred to as “benchmark baselines”, aligned with the best practice for emissions intensity within a given industry, and an independently audited forecast of production. Benchmark baselines generally remain in place for three years; however, no benchmark baselines have yet been issued.

For the purposes of this analysis, we apply a best practice emissions intensity benchmark to determine the initial baseline for all new facilities without base-year reported emissions,. Benchmarks for best practice emissions intensity are assumed to adjust (and likely decline) over time, particularly where all facilities have some accountability for their emissions (such as under the facility-level examples). New facilities would therefore be accountable for their emissions relative to industry best practice, adjusted to the commissioning year of the new facility.[30]

We note that an alternative framework for new facilities could also align activity best practice with international benchmarks (e.g., “global best practice”), requiring new facilities to implement the latest available technology, rather than simply matching local incumbent standards. This may be applicable where domestic emissions intensity data for a particular product is not available, or where technological ‘breakthroughs’ make continued investments in carbon-intensive processes at high risk of becoming ‘stranded’.

The setting of best practice standards for new facilities would ensure that new, high emitting facilities are required to reduce (or offset) their emissions upon entering the scheme (via a shallow emissions reduction trajectory), helping to reduce the impact of new emissions sources increasing total covered emissions.

Although new facilities will inevitably add to the Safeguard Mechanism’s carbon budget, the closure of aging facilities may offset these impacts. In line with this, there is potential for part of Australia’s “carbon budget” (or the Safeguard Mechanism’s) to be tracked and published to add transparency for a “new entry emissions reserve”, ensuring that new entrants do not erode Australia’s cumulative emissions position. This may be linked to accounting for closing facilities, described in the following section, providing assurance that new entrants are not eroding Australia’s cumulative emissions position to the point where universal baseline decline rates would have to be adjusted to maintain the budget.

4.7.2 Treatment of closing facilities

If emissions baselines are designed based on an underlying emissions intensity value, any unexpected (or planned) reduction in output - such as accidents, major shocks (such as the global financial crisis or COVID-19), shifts global product demand, or the phased closure of aging facilities (or depleting resources) - would be flexibly accounted for in the setting of emissions baselines. This would reduce the likelihood that a facility would receive windfall carbon credit gains where it records a lower level of production.

This is because under an emissions intensity framework, emissions baselines are set by multiplying each facility’s annual volume of output by an emissions intensity value (in our examples, either a default industry average, high performance benchmark, or site-specific value). Any reduction in output would therefore automatically lower both the facility’s emissions baseline, and its reported emissions, reducing the likelihood of crediting non-additional below-baseline credits (subject to the ambition of emissions intensity benchmarks as noted). Note that under this framework, variability of output from aging equipment, or depleting resources, would still be accountable for any emissions intensity increases.

[30] If necessary, current best practice emissions intensity can be calculated and stepped down by the same methodology as all other baselines to provide certainty for new investment.

Should emissions baselines be set in terms of ‘absolute emissions’, any reduction in output (especially distressed or unexpected reductions), including facility closures, could instead trigger the creation of below-baseline credits, given final reported emissions would likely be lower than a gradually tightening rate of the absolute emissions baseline.

In this case, rules would need to be established to clarify the issuance of below-baseline to closed facilities (for example issuing all, a portion, or no credits to a closing facility). This may also represent an opportunity to create a market-based financial incentive for a transition to cleaner investments. For example:

- Below-baseline credits for closing facilities could be ‘withheld’. Because facility emissions are reported the year after they occur, SMCs would not be issued until the year after the facility closed or scaled down production. Note, however, that, in some instances, this may create a production subsidy for existing facilities[31].
- Below-baseline credits (and associated revenues from trading these credits) could be retained by the company as a form of transitional assistance or compensation, with limits to avoid long-term legacy crediting risks.
- Below-baseline credits could be "transferred” by the owner to a new replacement facility, creating an incentive for voluntary early closures, paired with investment in best practice replacement production.
- Part of the “carbon budget” associated with the closed facility may be held in a “new entrant emissions reserve” to be allocated to new facilities, safeguarding against new entrants eroding Australia’s ability to meet its domestic emissions reduction commitments.

[31] In some cases (mainly where an absolute emissions baseline is set), the withdrawal of below-baseline credits may create an additional opportunity cost, impacting production decisions. For example, in considering the marginal cost of operation, a facility would receive credits for below-baseline performance only if it continues to operate. It would therefore consider the lost value of the credits should it close. Imposing a condition that below-baseline crediting depends on the continued operation of the facility could therefore transform crediting into a - production subsidy. Below-baseline issuances could instead be used for transitional assistance, or incentives for new entries.

5. MANAGING EXCESS EMISSIONS

5.1 Suitability of current scheme principles

Under the current Safeguard Mechanism framework, covered entities are required to keep their net emissions at or below their emissions baseline. If a facility's emissions exceed (or are expected to exceed) its baseline, it may take the following steps to manage its excess emissions:

- reduce on-site emissions;
- surrender ACCUs to offset the difference between reported emissions and the emissions baseline; and
- utilise other flexibility provisions - such as: apply for a multi-year monitoring period to provide facilities with additional time to reduce net emissions, apply for a new baseline (a calculated baseline or production adjusted baseline), or apply for an exemption (in exceptional circumstances).

A range of enforcement options are available to the Regulator, including enforceable undertakings, issuing an infringement notice, an injunction, or civil penalties.

Under an enhanced policy framework, ‘other flexibility provisions’, described above (point three), are assumed to be abolished, ensuring the integrity of any new carbon constraint is maintained. In addition to the above measures, facilities could be provided with additional flexibility in meeting their compliance obligations by utilising the trading of below-baseline credits (Safeguard Mechanism Credits) - e.g. where an entity “beats” its emissions baseline, below-baseline credits may be traded to another facility to surrender equivalent to their “above-baseline” emissions.

In doing so, the enhanced Safeguard Mechanism framework would provide businesses with the flexibility to reduce emissions at least cost, based on the least-cost combination of internal emissions reductions, below-baseline traded credits (SMCs), and high-quality external offsets (domestic and/or international). We discuss these measures below.

5.2 The use of Safeguard Mechanism Credits

Under an enhanced Safeguard Mechanism framework, below-baseline credits, or SMCs, are proposed to be created where a facility reduces its emissions below its annual emissions baseline. An SMC may be traded (sold), or surrendered by a facility to meet its annual emissions reduction obligations.

An SMC would be represented as one tonne of CO2e reduced. However, as described, the environmental integrity of SMCs created would be sensitive to the design of emissions baselines. For example, SMCs issued under an industry average intensity benchmark would not reflect genuine emissions reductions, given facilities would be rewarded despite having undertaken no action to improve their performance. This would mean true emission reductions from the market would be far smaller than the amount accounted for in net-terms, jeopardising Australia’s emissions reduction targets.

5.2.1 Crediting rules to support market integrity

The above example highlights the risk that many emissions trading markets (whether cap and trade or baseline and credit) can quickly become over- rather than under-supplied, attributed to the inexact nature of baseline setting and crediting rules.

As noted, while carbon market stakeholders regularly focus on the risk of there being not enough supply to support industry decarbonisation efforts, historically, it is the norm for new emissions markets to become over- rather than under-supplied by carbon credits (and international offsets). This can erode the effectiveness of carbon price signals, and environmental outcomes for years, or as in the case the EU, almost a decade.

Rules will therefore be required to protect against any potential oversupply of below-baseline SMCs, ensuring long-term market efficiency. In addition, rules may help to improve the integrity of below-baseline credits, and the interaction of SMCs with other units, such as domestic ACCU offsets. Possible rules include:

- **Rules to prevent adverse crediting**: Under an emissions intensity framework it is possible for fast-growing facilities to improve emissions intensity, leading to both large volumes of crediting, and an increase in absolute emissions. While these risks are mitigated by the design of intensity baselines that decline over time, rules could restrict crediting where absolute emissions increase.
- **Minimum crediting threshold**: A minimum amount of abatement could be required for the creation of below-baseline SMCs, ensuring that business-as-usual fluctuations in annual emissions intensity are not credited.
- **Assignment of vintages**: Because GHG emissions are reported under NGERs after the year in which they occur, below-baseline SMCs would not be issued until after the event. Assigning each credit a vintage (the year the reduction took place) would provide flexibility in the design of additional rules (below).
- **Vintage / banking restrictions**: A time limit could be set on the use of SMCs for surrendering against Safeguard Mechanism liabilities. This could align with the year in which the emissions reduction took place, or to future years with tight banking restrictions (e.g. use of SMCs for up to 5 per cent of a future liability), ensuring that any oversupply of below-baseline credits does not carry forward to undermine long-term scheme efficiency.
- **Quantitative limits**: A quantitative limit on the use of below-baseline credits (for example where SMCs would be eligible to fulfill up to 50% of a facility's compliance obligation) may be required to ensure the creation of (potentially low-cost) SMCs does not undermine the domestic ACCU industry.

5.3 The use of international and domestic offsets

5.3.1 The legacy of international offsets in Australia

In the past, access to international carbon offsets has formed a key part of Australian climate policy debate, with many stakeholders recommending the use of international units to help businesses meet their compliance obligations at reduced cost; while ensuring adequate supply of external abatement to support decarbonisation efforts.

Ahead of the enactment of the former Carbon Price Mechanism (CPM) in 2012, Australia's domestic carbon offset market was in its infancy, with 1.8 million ACCUs issued in 2012-13. This prompted the development of a one-way link with the EU ETS (agreed in August 2012), allowing the use of European Union Allowances (EUAs) by Australian compliance entities, up to a 50 per cent limit, from the commencement of a "flexible price period" in 2015. Eligible international emissions units also included some types of Certified Emission Reduction (CER) offsets, issued under the Clean Development Mechanism (CDM) to abatement projects in developing countries, up to a usage limit of 12.5%. These units were available for around $0.60/t CO2-e at the time.

However, much has changed in the past decade. Under the former Kyoto Protocol, only developed countries were required to set binding emissions caps, with the CDM designed to create an incentive for developed economies to support emissions reductions (and investment in developing countries. Under the Paris Agreement, however, almost every country is now expected to decarbonise. As a result, the world's largest emissions markets - including the EU ETS - have banned the use of international offsets, instead prioritising domestic decarbonisation as countries seek to unlock new technologies to drive domestic emissions reductions, and capture the economic benefits of the low-carbon economy (job creation, investment, environmental benefits, etc.)

Box 5.1: What impact would international offsets have had on Australia's previous Carbon Price Mechanism?

Should the Carbon Price Mechanism have progressed to an early floating price period, we estimate the market would have faced an initial shortfall, with demand for external emissions reductions fulfilled by low-cost CERs ($0.60/t) and EUAs (A$7-10). This was subject to quantitative limits, with liable entities able to meet up to 50 per cent of their obligations with EUAs, and a maximum of 12.5 per cent for CERs.

In line with the low cost of international units at the time, we estimate Australian Carbon Unit (ACU) prices would have traded at a discount to the EU ETS, with lower emissions from the electricity sector leading to reduced demand for EUAs, and a stronger blend of very low-cost CERs in the Australian market. In line with our reports at the time[32], this could have seen ACU prices initially trade at just $1-2 before the domestic cap tightened over time, ultimately leading to price parity between ACUs and EUAs[33].

As a result, while the tightening rate of emissions allowances would have contributed to some domestic emissions reductions under the CPM, the wide entitlement for the use of international units, and the very low price of these units, would have seen considerable investment flow from Australian companies to overseas markets. Comparably, little demand is likely to have been directed to local ACCU offsets, while low market prices would have undermined the long-term signal for domestic industrial decarbonisation.

5.3.2 Australia's domestic carbon offset market

Domestically, the Australian carbon offset market has now reached scale, with over 111 million ACCUs issued to date, up from 1.8 million in 2012-13. The Australian carbon offset market has experienced rapid growth in recent years, with a record 17 million ACCUs issued in 2021. Around 77 million ACCUs (70% of all issuances) have been delivered to the Commonwealth under the ERF (as at end of March 2022).

Through to 2030, a further 104 million ACCUs are contracted for delivery to the Commonwealth on 'fixed delivery' carbon abatement contracts (CACs), with more than 22 million ACCUs also contracted under 'optional delivery' CACs (more than 126 million total). Recent changes to the ERF framework, announced in March 2022[34], will allow current holders of fixed delivery contracts to pay an exit fee to be released from their delivery obligations to the Commonwealth to access potentially higher prices in the secondary market. These units may become available at prices above $24/t (average breakeven price based on an average contract price of $12/t), subject a strong enough price incentive to do so[35].

This pool of ACCUs represents 74 per cent of the Safeguard Mechanism's cumulative abatement task to 2030 – before any internal emissions reductions by industry, below-baseline crediting, and any investment in new ACCU generating projects is factored in.

In contrast to 2012, domestic offset supply is therefore both plentiful and cost-effective. Critically, this new issuance to existing projects is accessible today via Australia's developing forwards and derivatives markets, while investment in new ACCU generating projects is also forecast to incentivised by a robust demand and price signal[36].

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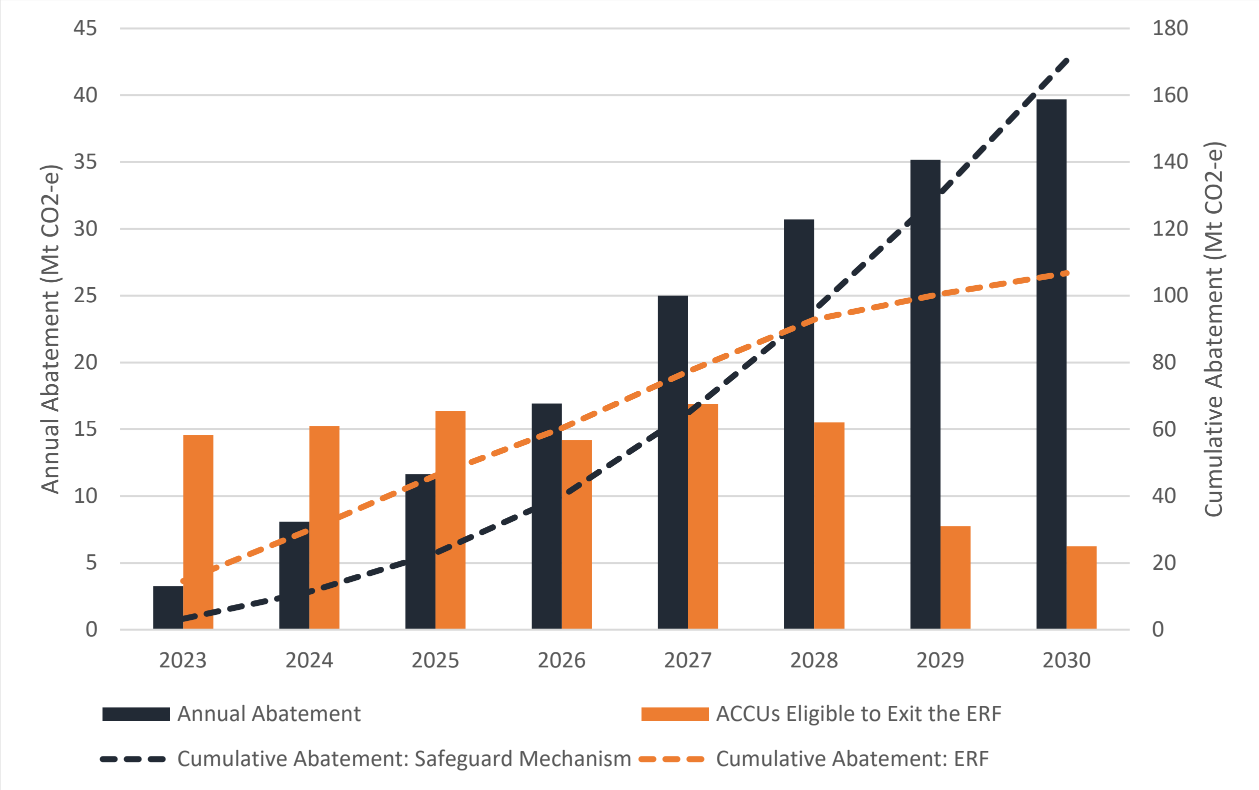
[32] News.com.au: "Business says end carbon tax, bring in ETS" (18/4/13) - Link
[33] The original design of the CPM also included a price floor ($15 rising by 4% p.a.) during the first three years. However, the price floor mechanism was removed as part of the agreement to link with the EU ETS
[34] Link.
[35] For example, prices at $25/t would provide little incentive for project owners to exit their existing CACs, while prices closer to $40/t would be likely to trigger more widespread selling.
[36] We model significant potential for newly created methods under the ERF to generate ACCUs, such as soil carbon, geologic Carbon Capture and Storage (CCS), plantation forestry, biomethane and 'blue carbon' methodologies, along with an integrated farm method. These sources have potential to contribute large-scale supply, while in some cases providing significant co-benefits.

Figure 31: Annual safeguard mechanism abatement task vs. ACCUs eligible to 'exit' the ERF 2022-30



Source: RepuTex Energy 2022; Clean Energy Regulator

5.3.3 Principles for the use of carbon offsets

Combined with the likely "soft-start" nature of the baseline and credit framework, the current availability of a large, cost-effective source of domestic ACCUs raises questions over the need for international offsets under the enhanced safeguard framework. Instead, international offsets could be utilised where the market scales up to a more ambitious target, or to alleviate any "extreme" pricing events.

Below, we provide an updated set of principles for carbon offset use:

- The decarbonisation of the industrial sector should not be delayed by the use of international carbon units. As a result, we recommend that international offsets be initially prohibited in the discharge of carbon liabilities.
- Instead it is proposed that liable entities meet their obligations for "above-baseline" emissions by undertaking on-site emissions reductions, or surrendering below-baseline SMCs and/or domestic ACCU offsets.
- Quantitative limits may be set on the surrendering of below-baseline credits to protect against integrity risks in the creation of SMCs (before baseline declines become more material); protect against oversupply risks; and ensure support for direct investment in the domestic ACCU market.
- In the event of a fundamental supply-demand imbalance; or where the Australian market price reaches a pre-defined "extreme" level[37]; or where a more ambitious emissions reduction target is implemented, restrictions on international offsets

[37] For example, Article 29a of the EU ETS Directive states that extra permits may be added to the market if, for more than 6 consecutive months, prices are 3 times higher than the average over the 2 preceding years. However, the trigger may only be utilised where price increases "do not correspond to changing market fundamentals". In the UK ETS, prices must be 2 times higher than the average of the previous 2 year period, for 3 consecutive months. By this lower definition, the UK rule has been triggered multiple times (due to initial volatility and the smaller market served). These approaches may be preferable to a pre-set price trigger, which is unlikely to be sufficiently enduring.

could be relaxed (temporarily or permanently[38]). Alternatively, any limit on the use of below-baseline credits could be relaxed.

- Similar measures may be designed to protect against significant declines in the market price in the event of an oversupply of external emissions reduction units. These include triggers for tighter restrictions on the use of below-baseline credits and/or ACCU offsets, and a price floor to maintain the price of carbon at a level that drives low carbon investment, similar to the United Kingdom[39].
- There is no requirement for Australian companies to report or offset their Scope 3 (downstream) GHG emissions. Where regulation (at a state or federal level) is extended, international offsets could be used to offset these emissions.

[38] For example, this could be managed in a similar way to the EU ETS Market Stability Reserve, which establishes pre-defined quantitative rules to release or withhold allowances from the market, protecting against supply-demand imbalances. Such a mechanism may similarly be adopted in Australia, providing a quantitative framework to maintain market stability based on pre-determined rules.

[39] https://researchbriefings.files.parliament.uk/documents/SN05927/SN05927.pdf

6. ASSISTANCE FOR INDUSTRY

6.1 Background and current relevance

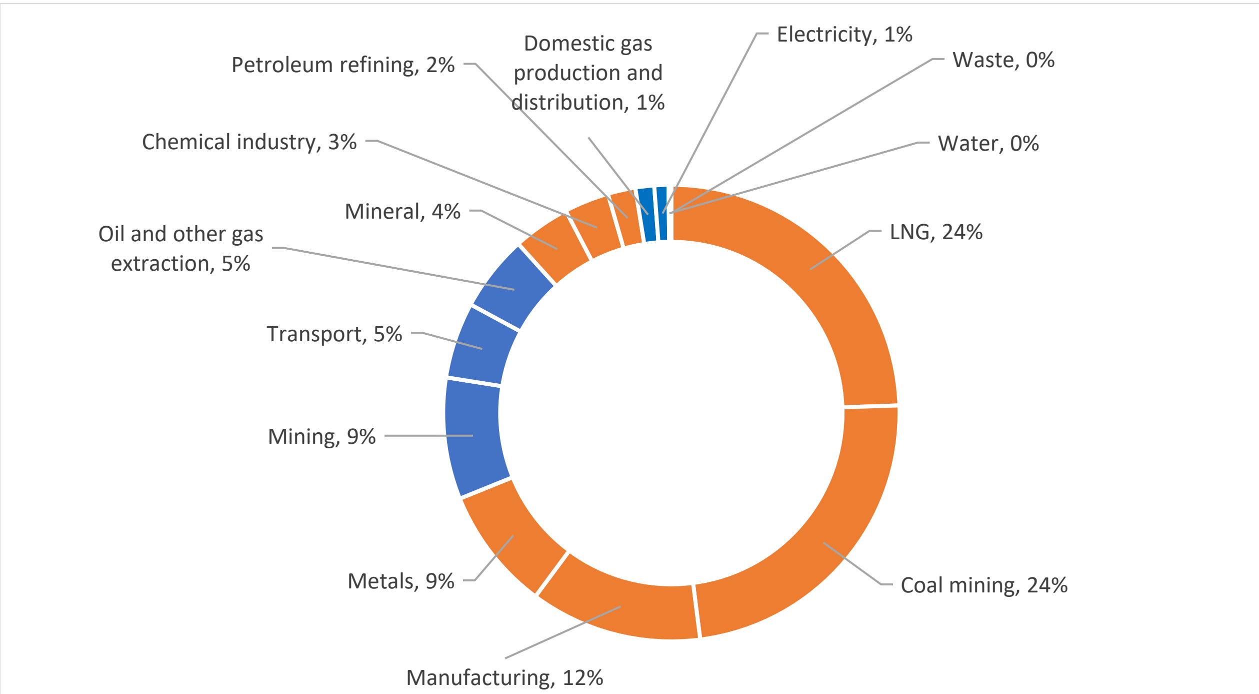
Industry assistance plays an important role in protecting against competitiveness distortions that may develop between Australian and international companies where carbon compliance costs are materially different between jurisdictions. This can create a risk that Australian emissions reductions could be eroded where a company moves production to another market, or where other cheaper products (that are not exposed to an emissions liability) are substituted for Australian output.

While carbon leakage remains an important consideration, these risks are decreasing as countries take action to reduce their GHG emissions under the Paris Agreement.

In Australia, industry assistance is currently provided to emissions intensive and trade exposed (EITE) industries under the large-scale renewable energy target (LRET). These assisted industries are far-reaching, including aluminium, alumina, iron and steel, petroleum refining, LNG production, and cement[40]. Together, eligible EITE activities make up over 78 per cent of covered emissions under the Safeguard Mechanism, and 56 per cent of all facilities (118). Exemptions for these industries (e.g. loosening or deferring emissions accountability) could therefore undermine Australia's low-carbon transition, while placing a heavier burden of compliance on domestic, non-trade exposed industries, such as domestic airlines and domestic gas. Many of these non-EITE facilities are themselves from 'hard-to-abate' sectors, where key technology gaps remain to eliminating 'fugitive' and industrial process emissions.

Widespread exemptions may be also be inconsistent with corporate voluntary commitments, with 74% of facilities (83% of covered emissions) having already established net-zero targets (83% of covered emissions), discussed in Section 3.2. A new definition of industry assistance may therefore be appropriate.

Figure 32: Safeguard Mechanism emissions coverage and current EITE status (in orange)



Source: RepuTex Energy, 2022

[40] Refer to a current list of EITE industries: http://www.cleanenergyregulator.gov.au/RET/Scheme-participants-and-industry/emissions-intensive-trade-exposed-activity-information-for-companies/eligible-activities

6.2 Principles for industry assistance

Given the wide coverage of EITE industries under the Safeguard Mechanism, and the 'hard-to-abate' status of many non-EITE industries, industry assistance measures must be careful to minimise distortions across economies, and those between sectors. In particular, the design of industry assistance measures that loosen or defer carbon accountability may risk diluting any market signal for decarbonisation, weakening the environmental and economic effectiveness of the framework. Combined with the widespread adoption of voluntary net-zero emissions reduction targets by industry, we therefore recommend that assistance measures focus on cost containment, rather than exemptions for industry.

Free compensation is embedded into the scheme

Under a baseline and credit system, covered facilities can emit up to a set baseline without incurring any liability. Each facility will only become accountable where its emissions (either in absolute or per unit of output, subject to scheme design) are higher than its baseline. As a result, the largest source of assistance for industry is embedded in the design of the Safeguard Mechanism framework, with the base-year initially set equivalent to the 100 per cent allocation of free permits under a traditional cap and trade system, stepping down to 96.4 per cent free allocation in year 1 (reducing annually by 3.6 per cent from base-year emissions).

This aligns with, or exceeds, free compensation for industry under the former CPM. For example, under the CPM, activities deemed to be 'highly' emissions intensive trade exposed received 94.5 per cent of their activity's benchmark emissions for free, with the allocation declining at a rate of 1.3 per cent per annum. 'Moderately' emissions intensive trade exposed facilities received 66 per cent of their benchmark emissions intensity as free carbon units. No carbon leakage occurred during the operation of the CPM.

As a result, the inherent design of the Safeguard Mechanism framework, and the inclusion of measures to manage excess emissions (such as below-baseline credits and domestic offsets), may imply that further industry assistance is not required.

No exemptions – all sectors should face a constraint

The most common form of industry assistance under baseline and credit (and cap and trade) frameworks is an output-based free allocation against a facility's baseline, providing a partial or full "exemption" from carbon liabilities described above.

While exemptions are the most obvious and simplest form of assistance, they also mean that many facilities will not face an incentive to reduce emissions. As a result, while there is no threat of a competitive distortion, there will also be only a voluntary signal to reduce emissions, which has historically failed to align covered industries with a net-zero trajectory (and has led to the industrial sector becoming Australia's largest source of emissions growth). Given almost 75 per cent of covered facilities have adopted voluntary net-zero emissions reduction targets, widespread exemptions may create a dynamic where voluntary targets set by industry would outpace the ambition of national policy (as under current federal policy).

Where special consideration is given to almost all high-emitting industries, this can also undermine principles of equity, with the burden of compliance falling more heavily on a small number of non-trade exposed industries. This can potentially result in internal carbon leakage, where exempted emissions intensive industries may be able to expand their production (and emissions) because they are not accountable for their emissions. Exemptions for industry are therefore not recommended.

A transitional 'cost containment scheme' is preferred

Where competitive risks are determined to still occur, a preferable method of industry assistance may be the design of a "transitional cost containment scheme". This would allow emissions accountability (and the emissions reduction incentive) to be maintained, with transitional support allocated to facilities to reduce compliance costs. This may be provided in several ways:

- Development of a 'refund mechanism' (as a refund or tax credit) to cover a proportion of a facility's cost of sourcing offsets[41], with cost recovery potentially limited to costs incurred in the surrendering of domestic ACCU offsets, supporting investment in local carbon farming.
- Priority access to funding and/or low-cost financing under the ALP's National Reconstruction Fund (NRF), supporting on-site projects that reduce emissions(and therefore result in compliance cost savings), and unlocking abatement projects that may otherwise not be financially attractive. This can also help to accelerate investment in emissions reduction activities dependent on a higher price signal, while reducing reliance on carbon offsets.
- Additional assistance could be provided based on economic hardship. For example, similar programs in Canada provide assistance where net relative compliance costs are greater than 3 per cent of sales or 10 per cent of profit[42]. However, such systems are opaque, and can be open to rorting[43].
- A hard penalty price cap, such as the large-scale generation shortfall charge, is not recommended given it would artificially pre-determine a limit on the maximum cost of abatement, and could restrict the development of a robust market-driven signal for emissions reductions.

The objective of the cost containment scheme should be to maintain emissions accountability for all facilities, providing transitional support where required, in place of exemptions or other mechanisms (such as international offsets) that may reduce beneficial investment in domestic emissions reductions. This would ensure the ongoing efficiency of Australia's low carbon transition, and create an equitable task for all facilities, rather than see assistance for one group impose greater costs on another.

The withdrawal of assistance

Any industry assistance measures should be time-limited so as to not undermine Australia's long-term, low-carbon transition, and be reviewed at regular intervals as international ambition continues to scale up over time.

[41] Similar to Business Council of Australia recommendation 7. Refer to Business Council of Australia, Achieving a net-zero economy, October 2021
[42] https://www.alberta.ca/assets/documents/cci-cost-containment-fact-sheet.pdf
[43] https://www.reuters.com/article/canada-crude-carbon-idCAKBN2IN0DE

7. FUTURE SCALE UP OF THE SCHEME

The Safeguard Mechanism should be designed to be an enduring, flexible policy framework, that is able to adjust over time as market conditions change, new technologies are developed, and new national emissions reduction targets are set. While changes to the scheme should be minimised to support policy certainty, as noted, market rules and regular reviews will be required to ensure the ongoing effectiveness of the policy framework.

In addition, the future broadening of the safeguard system could be considered:

Eligibility threshold may be reduced to 25,000 t/CO2e

While the ALP has adopted many of the BCA's recommendations to improve the Safeguard Mechanism, it has not accepted a proposal to reduce the eligibility threshold for entities covered by the scheme from 100,000 tCO2 per year, to 25,000 tCO2 per year, increasing coverage of emission point sources across the economy. The scheme will instead focus on action from Australia's highest emitters in its initial phase.

A lower eligibility threshold may be considered in order to extend the opportunity for mid-tier emitters to contribute below-baseline carbon credits, increasing both the cost effectiveness and environmental effectiveness of the scheme. Inclusion in the scheme could also be considered as a voluntary option for facilities reporting under the NGERs framework (similar to the Alberta system).

A lower eligibility threshold may also ensure the ongoing integrity of industrial decarbonisation efforts. For example, as declining baselines guide high emitting facilities to decarbonise, the threshold of 100,000 t/CO2e should not come to represent a floor for emissions reductions, where large facilities might 'drop out' of scheme where they reduce emissions below the threshold. While emissions reductions would be a good outcome, this could become a barrier to broader industry decarbonisation and Australia's net-zero emissions transition.

Inclusion of the power sector

While electricity generators are covered by the Safeguard Mechanism, the sector is treated differently, with total emissions subject to a sectoral baseline of 198 million tonnes of CO2-e, the high point of emissions over the FY10-14 reporting period.

Reported sectoral emissions were almost 164 Mt in FY21, well below the sectoral baseline. As a result of their separate treatment, electricity generators are assumed to be excluded from the Safeguard Mechanism and are instead covered by other aspects of the ALP's Powering Australia Plan.

Australia's electricity emissions are projected to continue to decline in response to key federal and state-level policy initiatives, such as the ALP's Rewiring the Nation program, state-level renewable energy targets, and the NSW Electricity Roadmap. Subject to the impact of these policy initiatives, consideration could be given to the inclusion of the electricity sector in a scaled-up Safeguard Mechanism framework, potentially facilitating a relationship between ACCUs and the equivalent carbon content of Large-scale Generation Certificates (LGCs).

8. SUMMARY OF POLICY PRINCIPLES

Section	Sub-section	Summary of outcomes
Scheme operation	Coverage of the Safeguard Mechanism	• The Safeguard Mechanism commenced on 1 July 2016, applying to facilities with direct (scope 1) greenhouse gas (GHG) emissions of over 100,000 tonnes carbon dioxide equivalent (CO2-e) per year. • In 2020-21 the scheme covered 212 facilities across the metals, mining, oil and gas extraction, manufacturing, transport, and waste industry sectors. • These facilities were responsible for 27% of national emissions in 2020-21, or 137 Mt of CO2e.
	Abatement task to net-zero emissions	• We project covered emissions will grow to 140 Mt in 2030 (18% above 2005 levels) under our BAU reference case, driven by LNG production. • Industrial emissions will grow to overtake those from the electricity sector by 2024 to become Australia's largest source of emissions. • Over the period 2022-30 this represents a cumulative emissions reduction task of 170 Mt to align covered facilities with a net-zero emissions trajectory, which may be met via the least-cost combination of internal abatement opportunities and external offsets.
	Baseline and credit vs. cap and trade systems	• A cap and trade system (ETS) sets an upper limit on emissions (a cap). Permits give facilities the right to emit, which add up to the cap. Where the cap declines, permits become scarce, driving the price. • A baseline and credit system allows facilities to emit up to a set baseline without incurring a liability. The baseline is therefore equivalent to 100% free allocation of permits under a cap and trade system, scaling down over time. • Where a facility reduces its emissions below its baseline it receives 'credits'. This creates an incentive for industry – rewarding lower emissions actions.
Emissions baselines	Introduction to scenarios	• Emissions baselines may be set in "absolute" (absolute quantity of a facility's emissions), or "emissions intensity" (emissions per unit of output). • Emissions intensity (EI) schemes allow emissions baselines to change (up or down) in line with production, aligned to a net-zero reduction trajectory. • EI baselines are more flexible because they adjust to production variability. They are also more resilient to a global event (e.g. COVID-19, GFC). • However, a small improvement in emissions intensity, and a large increase in output, could result in below-baseline crediting, while emissions increase. • Stronger baseline ambition (for both crediting and compliance) is therefore critical for scheme integrity. • We consider three scenarios for baseline setting as an 'industry average' (EI); site-level (EI) and facility level (absolute emissions).
	Scenario 1: Industry intensity scheme	• All facilities may be transitioned to "default" (industry) emissions intensity values, with an industry average intensity value declining to net-zero in 2050.

		• Above-average facilities would be required to purchase and surrender credits ("stick"). Below-average facilities would be credited ("carrot"), but would not be required to reduce emissions until later in the decade (when the industry avg. baseline declines further).
		• This makes above-average activities more expensive, creating an incentive for all facilities to reduce emissions – subject to the strength of the price signal.
		• Like all options, an industry EI scheme has challenges:
		  ▪ An 'industry average' threshold does not mean 'below-average' is 'low-emissions'. For example, gas-fired Alumina processes would be credited.
		  ▪ The incentive to generate (and sell) more credits may be diluted by the issuance of non-additional credits, and subsequent low price signal.
		  ▪ Below-average facilities with growing production could be credited, while increasing their absolute emissions. They would not be required to reduce (or offset) absolute emissions growth.
		  ▪ Some facilities with a large absolute footprint, such as Gorgon, would be below-average, and would not face an initial requirement to reduce emissions (only a voluntary incentive initially).
		  ▪ Crediting to below-average facilities would not represent genuine emissions reductions (until later in the decade). This could a) trigger a low market price / low incentive for action; and b) result in reported net emissions reductions occurring in accounting terms only, jeopardising the 2030 target.
		• Policymakers may strengthen the integrity of below-baseline crediting via a separate crediting "reference level" (at the site-level), creating 'hybrid' scheme with different baselines for crediting and compliance.
		• This may, however, create a more complex hybrid regulation-market mechanism, with diluted incentives.
		• An alternative design option may be a site-specific baseline for crediting and compliance (in EI or absolute).

	Scenario 2: Facility-level intensity scheme	• An EI benchmark may be set at the facility-level, ("site-specific" benchmarks under the current safeguard scheme), declining to net-zero by 2050. • The ability to generate below-baseline credits, combined with the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide dual incentives for all participants ("carrot and stick") from commencement of the scheme. • A baseline corresponding to current production intensity would ensure genuine below-baseline crediting. • It could also create a more appropriate price signal to incentivise investment in large, transformational emissions reduction projects. • Because baselines would decline from current production intensity, the transition would be gradual, with facilities accountable for 3.6% of their emissions intensity in year one, equivalent to a 96.4 per cent free allocation under a cap and trade system.

		• A "slow-start" (or transitional period) could therefore be embedded into the design of the system.
		• Like the industry EI scheme, there are weaknesses to a facility-level EI framework:
		  ▪ Rules would be required to protect against below-baseline crediting for business-as-usual improvements in emissions intensity (such as minimum crediting thresholds).
		  ▪ Facility-level emissions baselines can penalise early movers. Reference levels may therefore need to reflect a 2-3 year average (in line with Cth recommendations).

	Scenario 3: Facility-level scheme (absolute emissions)	• Facility-level baselines may be set in line with recent reported emissions in "absolute" terms, set to decline to reach net-zero in 2050.
		• Like Scenario 2, this would see crediting for genuine emissions reductions. The ability to generate below-baseline credits, combined with the pressure to avoid having to buy credits for emissions in excess of the baseline, would provide dual incentives for all participants from commencement of the scheme.
		• Like cap and trade systems, a baseline scheme set in absolute emissions would better align the market with a point-in-time target and carbon budget.
		• This approach is the global standard, and may better facilitate any future market linkage.
		• In a market such as Australia, where industrial output is variable and cyclical, baselines set in absolute emissions may no longer be suitable:
		  ▪ Any unexpected reduction in output or major event (e.g. COVID-19, GFC) would trigger the issuance of below-baseline credits (reported emissions would be lower than the previous year's baseline).
		  ▪ This could trigger an oversupply, creating a low price environment and eroding economic signals for investment in emissions reductions.
		• Rules may be developed to support market stability, as in the EU ETS, California and New Zealand.
		• While this construct would align Australia with the global standard, it may be considered a backward step given the work undertaken to transition the Safeguard Mechanism to an emissions intensity system.
		• While the current scheme lacks ambition, an EI system may provide industry with better flexibility to manage the variable and cyclical nature of local production intensity, while better maintaining scheme and price integrity (subject to a robust baseline approach).

	Treatment of new facilities	• The entry of new high emitting facilities into the Safeguard Mechanism has potential to considerably increase covered emissions. • New facilities could be assigned a "best practice" benchmark, in line with domestic or international standards, set to decline to net-zero by 2050. • This would ensure new, high emitting facilities are accountable for their emissions upon entering the

		scheme, helping to reduce the impact of new emissions sources increasing total covered emissions. • Part of the scheme's 'carbon budget' could be set aside for a "new entry reserve", ensuring new entrants do not erode Australia's cumulative emissions position.
	Treatment of closing facilities	• Under any EI scheme, slowing output from aging facilities would be accounted for in the setting of production-adjusted baselines (e.g. baselines would decline with production). • Where baselines are set in terms of absolute emissions, any reduction in output (planned or unexpected) could trigger crediting and windfall gains. • This could represent an opportunity to create a transitional incentive, for example, below-baseline credits could be retained to incentivise closure, or transferred to a replacement facility (incentivising clean investment). • Part of the scheme's carbon budget could be set-aside for a new-entrant reserve.
Managing excess emissions	Safeguard Mechanism Credits	• Below- baseline credits, or Safeguard Mechanism Credits (SMCs) are proposed to be issued to a facility with reported emissions below its baseline. • SMCs would be differentiated from ACCUs, largely generated from land-sector though sequestration projects, and would instead be issued to industrial emission avoidance projects. • The ability to generate credits from emissions reductions relative to a baseline, combined with the pressure to avoid having to buy credits for emissions in excess of a baseline, provide critical incentives for participants to transition to lower emissions processes. • Market rules will be required to govern the use of SMCs: ▪ Although stakeholders focus on the risk of there being not enough supply to support industry demand for external abatement, historically, it is the norm for new emissions markets to become over- rather than under-supplied by credits (and international offsets). ▪ Market rules will be needed to protect against this, potentially including banking/vintage restrictions and/or quantitative limits on the use of SMCs to fulfill a facility's compliance obligations. ▪ Limits on SMC use will also be needed to ensure ongoing support and demand for domestic ACCU offsets, which can provide significant benefits beyond emissions abatement, including regional investment and job creation, and co-benefits to biodiversity, landscape protection, and water quality.
	Offsets – domestic or international?	• Under the former Carbon Price Mechanism, access to international carbon units was critical to ensure sufficient liquidity of external abatement to support decarbonisation efforts. • Today, the local ACCU market has reached scale, with over 111 million units issued, up from 1.8 m in 2012-13. • Through to 2030, a further 126 million ACCUs may become available should they exit existing fixed- and optional-delivery contracts under the ERF.

		• This pool of new ACCUs already represents 74% of the Safeguard Mechanism's estimated cumulative abatement task to 2030 – before any internal emissions reductions and below-baseline crediting, or investment in new ACCU generating projects is factored in. • Although large, this pool is limited, and is therefore unlikely to dimmish the long-term signal for investment. Instead, this pool of offsets can serve as a key source of cost-effective supply, supporting the early transition, before giving way to new offset projects. • In combination with the possible "soft-start" nature of the baseline scheme, this raises questions over the need for international offsets. • International credits may be better suited to provide liquidity where the market scales up to a more ambitious target, or to alleviate extreme pricing events. • This fits with other jurisdictions, where international offsets have been banned as countries focus on local investment decarbonisation under the Paris Agreement.

Industry assistance	Principles for industry assistance	• Should current definitions of emissions intensive trade exposure be applied, over 78% of covered emissions, and 56% of all safeguard facilities (118) could be classified as EITE facilities.
		• Exemptions for these industries, such as loosening emissions accountability, could therefore undermine Australia's low-carbon transition, while placing a heavier burden of compliance on domestic, non-trade exposed industries (such as domestic airlines and domestic gas) – many of which are 'hard-to-abate'.
		• Exemptions may also be inconsistent with voluntary commitments, with 74% of facilities (83% of covered emissions) having already established net-zero targets.
		• New principles may therefore be required :
		   ▪ Under a baseline and credit system, assistance for industry can be embedded into scheme design.
		   ▪ For example, under a facility-level EI scheme each facility would become accountable for 3.6% of its emissions, equivalent to a 96.4% 'free allocation' of permits under an ETS system.
		   ▪ This level of industry assistance would be higher than the former CPM, where 'highly' emissions intensive trade exposed activities received 94.5 per cent of their emissions for free (declining 1.3 per cent per annum), while 'moderately' exposed facilities received just 66 per cent for free.
		• Where competitive risks are determined to still occur, a preferable method of industry assistance may be the design of a "cost containment scheme".
		• This would allow the emissions reduction incentive to be maintained for all facilities, with support to reduce compliance costs in the form of a 'refund mechanism' (e.g. as a refund or tax credit) to cover a proportion of a facility's cost of sourcing offsets.
		• In addition, priority access may be given to funding and/or low-cost financing under the ALP's National Reconstruction Fund (NRF), supporting transformative on-site projects that reduce emissions and result in

		compliance cost savings that may otherwise not be financially attractive. • This also help to accelerate emissions reduction investment in 'hard-to-abate' sectors, while reducing reliance on external carbon offsets.
Future scheme scale up	Eligibility threshold	• The safeguard scheme will initially focus on emissions reduction actions from Australia's highest emitters, emitting over 100,000t/CO2e per annum. • Further changes to reduce the eligibility threshold may be considered over time to extend the opportunity for mid-tier emitters to contribute below-baseline credits and ensure the integrity of industrial decarbonisation efforts. • For example, as declining baselines guide facilities to decarbonise, the threshold of 100,000 t/CO2e should not come to represent a floor for emissions reductions, where large facilities might 'drop out' of scheme. • This could become a barrier to broader industry decarbonisation and Australia's net-zero transition. • The extension of industrial emissions coverage may therefore be considered in a subsequent phase, with broader coverage increasing both the cost effectiveness and environmental effectiveness of the scheme. • Voluntary participation could also be considered to for mid-tier emitters (e.g. NGERs reporters) to contribute below-baseline carbon credits, increasing both the cost effectiveness and environmental effectiveness of the scheme, similar to the Alberta system.
	Inclusion of the power sector	• While electricity generators are covered by the Safeguard Mechanism, the sector is treated differently, with total emissions subject to a sectoral baseline. • Electricity generators are assumed to be excluded from the Safeguard Mechanism and are instead covered by other aspects of the ALP's Powering Australia Plan. • Subject to the impact of other policy initiatives (such as the Rewiring the Nation program, state-level renewable energy targets, and the NSW Electricity Roadmap), consideration could be given to the inclusion of the electricity sector in a scaled-up Safeguard Mechanism framework, potentially facilitating a relationship between ACCUs and the equivalent carbon content of Large-scale Generation Certificates (LGCs).

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The Carbon Market Institute (CMI) is a member-based organisation that is an industry association and an independent centre of excellence for business leading the transition to net zero emissions. Its over 130 members include primary producers, carbon project developers, Indigenous corporations, legal, technology and advisory services, insurers, banks, investors, corporate entities and emission intensive industries developing decarbonisation and offset strategies.

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