Australian Government

Department of Climate Change, Energy, the Environment and Water

Carbon Leakage Review

Consultation paper

November 2023

Cataloguing data

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Acknowledgement of Country

Our department recognises the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge Aboriginal and Torres Strait Islander Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture and pay respects to their Elders past, and present.

Contents

Introduction

This consultation is seeking feedback on matters relating to carbon leakage risks in Australia to inform a review of carbon leakage risks in Australia and consideration of additional policy options to address any carbon leakage, including an Australian Carbon Border Adjustment Mechanism (CBAM). Carbon leakage refers to production of emissions intensive trade exposed goods and commodities shifting from countries with more ambitious emissions reduction policies to those with weaker (or no) emissions reduction policies solely because of different policy settings.

The majority of countries have adopted net zero emissions pledges, in line with the long-term goals of the Paris Agreement. Consequently, low- and zero-emissions industrial production is an important element of a net zero world economy. This is increasingly becoming technologically feasible and economically attractive.

Australia is committed to net zero emissions by 2050, and a process for developing a net zero plan and six sectoral net zero plans is underway.

Australia has a large resource and industrial base and has great potential to expand zero- and low-emissions industrial production including for export, with economic benefits to match. Industrial production is a major contributor to Australia's overall emissions, including through production for export. Decarbonisation of industry will be supported by rapidly improving access to low-cost clean energy sources, and new technologies for zero- and low-emissions production of a range of commodities. Australia's green industry ambition is linked to opportunities created by the global transition to net zero.

The Australian Government has increased Australia's emission reduction ambitions and legislated targets of 43 per cent below 2005 levels by 2030 and net zero by 2050. In July 2023, reforms to significantly strengthen the Safeguard Mechanism in line with these targets came into effect.

Many other countries are also stepping up efforts to tackle climate change. But the level of ambition and the policies through which it is pursued differs between jurisdictions. This creates the potential for production to shift from countries with more ambitious emissions reduction policies to those with weaker (or no) emission reduction policies, and potentially weakening overall emissions reductions. Where such shifts in production occur solely because of different policy settings, they are termed 'carbon leakage'. Carbon leakage can undermine national and international climate action and may require a policy response where carbon leakage risk is significant.

The Review is undertaking analysis of the leakage risks in Australia and will assess the feasibility and effectiveness of a range of policy options to address any leakage risks. This includes a range of policy options, including an Australian Carbon Border Adjustment Mechanism (CBAM), product standards, targeted public investment in firms' decarbonisation, and multilateral initiatives.

The Review will consult extensively with two rounds of consultation and will report to government by 30 September 2024. The Review is led by Professor Frank Jotzo supported by DCCEEW, with representation from other Australian Government agencies.

Summary of matters where feedback is being sought

1.1 Carbon leakage

- Is the description of carbon leakage appropriate for the purpose of this Review?

1.2 The Safeguard Mechanism

- What is your view on how your business or industry could be affected by carbon leakage?

2.1 Relevant goods and commodities

- Are there other goods or commodities beyond those identified as trade exposed under the Safeguard Mechanism that should be included in the assessment?

2.2 Assessing impacts of carbon leakage and policy instruments

- Is this characterisation of the potential impacts of carbon leakage and instruments to address it appropriate for the purpose? Are there other aspects that should be considered?

2.4 Analytical approach

- What domestic economic effects from carbon leakage and policy approaches to address it are of particular importance for analysis and modelling? Would the analysis benefit from an assessment of impacts on bilateral trading partners and net global emissions?

3 Policy options to address carbon leakage risks

- Are there additional policy options that should be considered alone or as part of a portfolio of approaches to address carbon leakage?

3.1 Existing measures under the Safeguard Mechanism

- What is the capacity of current policy settings of the Safeguard Mechanism to mitigate carbon leakage risk into the future?

3.2 Australian carbon border adjustment mechanism

- Is an Australian carbon border adjustment mechanism desirable? If so, which design features should be considered?

3.3 Emissions product standards

- What is the appropriate role for emissions product standards to mitigate carbon leakage?

3.4 Targeted public investment in firms' decarbonisation

- What is the appropriate role for public investment measures to mitigate carbon leakage?

3.5 Multilateral and plurilateral initiatives

- What is the appropriate role for multilateral and plurilateral initiatives to help to mitigate carbon leakage, and the impact of unilateral measures taken to address carbon leakage?

4 Feasibility of policy options

- What principles should guide Australian policies to prevent carbon leakage?
- Should other factors be considered to assess the feasibility of potential policies?

How to make a submission

Submissions to this consultation paper can be made via the Department's Consultation Hub and by clicking the "Make a Submission" button. Submissions will be published online after the consultation closes; however, stakeholders may request that their submission is kept confidential and not published. The Department will also publish information on the outcome of the consultation on the Consultation Hub.

This consultation will close on **12 December 2023**.

Terms of Reference

1. Assessment of carbon leakage risks

a. Assessment of the extent of carbon leakage risks due to differences in emissions reduction policies between Australia and key trading partners, currently and into the future.
b. Identification of key products and sectors affected by carbon leakage risk, the likelihood and consequence of any significant risks, with particular focus on, but not limited to, steel and cement.

2. Policy options to address carbon leakage

a. Review of current and potential measures to address carbon leakage, in partnership with business, including:
    i. existing measures under the Safeguard Mechanism;
    ii. an Australian CBAM;
    iii. emissions product standards;
    iv. targeted public investment in firms' decarbonisation;
    v. multilateral or plurilateral initiatives.
b. Analysis of potential measures, should they be found necessary, with regard to: implications for industry competitiveness, emission reductions, adaptability for changes in other domestic policy settings, broader economic productivity and resilience, administration costs, legal requirements and Australia's international trade commitments, including World Trade Organization (WTO) rules.
c. Draw on the lessons from other countries' approaches to assessing and addressing carbon leakage risk, such as the EU's CBAM and the UK's Review of carbon leakage risks, including their assessment of product standards.

3. Feasibility of policy options to address carbon leakage, including an Australian CBAM

Assessment of the feasibility of policy options to address carbon leakage, with consideration of:

a. Principles underpinning policy options to address carbon leakage and implications for policy design, including for an Australian border carbon adjustment.
b. Potential scope of policy options to address to carbon leakage, including for an Australian border carbon adjustment: the coverage of products and sectors, the emissions scope, and the direction of trade (i.e., whether and how the adjustment falls on imports and/or exports).
c. Impacts of policy options to address carbon leakage, including an Australian border carbon adjustment, on firms' (decarbonisation) investment decisions, emission reductions, and other economic impacts, such as on Australia's relative attractiveness for foreign direct investment for net zero aligned projects.
d. How border carbon adjustments under an Australian CBAM could work, including issues relating to measurement of emissions embedded in traded goods, carbon costs incurred in origin countries, setting of the adjustment, obligations on importers/exporters, adaptability to changes in policy context over time, as well as the legislative and administrative requirements for establishment and operationalisation.
e. The implications of policies to address carbon leakage, including an Australian CBAM, for wider trade strategy and priorities, including legal consistency with and implications for international trade obligations, including the WTO, and inter-operability with carbon leakage measures taken by others, such as the EU CBAM.
f. Interests of Australia's trading partners, including those of developing countries in our region, and how an Australian CBAM or other policy measures could best support reductions in global and regional emissions intensities.

Review governance and timeline

Governance

The Carbon Leakage Review is being undertaken by DCCEEW and led by Professor Frank Jotzo.

The Review will consult extensively with two rounds of public consultation, including calls for written submissions. Key stakeholders include industry, peak business groups, experts and researchers, international trading partners, and the broader community.

Timeline

Figure 1 sets out a timeline for the Review. The final Review report will be provided to the Government by 30 September 2024.

The first phase of the Review focuses on the assessment of methods for carbon leakage risks, and initial review of policy options to address these risks. Stakeholder consultation takes place from 6 November to 8 December 2023, following the release of this consultation paper.

The second phase of the Review will involve analysis and modelling of leakage risks, and an assessment of the feasibility of policy options to address any identified leakage risks. Consultation related to this phase is planned for mid-2024.

The recommendations of the Review will be finalised during the third quarter of 2024 for Government consideration.

The detailed design of any agreed policy options would take place after the Review. These could be considered in the Government's Net Zero 2050 plan.

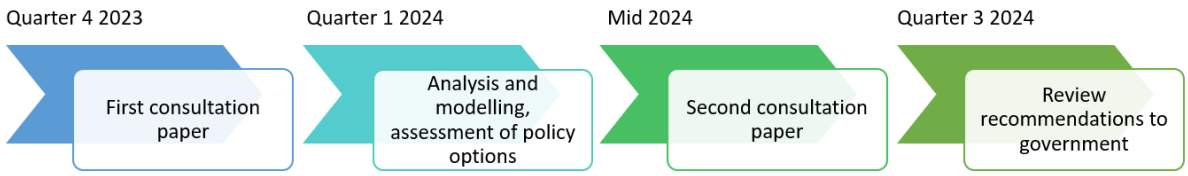

Figure 1: *Timeline for the review.*

1 Review context

The Review is undertaken in the context of the anticipated global move to net zero emissions, Australia's commitment to net zero emissions, and the opportunities for Australian industries from access to low-cost clean energy and technology. The findings of the Review will help inform Australia's approach to industrial decarbonisation and the competitiveness of industries in a net zero world.

Governments, including Australia's, are supporting the transition with a range of policy instruments. Where these apply to traded commodities, there is an opportunity to shape them in ways that benefit both climate as well as trade and competitiveness outcomes.

1.1 Carbon leakage

Countries differ in their emissions reductions goals, climate policies and stringency of policies to reduce emissions, with resulting effects on production costs. For emissions intensive and trade exposed (EITE) goods and commodities, differences in policy approaches and stringency create carbon leakage risks (see **Box 1**).

The Review will assess whether and for which products carbon leakage risks are material now and in future.

Box 1: Carbon leakage risks and industrial relocation

Differences in policy stringency between countries can result in different carbon costs and consequently impacts on competitiveness. Carbon leakage refers to production of emissions intensive trade exposed (EITE) goods and commodities shifting from countries with more ambitious emissions reduction policies to those with weaker (or no) emissions reduction policies solely because of different policy settings. Relocation of production and resulting higher or lower emissions can also occur due to other factors.[1] Left unchecked, carbon leakage undermines efforts to reduce emissions in relevant sectors.

[1] This includes broader competitiveness issues and policies unrelated to climate, or where trading partners have climate policy with similar levels of stringency but differ in their existing emissions intensity or their costs to produce cleanly. Production then shifts towards places where the emissions intensity of production is lower because of factors such as emissions intensity of energy supply, technology, and plant equipment. The anticipated emergence of renewable energy-based export industries, as well as critical minerals producers and possible downstream processing technology, including in Australia is an example of such relocation that is compatible with climate policy objectives.

Carbon leakage can occur via two main channels:

- **Trade channel:** domestic climate policies increase domestic production costs, making traded products from jurisdictions with less stringent policies more competitive.
- **Investment channel:** future investments in existing or new production could occur in countries with less stringent climate policies.

Carbon leakage risk is a function of the difference in policy stringency as well as factors such as the nature and durability of capital investments, relative costs of production in different countries, companies' ability to pass on carbon costs to consumers or to absorb them, and opportunities to reduce emissions through changes in existing plant or new investments.

Not all emissions reductions will come at a net cost to producers. Importantly, the falling costs of renewable electricity have made it increasingly competitive. However, in the absence of climate policies, some clean production processes will have a cost premium over conventional processes. This premium can shrink over time with scale, innovation and experience.

Managing carbon leakage supports the development of new low- and zero- emissions industries in Australia. This supports firms to have greater confidence to invest in low- and zero- emissions production, to capture the opportunities at home and abroad as the world transitions to a net-zero economy.

Addressing carbon leakage risk is also necessary to ensure that efforts to reduce industrial emissions are effective and are not undermined by distortions to competitiveness of domestic producers caused by uneven emissions reduction policies across countries.

In general, the literature suggests that domestic efforts to reduce emissions are typically partially offset by resulting increases in net global emissions (see below). This effect would be expected to hold also for Australia (Black et al. 2021).

Managing carbon leakage is a key concern for many countries seeking to strengthen climate action. Depending on the approach taken to address the risk, it can also pave the way for stronger domestic emissions reduction policies. Climate policy instruments, especially carbon pricing through emissions trading schemes (ETS), have usually been accompanied by measures to reduce carbon leakage risks, such as free allocations of emissions allowances or direct funding to minimise impacts.

Climate policies are not the only factors affecting carbon leakage, and leakage may not occur despite differences in policy and scheme prices. For example, for production to shift location via the investment channel, there also needs to be access to resources, skilled labour, energy, infrastructure and other inputs. Broader market considerations must also be considered. If other factors are not favourable, for example, if transport costs compared to domestic production are high, then leakage may not occur.

Question: Is the description of carbon leakage appropriate for the purpose of this review?

1.2 The Safeguard Mechanism

On 1 July 2023, the reforms to the Safeguard Mechanism came into effect, in the context of overall strengthened climate policy goals and instruments.[2] The Safeguard Mechanism is Australia's main industrial emissions reduction policy, ensuring Australia's largest industrial emitters make a proportionate contribution to Australia's legislated emissions reduction targets. Through the reforms to the Safeguard Mechanism, feedback was received about considering policy approaches to deal with carbon leakage risks over the long term. The Review will assess the leakage risks facing industry and long-term policy solutions. A separate review of the Safeguard Mechanism policy settings will be undertaken in 2026-27.

1.2.1 Coverage and scheme design

The Safeguard Mechanism covers all industrial facilities in Australia with annual emissions of more than 100,000 tonnes of carbon dioxide equivalent (tCO_2-e). The scheme covers around 215 of Australia's largest industrial emitters, which together account for around 28 per cent of total national emissions. This includes mining, oil and gas production, manufacturing, transport and waste facilities.

The Safeguard Mechanism creates financial obligations and incentives for facilities to reduce emissions. Facilities have baselines for their emissions and are required to remain at or below their baselines, including by surrendering domestic emissions credits. Baselines are set using production-adjusted emissions intensities, meaning changes in production volumes are matched by changes in the allocated emissions.

Emissions intensity baselines for existing facilities are set through a combination of site specific and industry average emissions intensity values and decline by 4.9 per cent per year. Facilities that remain below their baseline are issued Safeguard Mechanism Credits (SMCs) for the difference. SMCs can be sold to other Safeguard facilities. Emissions above baselines can also be covered through

[2] In 2022, Australia committed to a higher target of 43 per cent emissions reduction by 2030, from 2005 levels. This target was legislated and reflected in an updated Nationally Determined Contribution submitted to the United Nations Framework Convention on Climate Change (UNFCCC). A range of policies have been developed to achieve this target. Key amongst these has been reforms to the Safeguard Mechanism to reduce industrial emissions.

surrenders of Australian Carbon Credit Units (ACCUs).[3] From 2023-24, facilities that have exceeded their baseline can purchase ACCUs from the Government at a fixed price of $75, increasing with CPI plus 2 per cent per year. This cost containment measure is intended to provide certainty on maximum compliance costs. Any funds from this measure will be re-allocated to the Powering the Regions Fund (PRF).

1.2.2 Managing carbon leakage risks under the Safeguard Mechanism

The Safeguard Mechanism includes elements designed to minimise the risk of carbon leakage, especially through its emissions intensity baselines. It further includes measures to reduce the cost burden on trade exposed facilities. Eligible facilities can apply to be 'Trade Exposed Baseline Adjusted' (TEBA) to receive slower baseline decline rates, reducing their compliance costs under the scheme. The minimum annual baseline decline rate for the most affected facilities is 1 per cent for the manufacturing sector and 2 per cent for the non-manufacturing sector (compared to the 4.9 per cent per year default).

In addition, there are funding programs to assist trade exposed facilities to reduce their emissions. The $600 million Safeguard Transformation Stream (STS) under the PRF supports trade exposed facilities covered by the Safeguard Mechanism to reduce direct emissions. It provides competitive grant funding for up to 50 per cent of project expenditure for investments in low emissions technology. Additional PRF support is available to key industries including $200 million for the steel sector, and $200m for cement, lime, aluminium and alumina sectors through the Critical Inputs to Clean Energy Industry (CICEI) streams to maintain domestic production alongside decarbonisation efforts.

1.2.3 Carbon costs and abatement incentives

Safeguard facilities are incentivised to reduce the emissions intensity of production at the market price for emissions credits. Facilities that choose not to reduce on-site emissions are foregoing the opportunity to earn and sell SMCs.

However, the capacity to emit up to a facility's baseline in line with production volumes is equivalent to a production-based free allocation of emissions allowances in ETS, a common method of dealing with carbon leakage concerns (Grubb et al. 2022). Baselines mean that the out-of-pocket compliance

[3] ACCUs are issued for each tonne of carbon stored or avoided by projects under the ACCU scheme. The ACCU scheme provides landholders and businesses opportunities to run projects that avoid the release of greenhouse gas emissions from industry, energy efficiency, or waste management or remove and sequester carbon from the atmosphere through vegetation, wetland, and soil carbon methods. The price of ACCUs impacts the abatement incentive for Safeguard facilities, including potential value of SMCs. The ACCU price depends on multiple factors, including unit supply and demand, contract arrangements, and other social and environmental co-benefits that occur in addition to emissions reductions for certain methods. Participation in the ACCU scheme is voluntary. The reformed Safeguard Mechanism is a major source of ACCU demand.

cost per unit of production is much less than suggested by a focus on the market price for emissions credits, because generally facilities need to cover only part of their emissions with purchased credits.

As an illustration, consider a facility producing cement with an emissions intensity equal to the default emissions intensity (0.708 tCO_2-e per tonne of cement).[4] In year 1 of the Safeguard Mechanism, the baseline declines by 4.9 per cent, exposing 4.9 percent of emissions per tonne of cement (or 0.035 tCO_2-e) to a price for purchasing credits.[5] If the carbon credit price is $30 per tCO_2-e, this would amount to a compliance cost of $1.04 per tonne of cement. In year 5, the exposure increases to 24.5 per cent of emissions per tonne of cement (or 0.173 tCO_2-e), which at the same carbon credit price, results in a compliance cost of $5.20 per tonne of cement (noting prices may vary over time). Facilities that qualify for TEBA status and receive baseline rate reductions lower than 4.9 per cent per year would face lower costs and lower carbon leakage risks. For example, at the lowest decline rate of 1 per cent, the year 5 cost at $30 per tonne would be $1.06 per tonne of cement.

Question: What is your view on how your business or industry could be affected by carbon leakage?

1.3 International context

Global ambition to limit climate change is growing rapidly with 151 countries, accounting for 88 per cent of global emissions and 92 per cent of global gross domestic product (GDP), committing to net zero emissions targets (Net Zero Tracker 2023). Carbon pricing is currently implemented in 39 national and 33 sub-national jurisdictions, covering approximately 23 per cent of global greenhouse gas emissions. Additionally, 27 countries have implemented carbon crediting mechanisms which form part of carbon pricing (World Bank 2023). Many jurisdictions have also implemented non-pricing regulations targeted at different sectors of the economy, such as building, appliance and vehicle standards or bans of high-emission products. For example, the EU has emissions performance standards for cars and vans, including all new cars and vans sold in 2035 having zero tailpipe emissions.

Figure 2 shows the varying scheme price and coverage of policies of different jurisdictions. In Australia, the Safeguard Mechanism covers approximately 28 per cent of domestic emissions with ACCU prices of around $30 in 2022 (Clean Energy Regulator 2023).[6] The United States does not have a national carbon price or equivalent mechanism, but state emissions trading schemes cover approximately 10 per cent of the United States' national emissions at similar prices (Clausing and

[4] For simplicity, this is equal to the default emissions intensity used to set baselines for cement production.

[5] There are other factors that determine how baselines are set, beyond the default decline rate of 4.9 per cent. This includes the hybrid model transition from site-specific to industry average emissions intensity values between 2023-24 and 2029-30.

[6] The ACCU price is expected to rise because of the Safeguard Mechanism reforms. Prices are not expected to exceed the cost containment measure which starts in 2023-24 at $75 per tonne CO_2-e.

Wolfram 2023). Notably, the EU allowance price was on average €80 ($131) per tonne CO_2-e in 2022 and applies to around 40 per cent of EU emissions (International Carbon Action Partnership 2023).

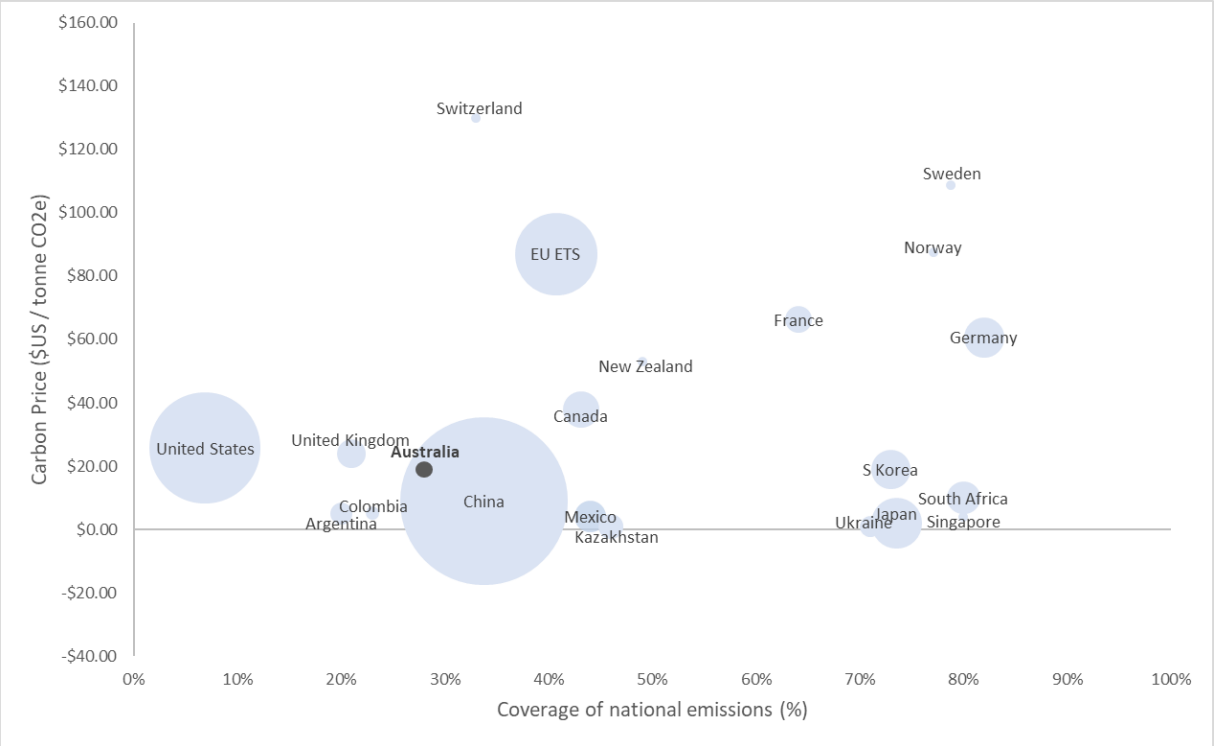

Figure 2: *Global pricing and coverage of national emissions comparison. The size of the circle indicates the country's share of global emissions. Note the UK reflects the Carbon Support Price, which is applied in addition to the EU ETS allowance price to reach the Carbon Price Floor. Data from World Bank Carbon Pricing Dashboard 2022 and the European Energy Agency adapted from Clausing and Wolfram (2022). Australian data from the National Inventory using an ACCU price of A$30 and an exchange rate of A$1.50 AUD/USD.*

It is anticipated that jurisdictions' equivalent carbon prices will continue to rise and pricing disparities will remain. For example, the International Monetary Fund (IMF) estimated marginal costs of emissions reductions (or equivalent carbon prices) in the order of US$140 for advanced economies are needed to achieve the current targets set out in current NDCs (Black S, Parry I, Roaf J and Zhunussova K 2021). This compares to US$30-40 for emerging and developing economies (International Energy Agency 2021). The price disparity increases with the stringency of the emissions reduction target and the relative contribution by different groups of countries.

The increasing coverage and stringency of climate policy measures in many countries has brought with it approaches to limit or preclude leakage (Dubash et al. 2022). Common approaches are to exempt trade exposed industries from a carbon tax, provide free emissions allowance allocations under an ETS or directly invest in or subsidise trade exposed businesses.

More recently, countries have also considered border focussed interventions such as carbon border adjustment mechanisms (CBAM), including as an alternative to other approaches such as free allocations. The EU is the first jurisdiction to introduce a CBAM. Other states and sub-state jurisdictions are reviewing climate policies and considering further or alternative measures to

address carbon leakage based on their circumstances, including Canada, China, Japan, the United Kingdom, and the United States.

These and other policy mechanisms are discussed in Section 3.

Policy mechanisms to address leakage need to be designed with trading partners and broader impacts in mind. For example, unilateral policies can result in reshuffling, where producers direct lower emissions production (from facilities which operate at lower emissions intensities, see section 2.2) to countries with price mechanisms and direct lower-priced emissions intensive products to countries which do not have carbon policies (Fowlie et al. 2021). Such reshuffling would not achieve a global emissions reduction and might give rise to bilateral trade tensions.

2 Assessment methods

This section discusses how the Review is assessing carbon leakage risk and the effects of different policy options to address it.

2.1 Relevant goods and commodities

Carbon leakage risks apply to goods and commodities that are both emissions intensive and trade exposed. At a high level, the leakage risk for specific goods and commodities can be identified by comparing the carbon cost advantage that goods produced overseas have compared to domestically produced goods based on the respective climate policies. Leakage risk can be estimated using data on emissions intensity, compliance prices and trade exposure (Fournier Gabela and Freund 2023).

Currently, the Safeguard Mechanism classifies 68 covered goods as trade exposed and therefore potentially at risk of carbon leakage.[7] This serves as a proxy list of EITE commodities and will form the starting point for the Review, with further analysis to determine those at significant risk.[8]

Trade data will be analysed to identify key trading partners who produce goods competing with Australian EITE goods in domestic and overseas markets. This will be combined with data from various sources on emissions intensities and scheme prices for goods from exporting countries to allow assessment of carbon leakage risks. The OECD's Trade in Embodied CO_2 database, for example, provides estimates on embodied emissions across countries and by sector.

The Terms of Reference for the Review include a focus on steel and cement, which were identified by stakeholders during the Safeguard reforms as sectors at particular risk of carbon leakage. These two commodities are trade exposed, emissions intensive as well as hard-to-abate and hard to substitute away from. They represent up to 11 per cent and 8 per cent of emissions globally. Sample data for these and other selected commodities that are commonly identified as at risk for carbon leakage are provided below.

Leakage risks can also apply to other goods and commodities that are not currently under the Safeguard Mechanism but might be subject to it or other relevant climate policies in future, including goods that are not currently produced in Australia but may be in future as new industries develop. The Review will also consider possible future low or zero emissions intensity production that may emerge in Australia.

[7] Trade exposed goods are defined in Schedule 2 of the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*, available at: https://www.legislation.gov.au/Details/F2023C00600.

[8] Safeguard covered goods will be extracted from these datasets using the relevant Standard International Trade Classification codes.

The Review may include other commodities in its analysis, including those downstream along the value chain of goods covered by the Safeguard Mechanism, which may indirectly face potential carbon leakage risks though carbon costs on their inputs.

The Review may investigate policies to address leakage for specific goods or uniform approaches applying to a broad set of goods.

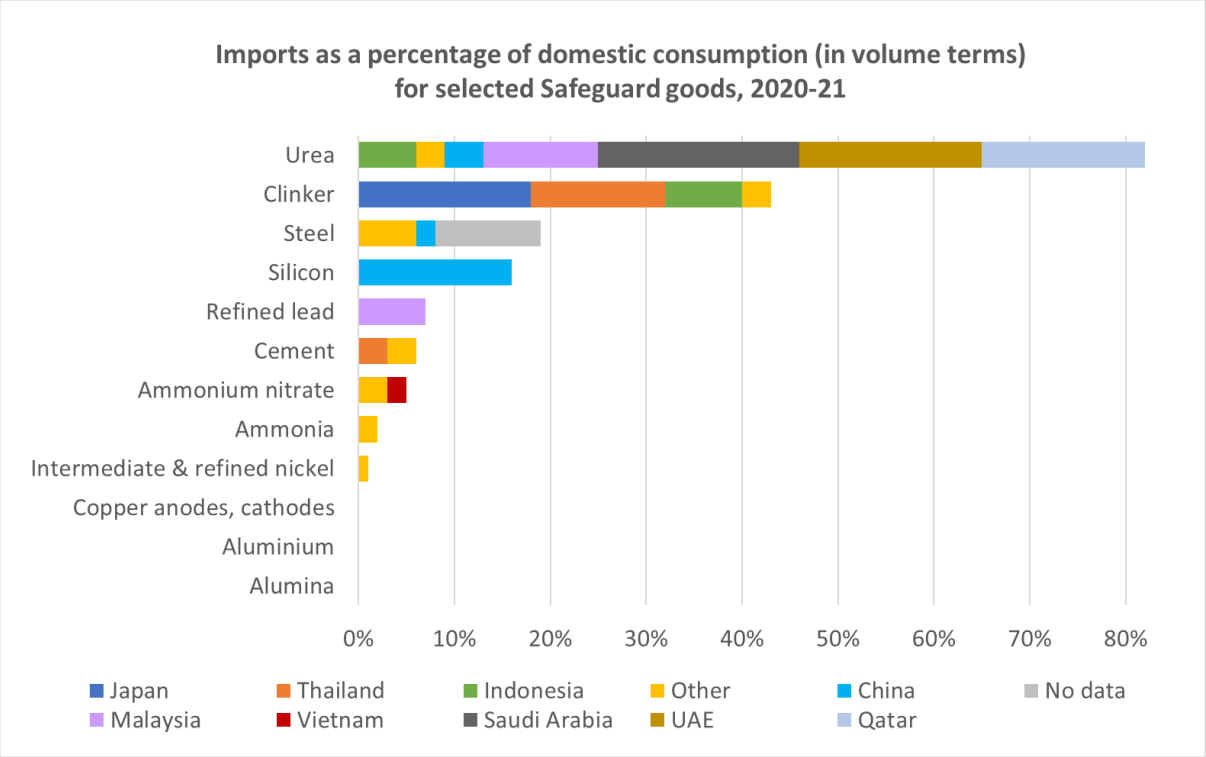

Figure 3: *Imports as a share of domestic consumption (in per cent of volume) for 2020-21 for selected commodities. The remainder of domestic consumption is met from domestic production. Goods with zero per cent are those where imports are nil or insignificant. Note that finished products are not included in this data, for example fabricated steel products . Import data from ABS and production data from DISR's Resources and Energy Quarterly and the Australian Industry Energy Transitions Initiative.*

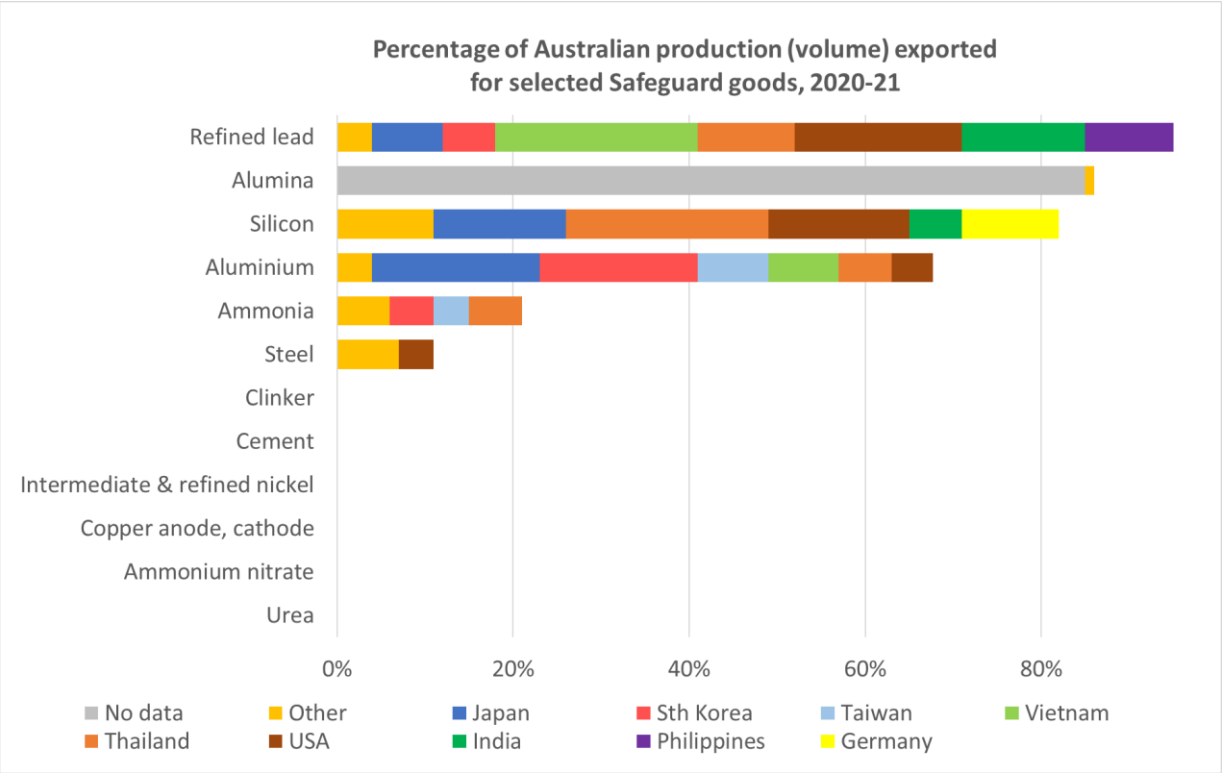

Figure 4: *Australian exports and destination in 2020-21 for selected Safeguard goods and commodities (in per cent of volume). Goods with zero per cent are those where exports are nil or insignificant. Note that finished products are not included in this data, for example aluminium products such as sheets and extrusions. Export data from ABS and production data from DISR's Resources and Energy Quarterly and the Australian Industry Energy Transitions Initiative.*

Question: Are there other goods or commodities beyond those identified as trade exposed under the Safeguard Mechanism that should be included in the assessment?

2.2 Assessing impacts of carbon leakage and policy instruments

Shifts in industrial production because of differences in climate change policy could have a range of economic effects in Australia and trading partner countries, and affect emissions. The Review will assess key effects from possible carbon leakage that could occur due to different policy settings between countries, as well as effects under different policy approaches to address leakage.

There can also be changes in trade flows and in the location of production when climate policy is similar across countries. This can be an efficient response to differing costs of and opportunities for low- or zero-emissions production or of other competitive and policy factors unrelated to climate. For Australia, this could result in new opportunities in low-emissions industrial production.

Effects of carbon leakage and policy instruments to address it can include: changes to production, investment and employment in specific activities; changes in regional economic activity; changes in

demand for and supply for other goods because of changes in relative prices; government revenue and expenditure; and possibly to some extent macroeconomic variables like trade balance, national investment and GDP.

Assessment of these effects in Australia is of particular interest to inform the Review, however it will likewise be of interest to assess possible economic effects in trade partner countries. This will allow us to understand if carbon leakage policies are well calibrated and supportive of national and global emissions reduction efforts.

Emissions will also be affected in Australia and trade partner countries. Whether domestic and global emissions decrease or increase because of shifts in trade depends primarily on the emissions intensity of production in different countries and how this evolves over time. Current average emissions intensities by country for selected goods are shown in Figure 5. National average emissions intensities mask the potentially significant variability between individual production facilities in a country, as illustrated for the case of alumina production in Australia in Figure 6. Emissions intensity of production in Australia is expected to decrease in future because of the Safeguard Mechanism and other factors.

In addition, policy settings (including related to carbon leakage) will tend to affect production technologies and volumes, and thus emissions. In general, policies to address leakage by jurisdictions with strong climate policies are expected to reduce global emissions. For example, the European Commission (2021) assessed that global emissions will be somewhat lower because of the EU CBAM (on top of reductions from the EU ETS itself). Other analysis suggests that effects of the EU CBAM on global emissions would be very small (UNCTAD).

Considerations of the appropriateness of policy measures to address carbon leakage need to factor in not only their direct effects on emissions given existing policies, but also their potential to support stronger global climate policy and potential drawbacks such as the costs on trade partners, administrative complexity, and interactions with trade rules.

Question: Is this characterisation of the potential impacts of carbon leakage and instruments to address it appropriate for the purpose? Are there other aspects that should be considered?

Figure 5: *National average emissions intensities for production of steel (primary and secondary), cement (scope 1 and 2) and alumina (scope 1) for selected countries. Data from Global Efficiency Intelligence 2022; Global Efficiency Intelligence 2019; DCCEEW 2022; Climate Transparency 2020.*

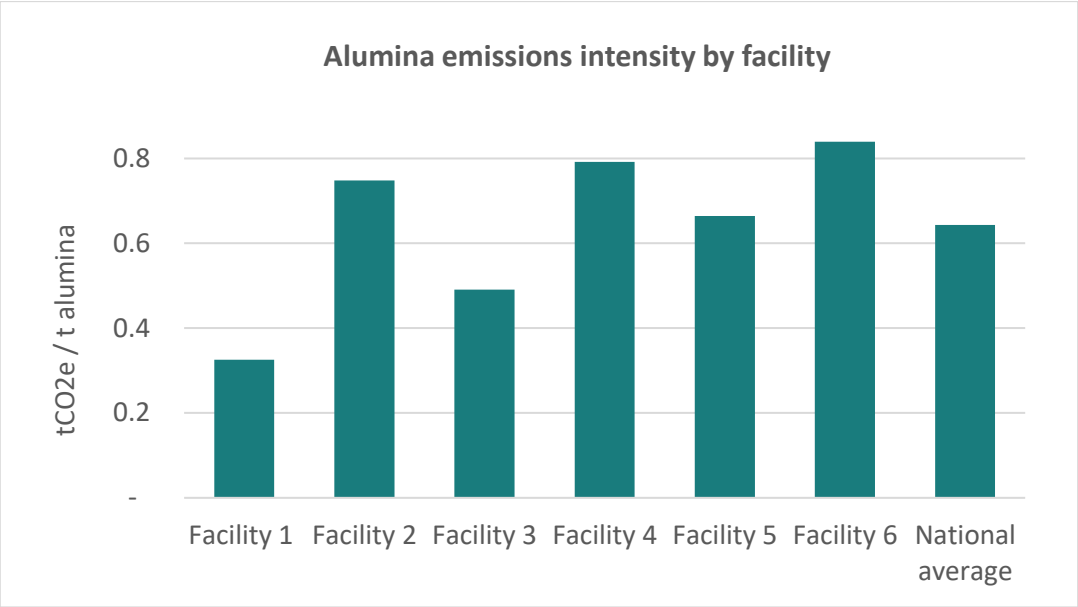

Figure 6: *Indicative alumina production emissions intensities (scope 1) by facility in Australia (FY2019-22 average). Based on data from ARENA 2022 and Clean Energy Regulator.*

2.3 Prior analysis on carbon leakage

Climate leakage risk can occur through multiple channels due to differences in climate policy ambition (Zhang and Zhang 2017). Policymakers tend to be most concerned about the trade channel – where cost differences due to asymmetric climate policies undermine climate mitigation efforts and shift trade patterns so that high-emissions production is more competitive (Dubash et al. 2022).

Ex-ante carbon leakage studies tend to find carbon leakage risk is significant (Carbone and Rivers 2017; Branger and Quirion 2014). Recent studies place potential carbon leakage rates — which refers to the increase in others' emissions relative to those reducing emissions comparted to a base — at around 10 to 30 per cent, i.e. if 100 tonnes were reduced as a result of policy in one country or group of countries then there would be an increase of 10 to 30 tonnes in other economies which are not making a similar effort (Böhringer et al. 2018; Branger and Quirion 2014; Wingender and Misch 2021). However, such studies typically do not consider policies that minimise or preclude leakage (Fowlie and Reguant 2018). Model results are typically dependent on simplified assumptions about substitutability between different production locations, and the results need to be treated with caution.

Various ex-post carbon leakage studies on the EU ETS find no or only insignificant evidence of adverse competitiveness effects and carbon leakage (Haites 2018; Koch and Basse Mama 2019; Branger et al. 2016; Venmans et al 2020; Levinson 2009). The literature has focused on the EU, since EU Allowance prices are consistently above the global average (Ellis et al. 2019). However, these results may reflect the fact that the EU ETS has effectively shielded EITE producers through free allowance allocations (Joltreau et al.2019). Where climate policy settings become more stringent and carbon costs rise, a common concern is that this increases leakage pressures and that policy approaches such as free emissions allocations are too costly and result in insufficient emissions

reduction. Effects of policy responses to mitigate carbon leakage risk such as a CBAM have also been studied by the EU (European Commission 2021).

2.4 Analytical approach

The potential outcome of carbon leakage risk depends on the differences in carbon costs between jurisdictions, as well as factors such as production costs, transport costs, substitutability of products from different production locations, type and age of existing capital investments and more.

To assess carbon leakage risks and the effects of different policy approaches to deal with it, the Review will employ an ensemble of analytical and modelling approaches.

Analysis will cover three domains:

- **Sector specific analysis:** Identification of production activities at risk of carbon leakage, data on trade flows under scenarios for future carbon costs, estimation of possible effects of carbon cost differentials and leakage policies on production, demand, trade and emissions intensity of goods.
- **Domestic economic analysis:** Estimation of effects on the Australian economy, including aspects such as changes in production and substitution effects between goods and commodities, as well as economy-wide emissions.
- **International economic analysis:** Assessment of effects on the economies of trading partners, including emissions using appropriate methodologies.

The analysis will require consideration of future climate change policy and resultant carbon costs in Australia and key trade partner countries.

Carbon costs arising from non-pricing instruments in trade partner countries can result in carbon equivalent costs. Where relevant, the analysis will seek to assess the impact of both existing and potential pricing and non-pricing climate policy instruments.

The analysis will start from current production, trade and climate policy settings and examine scenarios for future years, with the timeframe for analysis to be determined.

Question: What domestic economic effects from carbon leakage and policy approaches to address it are of particular importance for analysis and modelling?

Would the analysis benefit from an assessment of impacts on bilateral trading partners and net global emissions?

3 Policy options to address carbon leakage risks

Connected to policies aimed at reducing emissions, a range of policy options are in use in Australia and internationally, or can be considered, to address carbon leakage risks. They can and often are used as packages of different policy instruments, in the context of the overall objective of supporting the transition towards net zero emissions.

The Review will consider five policy options, and combinations of them:

- Existing measures under the Safeguard Mechanism;
- An Australian carbon border adjustment mechanism;
- Emissions product standards;
- Targeted public investment in firms' decarbonisation; and
- Multilateral or plurilateral initiatives.

These policy measures are not mutually exclusive and governments regularly deploy comparable measures in combination. For example, Australia's Safeguard Mechanism combines free allocation of emissions rights to covered facilities, tailored treatment for trade exposed facilities and targeted public investment measures under the PRF. The Australian Government is involved in ongoing efforts to develop multilateral initiatives to support emissions reductions efforts around the world, particularly in least developed nations and trading partners. Additionally, different policy options may be appropriate for goods that are primarily trade exposed in domestic markets versus those that are exposed to export competition.

The effectiveness and impacts of multiple scenarios will be tested in the Review, including different combinations of these options. The feasibility of each policy measure or combination as a mechanism to mitigate the risk of leakage will be systematically assessed, underpinned by sectoral and economic analysis, and informed by consultation with stakeholders as the Review progresses. Considering policy measures in combination is important, given that individual measures can interact in various ways.

Question: Are there additional policy options that should be considered alone or as part of a portfolio of approaches to address carbon leakage?

3.1 Existing measures under the Safeguard Mechanism

The design of the Safeguard Mechanism included key elements to mitigate risks of carbon leakage, including the capacity for each facility to emit up to its production adjusted baseline, concessional baseline decline rates for trade exposed facilities which experience particular cost impacts, and funding through the PRF.

The policy settings were designed so that facilities were incentivised to pursue emissions reductions while maintaining competitiveness.

Any level of baseline adjustment means that the equivalent emissions reductions need to be found elsewhere. The Safeguard Mechanism addresses this by building a reserve into the calculation of the decline rate. This allows for greater than anticipated access to trade exposed baseline adjusted status, as well as greater than anticipated emissions from either new or existing facilities. As ambition ramps up, this becomes increasingly challenging.

Figure 7 below illustrates the Safeguard baselines, additional baseline allocations for TEBA facilities and the emissions held in reserve, in the context of the overall carbon budget and emissions reductions to be delivered under the scheme.

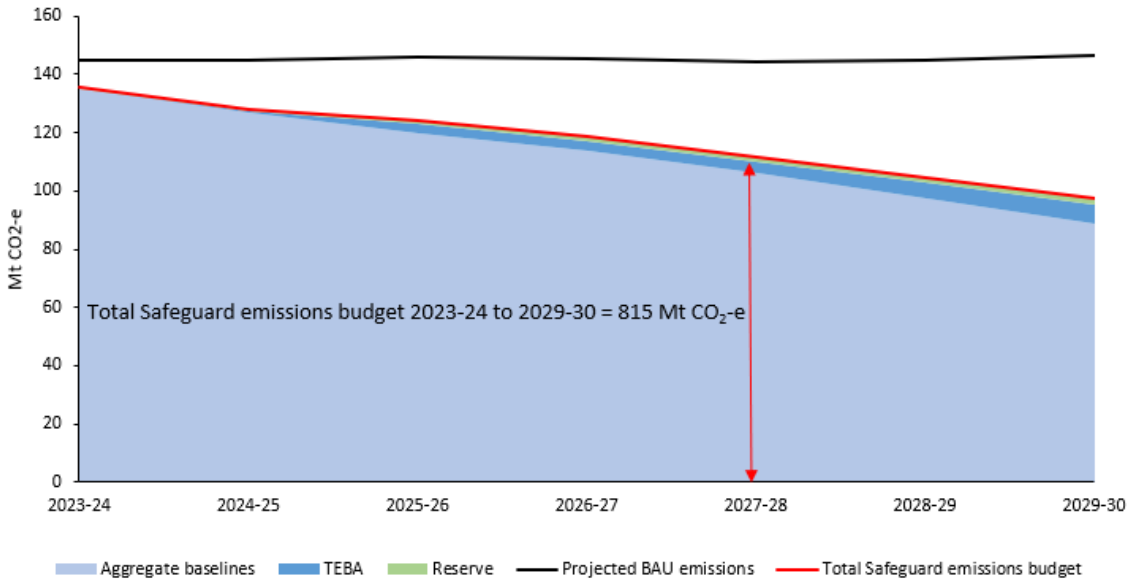

Figure 7: *Aggregate emissions baselines (light blue shading), TEBA allocations (dark blue shading) and the reserve (light green shading) in the Safeguard emissions budget. Note data is consistent with Australia's emissions projections 2022 and the September 2023 production variable update.*

The Paris Agreement requires all parties, including Australia, to submit their next Nationally Determined Contributions – including a 2035 emissions reduction target – in 2025. The existing Safeguard Mechanism policy settings, including the suitability of arrangements for emissions intensive, trade exposed activities, will be reviewed in 2026-27 to ensure the scheme's design is appropriately calibrated and effectively delivering emissions reductions in line with Australia's targets.

In the present Review, the Safeguard Mechanism arrangements will be considered as a baseline for comparison against other policy mechanisms in terms of mitigating the carbon leakage risk.

Question: What is the capacity of current policy settings of the Safeguard Mechanism to mitigate carbon leakage risk into the future?

3.2 Australian carbon border adjustment mechanism

A carbon border adjustment mechanism (CBAM) is a pricing mechanism that seeks to equalise the carbon costs facing domestic and overseas production by imposing a carbon cost or rebate adjustment at the border (Clausing and Wolfram 2023). The adjustment is calculated based on the carbon emissions embedded in the product and the difference between the domestic carbon compliance price and the relevant international carbon price (or potentially an equivalent price from other climate policies). A CBAM can include adjustments affecting imports, exports, or both.

Internationally, the EU is the first jurisdiction to implement a CBAM (see **Box 2**). Some other jurisdictions are considering CBAMs or similar policies, such as the UK and Canada. Some stakeholders indicated strong interest in an Australian CBAM, including through the Safeguard Mechanism reform consultation process (Carbon Market Institute 2023; Australian Industry Group 2021).

Box 2: The EU CBAM

The EU CBAM will require importers to report the emissions embedded in products, and surrender certificates at the equivalent carbon prices imposed on domestic production in the EU, less any carbon price paid in origin countries and any free allocation to like production in the EU. The adjustment applies to a subset of emissions intensive, trade exposed goods including iron, steel, cement, fertilisers, aluminium and hydrogen. It also applies to electricity imports.

The EU CBAM is being introduced in line with the reduction in free allocations of emissions allowances under the EU ETS, and in the context of strengthened emissions reductions targets and increased carbon prices in the EU.

A transitional reporting-only phase commenced on 1 October 2023. From 1 January 2026, importers will be required to surrender certificates valued based on the weekly average auction price of EU ETS allowances per tonne of CO_2 (European Commission 2023). An export adjustment was considered but ultimately not included in the EU CBAM.

3.2.1 Operation and effects of a CBAM

A CBAM on imports is a fee applied on imports at the border, equal to the carbon embedded in the good or commodity multiplied by the difference in the carbon compliance price (or equivalent price if effective non-pricing climate policy instruments are in operation) between the jurisdiction and the country of production. This is illustrated in Figure 8 below.

If there is no carbon cost in the country of production, then the carbon liability on imports is equal to the full domestic effective carbon compliance price. Where domestic producers face carbon compliance prices on only a share of their emissions, the same arrangements would apply to imports. For example, the baselines that apply to Australian facilities under the Safeguard Mechanism may be equally applied to imports.

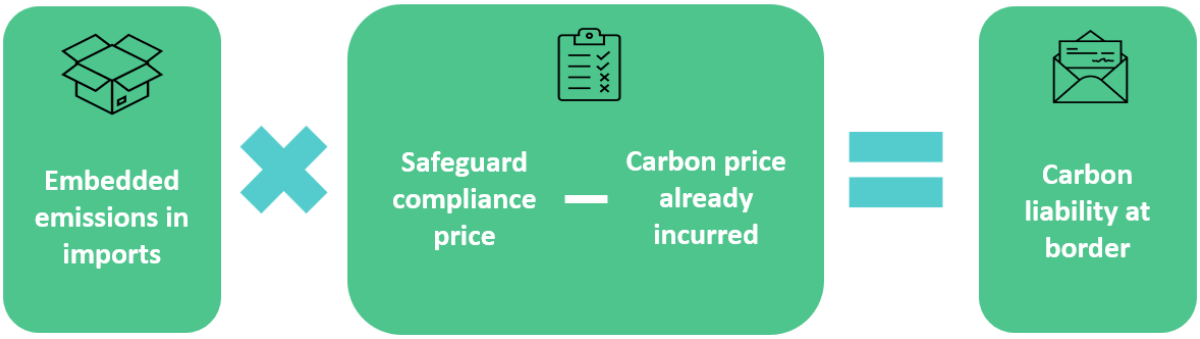

Figure 8: *Illustration of an import carbon border adjustment mechanism liability.*

A CBAM benefits domestic producers that face import competition. For industries or specific producers where domestic production is of lower emissions intensity compared to international competitors, a CBAM can benefit the domestic industry or specific producers (Clausing and Wolfram 2023). Conversely, if importers' production is lower in emissions intensity, they will be in a better competitive position under a CBAM. A CBAM can also change the composition of import sources. These effects arise because the same effective price is applied regardless of where production takes place.

By equalising the cost of carbon between domestic and international production, producers are likely to be able to pass on their embedded carbon costs to customers. If comprehensively applied, a CBAM allows carbon costs to be reflected in product prices in domestic markets, because all suppliers face the same effective price (Böhringer et al. 2012). A CBAM can therefore provide financial incentive both for industries to implement decarbonisation strategies and for consumers to choose lower emissions alternatives to save on carbon costs, as well as generating revenue for governments. How such revenue would be directed would be a separate consideration. Possible considerations include using border carbon revenue to further support industrial decarbonisation, either domestically or in collaboration with international partners.

Enabling carbon cost pass-through through a CBAM could also reduce the need for tailored treatment of EITE industries in domestic climate change policy, and so could be accompanied with a corresponding reduction in direct assistance to EITE facilities.

Product price increases due to carbon cost pass-through enabled by CBAM may also change purchasing and usage decisions, including substitution of goods and demand reduction by end users. For example, the construction sector may reduce their use of concrete and steel by altering designs or moving to less emissions intensive substitutes (UBS Securities Australia 2023).

Emissions monitoring, reporting and verification is a major issue in the design and implementation of a CBAM. Clear boundaries for emissions accounting and reporting need to be defined. Robust reporting systems are required. Emissions accounting can be a complex process, particularly where there are multiple facilities involved in the supply chain for a single product. Producers may have incentives to artificially reduce reported emissions intensities to avoid CBAM liabilities. CBAM also needs to consider the risk of resource shuffling (see section 2.2). For example, if a producer has one low emissions facility in one country, and a high emissions facility in another, there is the possibility to substitute production (or reported production) to the low emission facility.

The idea of CBAM has raised questions about the compatibility of such a measure with the objectives of free, fair, and open trade and consistency with countries' existing international obligations under WTO rules (see **Box 3**). Consistency will depend on the design and implementation. For instance, a non-discriminatory CBAM could only adjust for emissions that are domestically covered, so an adjustment would need to be reduced to the extent that Safeguard baselines apply and could not address scope 2 emissions while they are not subject to baseline declines. Another issue for some products, such as lime, is whether Safeguard Mechanism coverage could impact WTO compliance if only some production in Australia is covered. The Government is committed to maintaining Australia's international obligations and consistency with WTO rules, which is an important consideration for a possible CBAM (section 4).

Further considerations relate to the economic impacts on trade partner countries, especially developing countries, which may face adjustment pressures when the effective carbon price of an importing country is imposed on their exports (though moderated by the product price uplift).

3.2.2 CBAM extensions

An export CBAM could in principle also apply to exports, providing a carbon adjustment at the border to exported goods. The adjustment could be calculated based on the actual domestic carbon cost incurred during production, or a benchmark such as 'carbon efficient domestic production' or 'average global emissions intensity', compared to the assessed carbon compliance price for production at the destination. An export CBAM would ensure domestic producers' competitiveness in overseas markets are not impacted by differences in the carbon compliance price.

An export CBAM may impose a cost on government. An export CBAM could be implemented in a number of ways, including by issuing or allowing for free allocations for emissions involved in production of the exported goods.

An export CBAM diminishes incentives to reduce carbon emissions and may result in producers diverting product to international markets. Equivalent emissions reductions need to be found elsewhere in the Australian economy for a net change in emissions to be realised.

Box 3 – WTO obligations

Australia is a member of the World Trade Organization (WTO) which comes with a set of commitments to Australia's international trade. The core obligations that Australia must comply with includes the principle of "most-favoured nation", which requires Australia to treat its trading

partners equally, and the principle of "national treatment", which requires Australia to ensure that: (a) for goods, its laws and regulations do not grant advantageous treatment to goods or services produced domestically over those that are imported; and (b) for services, it does not treat domestic services or service suppliers more favourably than like foreign services or service suppliers. Outside the WTO context, Australia also has equivalent international legal obligations with respect to foreign investors and investments in Australia under free trade agreements and bilateral investment treaties. The circumstances of any measure, including its design and implementation details, will have a significant bearing on which specific obligations are relevant.

Question: Is an Australian carbon border adjustment mechanism desirable? If so, which design features should be considered?

3.3 Emissions product standards

Emissions product standards are a form of mandatory product standards (MPS) or regulations that set an upper limit on the emissions intensity of products, including imported products, that can be sold in the Australian market. An example of mandatory product standards is the Minimum Energy Performance Standards, which specify the minimum energy efficiency requirements of appliances sold in Australia.[9] Energy performance standards have been implemented in most countries in the OECD as well as growing economies including China, Brazil, Kenya, and Malaysia (Dubash et al. 2022). MPS introduced for the purpose of mitigating leakage risks would focus on the emissions associated with production, rather than the emissions associated with the use of the product.

MPS can have a role in mitigating leakage risks by levelling the emissions reduction requirements imposed on domestic and international producers. Rather than consumer-driven market initiatives such as voluntary standards or green product labelling, MPS regulate the maximum emissions-intensity of products that can be sold.

MPS may focus on phasing out a particular type of inefficient production or set a benchmark to apply to the overall emissions intensity (see **Box 4**). Transparent data on the production methods or emissions intensity of products is required.

Australia is currently developing a Guarantee of Origin (GO) scheme that is designed to be a product-based emissions accounting framework based on robust internationally aligned emissions accounting methodologies (DCCEEW 2022). MPS could use the GO framework to track emissions and verify that the product meets industrial MPS requirements, streamlining the administrative requirements.

[9] The standards are set out in the *Greenhouse and Energy Minimum Standards Act 2012* and associated determinations, available at: https://www.legislation.gov.au/Series/F2012L02037

MPS do not necessarily directly target the domestic production of goods for export. Facilities producing goods for export would be required to comply with any Australian emissions reduction policies, and where applicable, the international border carbon adjustment policies of trading partners. However, as more jurisdictions adopt standards, there is scope for international alignment on MPS, which increases the emissions reduction outcome and reduces the administrative burden for industries across trading partners.

Box 4: Examples of emissions product standards and related initiatives

The UK consulted on implementing MPS as a possible measure to mitigate carbon leakage alongside a potential UK CBAM in July 2023 (UK Department for Energy Security and Net Zero and HM Treasury 2023). The proposed MPS would set upper limits on the embodied emissions of industrial products, such as steel, cement, and chemicals, with the standard increasing in stringency over time.

The EU and US signed the Global Arrangement on Sustainable Steel and Aluminium in 2021, which removed existing tariffs and commenced negotiations on an agreement to facilitate trade in green steel and aluminium. These negotiations have the potential to set an internationally recognised definition of green steel and green aluminium.

ResponsibleSteel is an international private-sector organisation whose environmental standard forms the basis of SteelZero, which is a collection of organisations that publicly commit to buy and use 50 per cent low emission steel by 2030 and 100 per cent net zero steel by 2050.

The US National Institute of Standards and Technology has established a Low Carbon Cements and Concretes Consortium aimed at addressing measurement and standards needs related to low carbon cement and concrete.

Question: What is the appropriate role for emissions product standards to mitigate carbon leakage?

3.4 Targeted public investment in firms' decarbonisation

Public co-investment mitigates the risk of leakage by targeting funding at low emissions technology and longer-term industry decarbonisation. In contrast to support like free allocations under the Safeguard Mechanism baselines which lowers the immediate financial burden of carbon policies on facilities, such support aims to reduce the long-term carbon exposure, de-risk investment decisions and accelerate technology cost reductions through deployment and learning, thereby helping to facilitate increasingly stringent emissions targets and policies.

There are several opportunities for Australian industry to access funding for low emissions upgrades, including the $600 million STS and $400 million CICEI streams under the PRF. In addition, $400 million will be available under the Industrial Transformation Stream of the PRF. Other avenues for funding or co-funding investment in decarbonisation projects include grant funding through the Australian Renewable Energy Agency, the Clean Energy Finance Corporation, and the Northern Australia Infrastructure Facility.

Financing programs also enable infrastructure that underpins decarbonisation. For example, $20 billion of finance has been committed for grid infrastructure and renewable energy generation projects under the Rewiring the Nation plan (DCCEEW 2022c). Other programs aim to help start zero-emissions energy industries, such as the $2 billion Hydrogen Headstart program (DCCEEW 2022b).

Public co-investment in low-emissions investment can help support competitiveness of Australian industry, including where carbon border measures apply in Australia or other countries. The sustainability and efficiency of public subsidies to industry are an important consideration. Distributional impacts also need to be considered.

Public co-investment is a key part of the transition to net zero emissions economies in many countries (**Box 5**).

Box 5: Recent examples of public investment policies

The United States Government introduced significant support for developing renewable energy, clean hydrogen, and carbon capture technology, along with other opportunities aimed at reducing emissions under the Inflation Reduction Act of 2022 (IRA).[10] The IRA is expected to lead to substantial emissions reductions and job creation in the US, as well as sparking shifts in investment patterns from other countries.

The United Kingdom's Industrial Decarbonisation Strategy includes direct investments in technologies to enable industry to transition to cleaner technologies. The Energy Innovation Programme included £100 million for industrial decarbonisation and carbon capture, use and storage. The UK has also consulted on a £250 million Clean Steel Fund which would support the UK steel sector to move to a decarbonisation pathway compatible with net zero (UK 2021; 2020).

South Korea has committed 30.1 trillion won ($35 billion) in investments under the Green New Deal, focusing on renewable energy, green infrastructure and industry (IEA 2021).

Question: What is the appropriate role for public investment measures to mitigate carbon leakage?

3.5 Multilateral and plurilateral initiatives

In the absence of globally harmonised climate change policy, multilateral and plurilateral initiatives can support efforts to mitigate carbon leakage risks and help reduce the negative impact of measures taken to address carbon leakage. They include engagement between governments in climate and

[10] The IRA was passed by US Congress in 2022, available at: https://www.congress.gov/bill/117th-congress/house-bill/5376

trade institutions, forums, and through other initiatives. Such initiatives are pursued by many governments as complementary rather than primary measures for addressing leakage.

They can and often do address competitiveness and carbon leakage risk in the context of other common goals such an open trading system. Some of these initiatives are aimed at broadening climate change action and harmonising climate ambition and policy, including carbon pricing to reduce the risk of carbon leakage.

Multilateral and plurilateral forums can also harmonise or develop regulatory systems across jurisdictions to increase interoperability, streamline process and maximise effectiveness of policy. For example, common methodologies for measuring and verifying emissions embedded in traded goods, methods to compare and assess climate mitigation policies across jurisdictions, and common product standards, can all support policy approaches including CBAMs and MPS.

Such initiatives can mitigate the risk of product or resource reshuffling caused by border carbon adjustment policies operating in different jurisdictions.

Multilateral and plurilateral forums can also facilitate the sharing of information and development of toolkits that enable decarbonisation in other jurisdictions, which can help facilitate higher policy ambition and support collective action to address carbon leakage risks.

Coordinating efforts amongst countries with different national decarbonisation pathways and specific circumstances is complex and may take time to develop and realise outcomes. For instance, any agreement reached would then be implemented through domestic policy. Providing ongoing support to other countries to decarbonise is also an important aspect of multilateral and plurilateral initiatives. Supporting decarbonisation efforts is particularly important to support sustainable development and trade opportunities for developing nations.

In addition to being a signatory to the Paris Agreement, Australia is a member of several multilateral initiatives and global forums, some of which specifically seek to address the risk of carbon leakage. This includes the Climate Club, which is focused on advancing ambitious and transparent climate mitigation policies and addressing carbon leakage.

Table 1: Multilateral and plurilateral initiatives.

Organisation	Initiative	Purpose
G7	Climate Club	The Climate Club's work program is focused on three pillars: (1) advancing ambitious and transparent climate mitigation policies, (2) transforming industries to accelerate decarbonisation, and (3) boosting international cooperation and partnerships. An early focus includes work to strengthen the measurement and reporting of emissions in the steel and cement sectors and efforts to align emissions intensity estimation methodologies and metrics to support the increased trade of zero or near-zero emissions products between countries.
Coalition of Trade Ministers on Climate	Coalition of Trade Ministers on Climate	The Coalition has 58 Ministers, including the EU Member States, and is a new forum for Trade Ministers to cooperate on climate-related trade policy issues, including potentially carbon leakage.
OECD	Inclusive Forum on Carbon Mitigation Approaches	The Forum aims to help improve the impact of emissions reduction efforts around the world through better data and information sharing, evidence-based mutual learning, and inclusive multilateral dialogue.
	Trade and Environment Committees	Early discussions on carbon leakage have started in the Trade and Environment Committees, as well as the Joint Working Party on Trade and Environment.
WTO	Committee on Trade and Environment and Trade	The Committee provides a forum for WTO members to discuss the trade and climate nexus, share their experiences and consider best practice on trade policies and least trade restrictive approaches.
	Environment Sustainability Structured Discussions (TESSD)	TESSD includes a dedicated forum on trade-related climate measures and is focused on sharing different practices, enhancing transparency and developing common approaches to address decarbonisation through trade-related climate measures, including carbon leakage.

Question: What is the appropriate role for multilateral and plurilateral initiatives to help to mitigate carbon leakage, and the impact of unilateral measures taken to address carbon leakage?

4 Feasibility of policy options

The merits and feasibility of proposed policy options, and their combinations, will be assessed once the nature and extent of leakage risks for Australia is better understood. The assessment will be underpinned by scenario analysis (see section 2).

A range of specific factors will be considered in the assessment of the policy options, as listed in part 3 of the Review's Terms of Reference.

The *principles* underpinning policy options to address carbon leakage and implications for policy design will be considered.

The *potential scope of policy options* will be set out and analysed. This includes the coverage of products and sectors, the emissions scope, and the direction of trade (imports/exports) that the policy applies to.

The *impacts of policy options* on firms' decarbonisation investment decisions, emissions reductions, as well as other economic impacts such as Australia's relative attractiveness for investment in net zero aligned projects.

The feasibility assessment will consider *how policy options could work in practice*. In the case of an Australian CBAM, this includes issues relating to the measurement of emissions embedded in traded goods, carbon costs incurred in origin countries, setting of the adjustment, obligations on importers and exporters, legislative and administrative requirements for establishment and operationalisation, as well as inter-operability with measures taken by others such as the EU CBAM. Adaptability of a CBAM and other policy options to changes in policy and trade context over time will also be considered.

Implications of the policy options for wider trade strategy and priorities are a key consideration. This includes legal consistency with and implications for international trade obligations of an Australian CBAM, including Australia's commitments under the World Trade Organization Agreements and obligations under international law.

The Review will also consider the *interests of Australia's trading partners*, including those of developing countries in our region, and how the policy options could best support reductions in global and regional emissions intensities.

Question: What principles should guide Australian policies to prevent carbon leakage? Should other factors be considered to assess the feasibility of potential policies?

Appendix A – Relevant policies for G20 countries

Country	Share of global		Economy-wide emissions reduction targets 2030 and net zero	Domestic settings	Average price in 2022 (US$)^
	GDP 2021	GHG emissions 2020			
Australia	1.0%	1.2%	43% below 2005 Net zero by 2050	Safeguard mechanism	NA
Argentina	0.7%	0.8%	Limit emissions to 349 Mt CO2e Net zero by 2050	Carbon Tax	$5
Brazil	2.4%	3.1%	50% below 2005 Net zero by 2050	Considering ETS	NA
Canada	1.4%	1.5%	40% to 45% below 2005 Net zero by 2050	Carbon Tax + offset	$40
China	18.5%	25.9%	Reduce CO_2 emissions per unit of GDP by over 65% below 2005 levels Peaking CO_2 before 2030 Carbon neutrality by 2060	ETS	$9
European Union	14.8%	6.2%	55% below 1990 Net zero by 2050	EU ETS	$87
France	2.3%	0.7%	40% below 1990 Net zero by 2050	Carbon Tax +EU ETS	$49[1]
Germany	3.3%	1.4%	65% below 1990 Net zero by 2045	Carbon Tax + EU ETS	$33[2]
India	7.0%	6.7%	Emissions intensity reduction by GDP: 45% below 2005 Net zero by 2070	ETS bill passed	NA
Indonesia	2.4%	3.1%	32% to 43% below BAU Net zero by 2060 or sooner	ETS +	$2[3]

Country	Share of global		Economy-wide emissions reduction targets 2030 and net zero	Domestic settings	Average price in 2022 (US$)^
	GDP 2021	GHG emissions 2020			
Italy	1.9%	0.7%	60% below 1990 Net zero by 2050	EU ETS	$87
Japan	3.8%	2.2%	46% below 2013 Net zero by 2050	Planned ETS + carbon levy	$4[4]
Mexico	1.8%	1.3%	35% to 40% below BAU Net zero by 2050	Carbon Tax + Pilot ETS	$4
Russia	3.1%	3.8%	30% below 1990 Net zero by 2060	No	NA
Saudi Arabia	1.3%	1.5%	19% below 2019 Net zero by 2060	No	NA
South Africa	1.7%	1.1%	Emissions peak 350 to 420 Mt CO_2-e Net zero by 2050	Carbon Tax	$10
South Korea	2.0%	1.3%	40% below 2018 Net zero by 2050	ETS	$18[5]
Türkiye	2.3%	1.0%	41% below BAU Net zero by 2053	No	NA
United Kingdom	1.9%	0.9%	68% below 1990 Net zero by 2050	ETS	$99
United States	15.8%	11.1%	50% to 52% below 2005 Net zero by 2050	Some states	$31[6]

^ Price data from the World Bank Carbon Pricing Dashboard unless indicated otherwise

[1] Carbon tax price

[2] Separate price to EU

[3] 2021 ETS pilot scheme price

[4] Tokyo ETS price

[5] 2022 average ETS auction price

[6] California ETS price

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