The Australian Industry Group

Swings and Roundabouts

the unexpected effects of Carbon Border Adjustments on Australia

August 2021

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About Ai Group

The Australian Industry Group (Ai Group®) is a peak employer organisation representing traditional, innovative and emerging industry sectors. We are a truly national organisation which has been supporting businesses across Australia for more than 140 years.

Ai Group is genuinely representative of Australian industry. Together with partner organisations we represent the interests of more than 60,000 businesses employing more than 1 million staff. Our members are small and large businesses in sectors including manufacturing, construction, engineering, transport & logistics, labour hire, mining services, the defence industry, civil airlines and ICT.

Our vision is for a thriving industry and a prosperous community. We offer our membership strong advocacy and an effective voice at all levels of government underpinned by our respected position of policy leadership and political non-partisanship.

With more than 250 staff and networks of relationships that extend beyond borders (domestic and international) we have the resources and the expertise to meet the changing needs of our membership. We provide the practical information, advice and assistance you need to run your business. Our deep experience of industrial relations and workplace law positions Ai Group as Australia's leading industrial advocate.

We listen and we support our members in facing their challenges by remaining at the cutting edge of policy debate and legislative change. We provide solution-driven advice to address business opportunities and risks.

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Contents

Executive Summary 7

Recommendations 9

1 Why look at carbon border adjustments – and what are they? 11

1.1 Climate and competitiveness 11

1.2 Australia's options 13

1.3 Carbon border adjustments 14

2 Climate policy context 16

2.1 Objectives of competitiveness solutions 16

2.2 Free allocation: strengths and shortcomings 17

2.3 Policy case for a carbon border adjustment 19

2.3.1 Trade objective 19

2.3.2 Incentives objective 20

2.3.3 Financial sustainability objective 21

2.3.4 Adaptability objective 24

3 Legal context 26

3.1 Key treaty commitments 26

3.1.1 Most favoured nation 26

3.1.2 Prohibition on charges beyond scheduled tariffs (and an exception) 26

3.1.3 Rules on application of internal taxation and regulation to imports 27

3.1.4 Defence for environmental policies 27

3.1.5 Restrictions on subsidies 28

3.1.6 Other relevant agreements 28

3.2 Implications for a carbon border adjustment 29

3.2.1 Alternate forms of nondiscrimination for import adjustment 29

3.2.2 Products and the point of liability in domestic policy and adjustments 32

3.3 Adjustment for policies other than explicit carbon prices 33

3.4 Interaction of carbon border adjustments and anti-dumping 33

3.5 Evolution of trade rules 34

3.6 Conclusion 35

4 Practical implementation context 36

4.1 Administrative costs 36

4.1.1 Using domestic data 36

4.1.2 Using relevance thresholds 37

4.1.3 Using existing processes....38
4.2 Transitional risks and stockpiling....40
5 International policy context....42
5.1 Impacts on trading partners....42
5.1.1 Comparing impacts on profits of a hypothetical carbon border adjustment....42
5.1.2 Scenario comparison: core assumptions....44
5.1.3 Scenario comparison: what if the EU supplier gets cleaner?....45
5.1.4 Scenario comparison: what if the EU supplier gets dirtier?....46
5.1.5 Scenario comparison: what if the EUETS halves its shielding?....47
5.1.6 Introduction of EU CBAM....47
5.1.7 Interaction of multiple economies' carbon border adjustments....48
6 Assessing proposed international carbon border adjustment policies....49
6.1 Carbon border adjustment by Australia's major trading partners....49
6.2 EU CBAM in detail....52
6.2.1 Form....52
6.2.2 Scope of products and emissions covered....53
6.2.3 Scope of economies affected....54
6.2.4 Approach to assessing emissions intensity....55
6.2.5 Approach to carbon constraints in other economies....55
6.2.6 Approach to EU free allocation....56
6.3 EU CBAM impacts on Australia....57
6.3.1 Covered Australian exports....57
6.3.2 Modelling CBAM impacts....59
6.3.3 Impacts on Australian aluminium exports....61
6.3.4 Impacts on Australian steel exports....64
6.3.5 Overall impacts of CBAM as proposed on Australian trade....66
6.4 Impacts of other potential border adjustments on Australia....67
6.4.1 United States – Polluter Import Fee....68
6.4.2 Climate policy and energy transition impacts on Australian trade....70
Glossary....71

Figures

Figure 1 - Conceptual relationship between carbon prices and product prices 13
Figure 2 - Comparison of product profitability under different Australian climate policies – core assumptions 44
Figure 3 - Comparison of product profitability under different Australian climate policies – cleaner EU supplier 45
Figure 4 - Comparison of product profitability under different Australian climate policies – dirtier EU supplier 46
Figure 5 - Comparison of product profitability under different Australian climate policies – EU halves shielding.....47
Figure 6 - Share of Australian 2018 fossil exports going to economies committed to net zero emissions by midcentury.....70

Tables

Table 1 - Summary comparison of free allocation and carbon border adjustment 16
Table 2 Comparison of net carbon budget cost of competitiveness approaches 22
Table 3 - Carbon price impacts are diluted in higher value added products 23
Table 4 - Tests for sector relevance of competitiveness measures.....37
Table 5 - Australian exports to Europe covered by current CBAM proposal 57
Table 6 - Major Australian exports to EU not covered by current CBAM proposal.....58
Table 7 - Impacts on EU aluminium prices 61
Table 8 - Impacts on aluminium supplier costs 61
Table 9 - Impacts on aluminium supplier profitability 62
Table 10 - Absolute value of profit impact on Australian aluminium trade with EU.....63
Table 11 - Impacts on EU steel prices 64
Table 12 - Impacts on steel supplier costs 64
Table 13 - Impacts on steel supplier profitability 65
Table 14 - Absolute value of profit impact on Australian steel trade with EU 65
Table 15 - Australian exports to the United States potentially covered by the proposed Polluter Import Fee 69

Executive Summary

Too often climate policy discussion has been dominated by fantasy scenarios: either one where a single country acts alone; or one where the whole world moves in perfect harmony to a globally consistent carbon pricing system. Neither scenario matches the messy multi-speed reality. The Paris Agreement reflects significant action worldwide that will intensify over time. But it also implies a patchwork world with widely varying national and regional policies. Any climate policy is going to have to work effectively within this context, managing risks to national trade competitiveness while lowering net national emissions. That challenge demands solutions that are environmentally effective, economically sound and practically implementable.

A carbon border adjustment is a way of ensuring that a nation's policies to reduce greenhouse gas emissions do not unfairly disadvantage their industries. If one economy imposes a carbon cost on local producers, a carbon border adjustment would also impose it on imports and potentially rebate it on exports – ensuring that trade competitiveness is not affected by climate policy differences between countries.

Carbon border adjustments are becoming hotly discussed in Australia because of the moves by the European Union to implement one, the potential that other major economies will follow, and the perception that Australian trade competitiveness will be threatened unless we adopt more stringent domestic emissions constraints.

This paper has three purposes:

1. Understanding the impacts on Australia of the proposed EU Carbon Border Adjustment Mechanism (EU CBAM) and similar policies being considered elsewhere;
2. Understanding the broader economic, legal, diplomatic and practical context to border adjustments, without which we can't understand the EU proposal; and
3. Illustrating that context for an Australian audience by applying it to a hypothetical Australian border adjustment.

The findings may be surprising.

Australia appears to have little to fear in the medium term from actually implementable border adjustments by the EU or anyone else. Little of our trade with Europe is affected – around 0.25% by value – and the direct impact on profitability of covered exports would be broadly neutral. A carbon border adjustment designed to comply with international trade commitments, as Europe has promised, must be non-discriminatory and not operate as a form of trade protection.

A properly designed carbon border adjustment would equalize, not penalize, avoiding disadvantage to exporters from any nation versus the scenario where no carbon cost was implemented at all. The emerging EU CBAM design is pragmatic and close to achieving this. While close attention is needed to fair implementation and indirect impacts, trade partners should be able to be reassured if transparency and dialogue are maintained.

Border adjustments by other major trade partners could impact more trade, but would likely also have a neutral effect at first. In the longer term some of our industries will lose export competitiveness unless they have a basis to invest in low, zero and negative-emissions production. However, the biggest climate-related risk to current Australian trade is not likely to be border adjustments, but the impact of our trade partners' emissions reduction policies and energy transitions on their demand for our thermal coal, coking coal and gas exports.

Diversification into exports related to clean energy is a sensible hedge.

Carbon border adjustment may be cheaper, more effective, and more sustainable over the long term than alternative approaches to trade competitiveness in climate policy.

A carbon border adjustment could be designed to achieve policy objectives at least as well as the widely used free allocation approach that underlay Australia's former Jobs and Competitiveness Program (JCP):

- Trade – can be effective in avoiding distortions for products to which it applies.
- Abatement incentives – can encourage emissions reduction by domestically oriented producers and by consumers. With careful design, can also drive exporter abatement.
- Financial sustainability – can be much cheaper for national fiscal and carbon budgets. An Australian adjustment could be 40% cheaper than the former JCP.
- Adaptability – can be evolved more easily to suit changing policies overseas.

A carbon border adjustment designed to make maximum use of existing emissions information and customs processes would be practical to implement. While it would need hard work and government investment, it need not increase administrative burdens for businesses.

These advantages appear large. If confirmed by further analysis and practical experience with the EU CBAM, more economies can be expected to pursue carbon border adjustments. **Australia should:**

- **pay close attention to the development of carbon border adjustments overseas;**
- **seek to improve these overseas adjustments and win fair treatment for Australian businesses, including through data recognition agreements; and**
- **examine border adjustments alongside alternative options as we develop plans for a prosperous net zero emissions future.**

The remainder of this paper is structured as follows:

Chapter 1 *(p 11)* introduces the problem of trade competitiveness in climate policy.

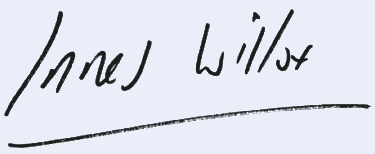
Chapter 2 *(p 16)* evaluates the economic and policy strengths of two broad approaches to trade competitiveness: free allocation of emissions rights and carbon border adjustment.

Chapter 3 *(p 26)* explores the trade law context – whether a carbon border adjustment can be compatible with World Trade Organisation obligations, and how.

Chapter 4 *(p 36)* looks at the practical context to implementing a carbon border adjustment, including whether the necessary information can be acquired without high costs.

Chapter 5 *(p 42)* considers the international trade policy context and the potential impacts of a carbon border adjustment on competitiveness.

Chapter 6 *(p 49)* examines the proposed EU CBAM in the light of all this, assesses potential impacts on Australia, and compares these to the impacts of other current and potential overseas climate policies.



Innes Willox

Chief Executive

Australian Industry Group

Recommendations

Australia should pay close attention to the development of carbon border adjustments overseas; seek to improve these overseas adjustments and win fair treatment for Australian businesses, including through data recognition agreements; and examine border adjustments alongside alternative options as we develop plans for a prosperous net zero emissions future.

Watch EU CBAM and learn

Australian policy makers, industry and other stakeholders should closely observe the EU CBAM's development and implementation, both to understand its impacts better than the early estimates presented in this paper, and to learn from it to inform consideration of Australia's future policy options. Flow-on impacts on global markets and the Australian market also need attention.

Advocate that carbon border adjustments be fair, workable and WTO-consistent

There are good reasons to think CBAMs need not be a threat to the global trading order in general or to Australia in particular. Australia should encourage all countries considering CBAMs to ensure their design and implementation is consistent with WTO and bilateral trade commitments and moderates administrative costs. We should encourage the EU to make their CBAM more effective and equitable, including by completing the phaseout of free allocation and ensuring that competing materials are covered.

Negotiate carbon border adjustment data recognition agreements

Australian businesses will be disadvantaged if their emissions data cannot be validated by the EU. However we already have globally robust systems for reporting and tracking emissions across our economy; if any country is able to get its data and sources of validation accepted, we should. Australia should enter negotiations with the EU as soon as practical to:

- win recognition for emissions data reported through the National Greenhouse and Energy Reporting System; and
- establish arrangements for sharing or confirming that data upon request from industry.

Support WTO reform regarding carbon border adjustments

Australia should explore and lend support to the reforms and initiatives discussed at section 3.5, which would make it easier for carbon border adjustments to be practical, effective and WTO-compliant:

- Resolving the issue of products versus production processes;
- Clarifying the scope for the practicality of data gathering to be taken into account in use of Art XX defences; and
- Establishing common databases, methodologies and/or institutions for aligning and adjudicating adjustments.

Reduce Australian emissions and examine Australian carbon border adjustment options

Achieving net zero emissions by 2050 is in Australia's national interest, both as our necessary contribution to a successful global effort to limit dangerous climate change, and because our industries will become uncompetitive over the longer term if they are unable to invest in cleaner production technologies. We need effective solutions to the competitiveness challenges involved in all this. Carbon border adjustments should be fully examined and compared to alternative competitiveness options.

Any future Australian carbon border adjustment should be:

- Non-discriminatory and consistent with our WTO, plurilateral and bilateral trade commitments;
- Based on domestic emissions data by default, with options for acceptance of validated international data;
- Ignore overseas policy by default, with options for acceptance of validated international data on carbon prices actually paid;
- Based on existing customs data and systems;
- Applied to exports as well as imports, with full disclosure of the export rebates; and
- Based on reliably observable out-of-pocket cost impacts of future domestic policies, such as an evolved Safeguard Mechanism.

1 Why look at carbon border adjustments – and what are they?

A carbon border adjustment is a way of ensuring that a nation's policies to reduce greenhouse gas emissions do not unfairly disadvantage their industries. If an economy imposes a carbon cost on local producers, a carbon border adjustment would impose it on imports and potentially rebate it on exports – ensuring that trade competitiveness is not affected by climate policy differences between countries. There are other options, but a carbon border adjustment may be cheaper, more effective, and more sustainable over the long term.

Carbon border adjustments are becoming hotly discussed in Australia because of the moves by the European Union to implement one, the potential that other major economies will follow, and the perception that Australian trade competitiveness will be threatened if this happens and we do not impose more stringent domestic emissions constraints.

For an Australian audience it is easiest to understand carbon border adjustments through Australia's own climate policy context.

1.1 Climate and competitiveness

The long term goals of the Paris Agreement, which are strongly in Australia's national interest, are to restrain global warming to well below 2°C above preindustrial levels, and pursue efforts to keep it below 1.5°C. This entails ongoing deep global emissions reductions leading to net zero emissions by around 2050 (for 1.5°C) or 2070 (for 2°C).[1]

Australian climate policy needs to become more active and ambitious over time to play our full part in this vital global effort. But many businesses, seeing uneven climate policies around the world, have been rightly concerned about the risk that Australian action could damage the competitiveness of local industry. That could cost Australia investment and jobs while leaving global emissions unchanged or even increased, if emitting activities shift to countries with weak policies.

Similar concerns are expressed by businesses in every economy. The Australian Climate Roundtable, a collaboration between leading business, environmental, farmer, investor, social welfare and union groups, including Ai Group, has nominated trade competitiveness as one of its key principles for good climate policy:

[1] See Intergovernmental Panel on Climate Change, *Special Report on Global Warming of 1.5°C – Summary for Policymakers* (2019) figure SPM.3A https://www.ipcc.ch/sr15/chapter/spm/

> *Policy should prevent the unnecessary loss of competitiveness by Australia's trade exposed industries and net increases in global emissions that might otherwise occur due to the uneven international application of climate policies.*[2]

Trade competitiveness is a serious issue that must be addressed for an economically and politically sustainable climate policy. While many factors impact industry competitiveness, and energy or carbon costs will not be determinative for all businesses, a significant and sustained differential in the carbon constraints faced by Australian and overseas businesses can lead to a loss of investment and activity without improving global emissions. This arises because trade exposed industries generally have to accept prices for their products that are shaped by global competition and have no ability to pass on cost increases that are not reflected in global markets.

Figure 1 illustrates the danger with four simple and abstract scenarios.

- **Scenario A – Universal Carbon Price.** In a world with a universal carbon price, selling prices for emissions-intensive products rise in line with the carbon price level as long as there are no cost-competitive lower-emissions substitutes; efficient producers can recover their costs, though higher prices may reduce demand for some products.
- **Scenario B – Substitutable Products.** If low- or zero-emissions substitutes become available for a given product, their price serves as a limit on how far carbon costs can push up the price that customers will pay for an emissions-intensive product. Producers face competitive risks if they do not switch technologies – potentially painful, but fair.
- **Scenario C – Lowered Intensity.** Over time costs and carbon intensities are not static; innovation may reduce the carbon intensity of a given product, weakening the impact of carbon prices on product prices. Producers should be able to recover their costs if they keep up with the state of the art.
- **Scenario D – Pricing In One Country.** If a carbon price is not universal, but applied in a minority of producing countries, prices for internationally traded products will not rise in line with carbon prices. Impacted producers will have to absorb carbon costs through reduced profitability, and production will shift to economies with lower or no carbon costs.

Too often climate policy discussion has been dominated by fantasy scenarios: either one where a single country acts alone; or one where the whole world moves in perfect harmony to a globally consistent carbon pricing system. Neither of these abstractions bears much relationship to the messy multi-speed reality. The Paris Agreement reflects significant action worldwide that will intensify over time. But it also implies a patchwork world with widely varying national and regional policies. Any climate policy is going to have to work effectively within this context, managing the risks to national trade competitiveness even while lowering net national emissions. We need solutions that are environmentally effective, economically sound and practically implementable.

[2] Australian Climate Roundtable, *Australian Climate Roundtable: Joint Principles For Climate Policy* (November 2020) 3 https://www.australianclimateroundtable.org.au/wp-content/uploads/2020/11/Climate_roundtable_joint_principles-Updated_November_2020.pdf.

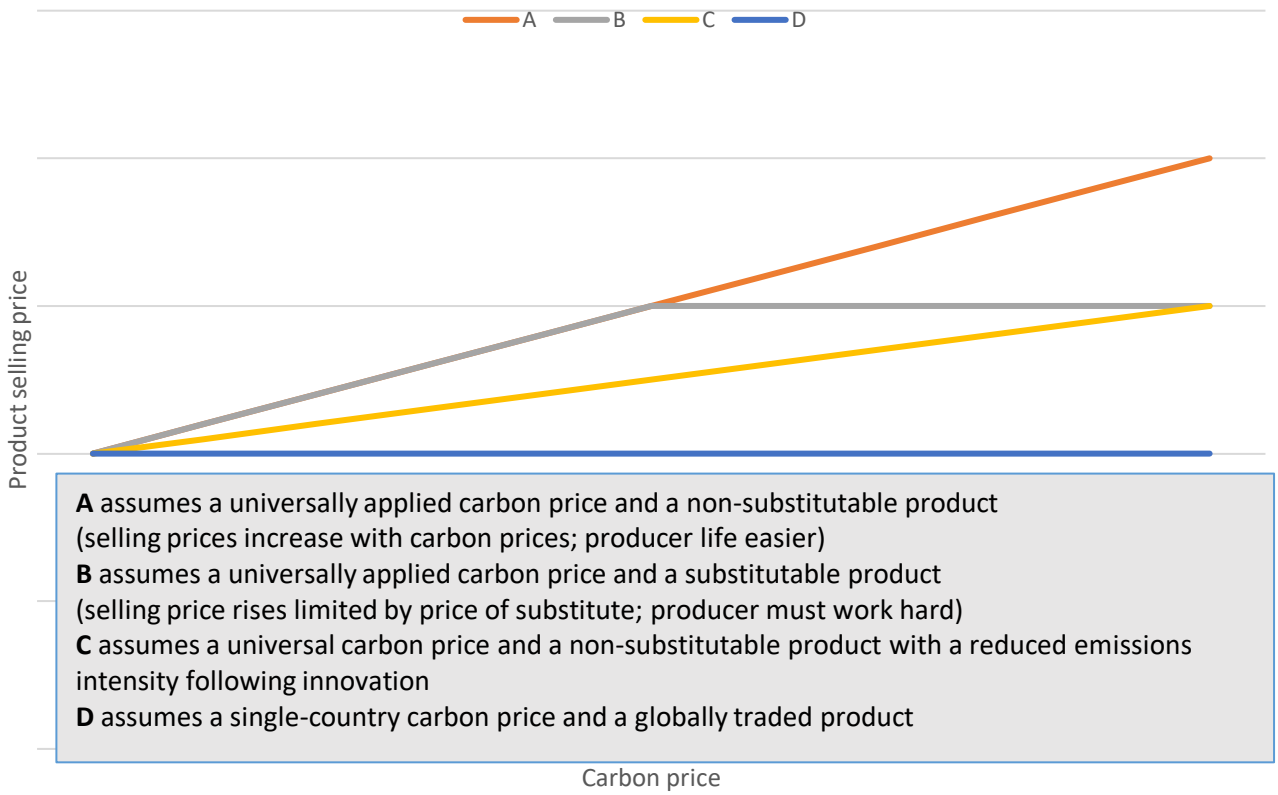


Figure 1 - Conceptual relationship between carbon prices and product prices

1.2 Australia's options

Australia's climate policy context is a useful starting point for Australian audiences to consider the issues that are shaping competitiveness policies overseas like the EU CBAM.

More ambitious long term emissions commitments are being considered or already in place in many major regional, national and state economies, including in Australia. Policies to pursue these goals are being developed. That makes it timely to consider the options for dealing with trade competitiveness.

There are many forms of climate policy. This includes explicit carbon prices such as carbon taxes; emissions trading schemes; and hybrids.

Other policies put a more indirect or implicit value on carbon, such as:

- regulation of emissions standards;
- mandated closures and product phaseouts;
- public procurement;
- subsidies;
- clean energy obligations and related trading schemes; and
- hybrids.

All meaningful policies have costs and potential competitiveness impacts for someone, even if costs are not explicit and even if they produce overall benefits. For the sake of simplicity, this paper will focus on how to address competitiveness under an explicit carbon price. The analysis would be relevant to other more plausible policy models, including an evolved Safeguard Mechanism. Without a meaningful carbon constraint competitiveness measures are unnecessary, and may contravene our trade commitments (see Chapter 3).

The Federal Government's current Safeguard Mechanism sets emissions baselines and benchmarks that facilities with large direct emissions must stay below. While it has had little impact to date, it is often discussed as a potential future tool for driving emissions reductions. The mechanics of this are beyond the scope of this paper. However, a more aggressive Safeguard has the potential to impact Emissions Intensive Trade Exposed (EITE) businesses over time. The Safeguard does not presently have any method of dealing with this, beyond the fact that current loose baselines mean little immediate risk of impacts on most emitters and that access to domestic carbon offsets could reduce compliance costs for all emitters. In future, access to international carbon units might also help contain costs, though demand for and prices of these units may rise substantially as major economies pursue net zero emissions by mid-century.

A familiar previous approach to EITEs under the 2012-15 Carbon Pricing Mechanism was the Jobs and Competitiveness Program (JCP). JCP was an "output-based updating allocation" that issued free emissions permits each year to at-risk activities based on their production. In effect, government compensated companies for the gap between Line A and Line D in Figure 1 above. This system is well understood and, while established with considerable effort, worked reasonably well in terms of administrative smoothness and effective shielding for covered activities. The same concept could potentially be applied to an evolved Safeguard. However, JCP was not perfect:

- It was costly, accounting for about 30% of the budget cost of the former carbon pricing package at the outset and potentially much more over the longer term;
- The rate of allocation reduced according to a fairly arbitrary 1.3 per cent annual 'decay rate', subject to a process of future reviews that would have been difficult to conduct in practice; and
- Many trade exposed activities were excluded from coverage on the basis that they were not sufficiently emissions intensive.

A future implementation of the same free allocation concept could try to alleviate these shortcomings. And given the hard work required to establish the approach and the EITE activity definitions that underpin it, we should not lightly throw JCP aside. Indeed, JCP lives on today in the exemption arrangements under the Federal Renewable Energy Target. But it is also worth investigating whether there are better alternatives.

1.3 Carbon border adjustments

A carbon border adjustment is one such alternative. The idea is to rebate carbon costs on exports and impose them on imports. Local producers would be fully subject to Australia's domestic climate policy; when they export they would receive a rebate in cash or permits based on the volume of exports and a product-specific emissions intensity factor (for which there are several design options, discussed further below). Importers of relevant products would have to pay cash or permits based on the volume of imports and the same product-specific intensity factors. Since all potential suppliers of relevant products would face carbon costs, product prices would rise to reflect those costs, consistent with Scenarios A-C in Figure 1 above, depending on whether substitutes or innovation were available.

Carbon border adjustments have been long discussed in climate policy, but rarely implemented – though border adjustments are used worldwide in the context of value added taxes like Australia's Goods and Services Tax (GST). Essentially carbon border adjustments differ from free allocation by focusing trade exposure measures on the border, rather than on the point of production within Australia. Three different reasons for pursuing carbon border adjustments are sometimes offered; a carbon border adjustment design might look very different depending on which of these issues it prioritises:

1. **Preventing an unfair loss of competitiveness**. If all suppliers to the domestic market face a carbon cost, and exporters do not, all suppliers can recover their carbon costs so long as they are around average emissions intensity. To the extent this is pursued and achieved, the adjusting economy's trade exposed industry is no less (nor more) internationally competitive after the imposition of a carbon cost than it was before.
2. **Encouraging consumption efficiency**. If suppliers can recover their carbon costs from consumers, consumers have a financial incentive to choose products with lower embodied emissions. To the extent this is pursued and achieved, policy will produce an abatement pathway that is closer to the theoretical least-cost ideal.
3. **Encouraging climate policy in other countries**. A carbon border adjustment could be used to encourage other countries to strengthen their climate policies in order to reduce the exposure of their exporting industries to such adjustments. To the extent this is pursued and agreed, the world as a whole could more closely approximate the theoretical ideal of uniform concerted action and burden-sharing.

However not all these goals may be achievable or compatible in a single practical policy design.

As the remainder of this paper will establish, the strongest potential benefits of a carbon border adjustment are that it could meet the competitiveness challenge at least as effectively as free allocation while providing more incentives for abatement and operating at a lower cost to public fiscal and carbon budgets. Free allocation may be a cheaper solution because rebates are only required on exports, while imports raise revenue; this is explored further below. Cheapness could allow it to offer coverage that is higher, wider or longer lasting than free allocation at the same cost. Alternately, savings on the competitiveness element of policy could leave more resources available for households, broad-based tax reform, investment in emissions reduction, or other purposes. At a minimum, these potential benefits make carbon border adjustments worth exploring further.

By contrast, influencing other countries may be possible only to a limited extent. A mid-sized economy like Australia has little ability to exercise economic coercion through a hypothetical border adjustment. A massive economy like the European Union has greater potential power to exert, but as will be considered in Chapter 3, an adjustment that discriminates between countries with and without climate policies may also be more legally complex to implement. The practical scope for international influence may not be from coercion, but from the power of positive example if a well-designed and well-implemented carbon border adjustment can be operated successfully to enable stronger climate policy without loss of competitiveness.

The concept of a carbon border adjustment has often attracted objections that it would be counterproductive, illegal and impractical. As the following chapters will explore, there is now reason to believe that each of these objections can be fully overcome.

2 Climate policy context

A carbon border adjustment could be designed to achieve climate policy objectives at least as well as free allocation:

- Trade – effective in avoiding distortions for products to which it applies.
- Abatement incentives – encourages emissions reduction by domestically oriented producers and by consumers. With careful design, can support emissions reduction by export-oriented producers too.
- Financial sustainability – substantially more affordable than JCP.
- Adaptability – can be evolved more easily than JCP to suit changing policies overseas.

Table 1 - Summary comparison of free allocation and carbon border adjustment

	Free allocation		**Carbon border adjustment**	
Trade neutrality	OK. Mostly effective in near term for limited covered activities		Good. Effective and able to offer wider coverage	
Abatement incentives	OK. Full incentive for abatement by domestic production, no incentive for abatement in domestic consumption of trade-exposed products		Good. Full incentive for abatement by domestic production (especially if export rebate is 'sticky'); full incentive for consumption shifts	
Financial sustainability	OK. Expense initially manageable but substantial and growing		Good. Can deliver higher shielding at 30%-40% saving on JCP	
Adaptability	Bad. Fraught review process and crude adjustment options		OK. Greater options to adjust for changing circumstances	

2.1 Objectives of competitiveness solutions

Any approach to the problem of trade exposure would need to fulfil several goals to be a worthwhile part of climate policy:

- Prevent the introduction of national climate policy, in the context of uneven international policies, from worsening **trade distortions** (i.e. prevent both 'carbon leakage' and the unnecessary loss of national economic activity that would be viable under a uniform global carbon constraint);

- Maintain **incentives** to efficiently reduce emissions, since simply shielding an industry from change will undermine its longer term competitiveness;
- Operate at a sustainable **cost**, since there are many demands on resources and carbon constraints will grow tighter over time; and
- Be **adaptable** to the changing international context, where countries' climate policies and emissions profiles shift over time.

Australia's context is a useful starting point. Australia already has a fully fleshed out approach to addressing the trade competitiveness impact of climate policy – the JCP, described at section 1.2 above. Other economies have similar approaches, such as the European Union Emissions Trading System (EU ETS) Carbon Leakage List.[3] A carbon border adjustment would need to meet these goals at least as well as JCP to be worth considering. Both approaches are considered in depth below.

2.2 Free allocation: strengths and shortcomings

JCP, which lives on as the basis for an exemption from direct costs associated with the Renewable Energy Target, was very important to trade exposed industries. It was implemented successfully and performed well during the short period of its operation.

An 'output-based updating allocation' like JCP reduces trade competitiveness impacts by giving free permits to vulnerable domestic producers on the basis of their entire actual production (whether for export or domestic use), a deemed emissions intensity of production, and an allocation rate (set either at 100%, for full shielding, or something less for partial shielding). Allocation to a company producing a relevant good is:

$$Allocation = Production_{(EITE\ actual)} \times Intensity_{(EITE\ deemed)} \times Rate$$

Because producers receive an allocation based on each unit of production, they cannot reduce their unit carbon cost by reducing production. But because the allocation is based on a deemed emissions intensity per unit – such as a historic industry average or a best practice benchmark – companies have an incentive to make investments that improve the carbon intensity of their own production, reducing their carbon costs but not the free allocation they receive per unit.

Free allocation has a cost to government in foregone revenue (and to everyone who might otherwise have benefited from the use of that revenue), and could be difficult to sustain in the context of a shrinking cap on emissions and growing emissions-intensive sectors. During the period of the carbon tax JCP allocation accounted for about 30% of units allocated and spending (or revenue foregone).

The JCP made the following design choices in implementing an output-based updating allocation:

- Moderately EITE businesses were defined as those conducting activities with a trade share of greater than 10% and an emissions intensity above 1000 tonnes CO2-e per $1 million in revenue, or 3000 tonnes CO2-e per $1 million value added;
- Highly EITE businesses were those above intensity thresholds of 2000 tonnes per $1 million revenue, or 6000 tonnes per $1 million value added.

[3] See https://ec.europa.eu/clima/policies/ets/allowances/leakage_en.

- Allocations were based on industry-wide averages using data from 2004-05 to 2008-09 (for revenue and value add) and from 2006-07 and 2007-08 (for emissions);
- Activity definitions were developed for more than fifty EITE activities, from aluminium smelting to animal fat rendering. These specified the boundaries of qualifying activities and incorporated audited industry wide data for each activity.
- To make JCP more affordable, EITEs did not receive a full allocation of the product of their production and historic industry average emissions intensity. Instead, an allocation rate was introduced to the calculation, starting at 66% for moderate EITEs and 94.5% for high EITEs.
- To further maintain affordability over time, the allocation rate for each activity would decline by a 'decay rate' of 1.3% per annum. This number may have been derived from economy-wide historic reductions in emissions intensity, though for any given sector or activity it was fairly arbitrary.
- The Productivity Commission (PC) was tasked with conducting regular reviews of JCP, referring to matters including the extent of carbon constraints experienced by relevant international competitors for each activity. The PC would recommend to the Minister whether to maintain, reduce or increase the rate of EITE allocation for each activity.

It is worth noting that the development of JCP raised concerns within government that it could be considered a subsidy to domestic production that contravened Australia's trade commitments, and potentially subject to challenge by our trading partners. This fear was not groundless, and the legal context is considered further below. The design tried to minimise this through less than full average allocation, a rigorous data basis and transparent operation.

Overall JCP was well implemented, generally accepted by and familiar to intense emitters, and successful in its immediate goal of preventing a substantial climate policy-induced loss of competitiveness by covered industries.[4] However, it was not perfect in coverage, the cost was substantial, and difficult questions were clearly going to arise over time.

Giving the PC a role in advising on when and how to cut, lift or freeze the rate of allocation for each activity seemed rational.

But in practice the task of assessing the nature of carbon constraints in the home economies of relevant competitors for each industry would have been extremely difficult. The blunt nature of the available response – changes to the rate of allocation for a whole activity, with no differentiation possible – made it very likely that over time the scheme would see either over-allocation or under-allocation. The 1.3% decay rate was little solution to this, being too slow to constrain likely allocation growth and too arbitrary to reflect sectoral developments. And the total expense of the program (in terms of permit allocation or foregone revenue) was likely to grow harder to manage over time given a falling cap.

For all its strengths, the JCP was likely to see increasing challenges to the competitiveness of trade exposed industries over time.

[4] Noting that trade exposed industries in general were under severe competitive pressure during this period for the unrelated reason of a historically elevated exchange rate.

2.3 Policy case for a carbon border adjustment

The core requirements for trade exposure policy at the outset of this chapter (effective prevention of trade distortions, preservation of abatement incentives, financial sustainability, adaptability) can be delivered at least as well as free allocation approaches like the JCP program , and at a lower cost to public fiscal and carbon budgets, by a realistic and implementable carbon border adjustment. This can be achieved in part by building on existing frameworks, including EITE definitions and the broader production-based emissions accounting approach that all economies use.

A carbon border adjustment can come in two parts:

1. Imposition of carbon costs on liable imports. This could be through a cash charge or a requirement to surrender emissions permits.
2. A rebate of carbon costs for eligible exports. This could be in cash or emissions permits, depending on the design of the policy being adjusted for. It can be considered as a variation on the JCP free allocation concept, but one that only applies to the exported fraction of production from an eligible activity.

An economy might do one adjustment without doing the other. For instance, the proposed EU CBAM involves only an import adjustment. For an economy like Australia, where emissions intensive products are a larger share of total exports, both import and export adjustments may be necessary to have a viable alternative to free allocation.

Both the outgoing rebate and the incoming impost require decisions on: the scope of eligible activities; the basis for assessing the emissions intensity of activities; and the rate of rebate or impost. There are strong reasons to make these settings as nearly symmetrical as possible across both elements: to avoid distorting trade or emissions; to simplify implementation; and to ensure compliance with international trade law.

Consider a combined import and export adjustment that applied only to the same goods previously covered by JCP; used domestic average emissions intensities by default; and adjusted at 100% of the relevant default value. How would such an adjustment perform against the objectives outlined above?

2.3.1 Trade objective

The effect of an inward carbon border adjustment is to allow both local producers and importers supplying the domestic market to pass through carbon costs to domestic consumers, since all potential suppliers will face those costs. Domestic prices for carbon intensive products would rise to reflect the prevailing carbon intensity of suppliers to the market.

Meanwhile, an export adjustment reduces or eliminates the carbon costs associated with production for export, which producers would otherwise be unable to recover in international product markets where prices do not reflect carbon costs.

Depending on the rate of rebate or impost, a carbon border adjustment can therefore prevent the imposition of a national carbon price from altering the competitiveness of exporters and import competitors, compared to a scenario without a carbon price. Whether it is superior to free allocation policies like JCP in this respect depends on the ability to sustain an equal or fuller rate over time.

2.3.2 Incentives objective

Technology and market developments should provide increasingly practical options to reduce or eliminate emissions in trade exposed industries over time, whether through cleaner energy supplies (e.g. renewables); techniques to reduce direct emissions from activities (e.g. adding carbon capture and storage to industrial processes); or substitutes for emissions intensive products (e.g. recycled metals for primary metals). Adoption of these will require adequate technical performance and cost competitiveness, as well as favourable investment conditions.[5] Emissions policy can potentially accelerate or hinder adoption.

A carbon border adjustment can provide abatement incentives for domestic producers and domestic consumers. Incentives for overseas producers are possible but are likely to be muffled in a practical design, at least initially and perhaps permanently (see below in this section).

Domestic production for the domestic market faces a full carbon price signal. There would be no trade-policy requirement for free allocation to domestically-oriented production (though a baseline and credit approach might be adopted for non-trade reasons). While domestic prices will reflect carbon costs, producers who cut their emissions can increase profits or reduce their selling prices.

Domestic production for export can also face a full price signal, as long as the emissions intensity on which rebates are based has a degree of 'stickiness' or independence from an exporter's own performance. Comparable to the JCP, a carbon border adjustment can incentivise reduced emissions intensity without discouraging production by pegging the export rebate to a 'sticky' metric that is independent of an individual producer's decisions – for instance the average emissions intensity of the relevant domestic industry, or (a larger data challenge) of the global sector of which it is part. Failing to reduce emissions intensity incurs an opportunity cost through the inability to sell the emissions rights that could have been freed up.

Consumers have a stronger incentive to reduce emissions under a carbon border adjustment than under free allocation. Carbon costs may show up rapidly in prices for non-traded goods like electricity, subject to competition from domestic low- and zero-carbon options. But in the absence of a carbon border adjustment, selling prices for traded goods will only reflect carbon costs when a sufficient portion of global producers face such costs. This may take many years given the diversity of international policies, the different speeds at which relevant economies are moving to reduce emissions, and the frequency with which current climate policies around the world minimise out-of-pocket costs to trade exposed industries overseas through free allocation.

Under a carbon border adjustment selling prices for emissions intensive goods immediately reflect carbon costs, because all potential suppliers face similar costs. Consumers have an incentive to shift to less intensive products. For instance, timber products may increase their share of the market for residential construction materials. It is difficult to tell how significant these consumption incentives may be; but in the realm of non-traded goods, consumer response to electricity price movements has proved much larger than many anticipated. In any case, consumer incentives are clearly much bigger with an adjustment than without.

Overseas producers could have an incentive to reduce their emissions intensity, depending on how an import adjustment is set. If the impost is calibrated against the actual emissions intensity of the overseas producer, reducing their emissions allows them to either increase profits or reduce selling prices in the domestic market in pursuit of greater market share. However, judging the individual emissions intensity of importers is likely to

[5] Economies of scale and learning effects can mean that greater adoption of itself drives costs lower, as we have seen with solar photovoltaics. Prospects for investment depend on much more than emissions policy. For instance, global steelmaking combines substantial overcapacity with a relatively flat cost curve, limiting profitability and discouraging new market-driven investment.

be very difficult, verging on impractical, in the absence of much more elaborate and trusted data frameworks than are available today. If the import impost is instead pegged to more easily established international or domestic industry-wide levels, a carbon border adjustment does not give individual importers an incentive to reduce emissions.

However, any one economy's climate policy may never be more than a small influence on producers in other economies, to whom the policies of their own governments are much more important. Very large economies may have greater influence, while medium sized economies like Australia have limited scope to exert coercion. The Paris Agreement requires all signatories to make and pursue successive pledges on the limitation and reduction of the emissions they produce. Helping nations better meet their own commitments may be the most practical focus for border adjustments.

2.3.3 Financial sustainability objective

Free allocation policies are expensive. JCP came at a significant cost to the financial Budget and the carbon budget: government forewent revenue by handing out the scarce and valuable resource of emissions rights. In 2014-15 JCP would have required an allocation of nearly 130 million permits, with a value of $3.2 billion, out of a total carbon budget of 331 million permits and $9.8 billion. Over time this cost would have changed to reflect the level of all EITE production, the level of the carbon price, the gradual 1.3% decay in the allocation rate, and any changes recommended by the PC. Growing production from sectors like LNG could have resulted in the JCP consuming an ever-larger share of a more aggressively declining national carbon budget. This could have forced difficult decisions between EITE assistance, household assistance, and calls on the broader financial Budget.

A carbon border adjustment would have a much lower impact on both the financial Budget and the carbon budget. Whereas the permit requirement for a free allocation approach depends on the allocation rate and the whole of domestic EITE production, the net permit requirement for a combined inward-and-outward carbon border adjustment is:

$$Requirement = (Exports_{EITE\ actual} \times Intensity_{EITE\ deemed}) - (Imports_{EITE\ actual} \times Intensity_{EITE\ deemed})$$

If an export adjustment is made, it is only the exported fraction of domestic production that requires a free allocation. If an import adjustment is made, no free allocation is needed for domestic production that is domestically consumed, and the financial and/or carbon budgets are improved by the surrender of cash and/or permits by importers.

The savings from a carbon border adjustment compared to JCP will differ for each trade exposed industry, depending on the balance of imports, exports, production and consumption:

- Little difference for activities like LNG production where all local product is exported and there is little import or domestic consumption;
- Modest savings for activities like aluminium smelting where some production is for local consumption and there are some imports;
- Large savings for activities like steel production or petroleum refining where most production is consumed locally and there are large imports.

The following table sets out estimates for how the savings would have stacked up in 2013-14 using production, imports and export data for several activities which accounted for 73.5% of free permit allocation in the final

year of the JCP. The comparison is between the JCP as it was; a hypothetical JCP that offered 100% shielding for all EITEs; and a hypothetical carbon border adjustment also offering 100% shielding. The savings are substantial.

Table 2 Comparison of net carbon budget cost of competitiveness approaches[6]

Emissions Intensive Product	Total free allocation, JCP treatment (t)	Net free allocation, carbon border adjustment (t)	Carbon border adjustment saving versus JCP (%)
Aluminium smelting	25,382,700	20,095,018	20.8%
Alumina refining	16,459,443	16,317,004	0.9%
Steel production	8,842,838	-7,744,400	187.6%
LNG production	22,754,160	33,371,000	-46.7%
Petroleum refining	2,503,683	-9,283,938	470.8%
Clinker production	4,082,117	-3,157,000	177.3%
Ammonium nitrate	3,766,014	-398,520	110.6%
Ammonia	2,929,071	0	100.0%
Nickel production	2,226,510	3,059,552	-37.4%
Zinc smelting	2,064,825	1,389,660	32.7%
TOTAL	**91,011,360**	**53,648,375**	**41.1%**

These rough calculations suggest a carbon border adjustment can deliver complete shielding at around **40% less budgetary cost than JCP**. However, the calculations need to be refined and extended to more activities, based on the most up to date data about domestic production, emissions intensity and consumption, as well as imports and exports.[7] The full savings may well be larger, but would evolve over time.

There are two important points to make about the lower cost to government of a carbon border adjustment.

One is that this lower cost enables more to be achieved with the carbon and financial budgets associated with a climate policy. Shielding can be sustained at a higher level for longer. More resources are available for other

[6] Calculations are based on key assumptions including recent or expected production, import and export data from a variety of official and industry sources; emissions intensities mostly from the JCP, which in turn were derived from 2006-07 and 2007-08 industry averages; the JCP allocation rates of 94.5% and 66% for high and medium emissions intensity activities; and that an Australian border adjustment would involve a full rebate of carbon costs to exports and application of the same Australian benchmark to imports. The treatment of LNG is very consequential. Under JCP LNG was treated as moderately emissions intensive, but in recognition of the wide range of emissions intensities of different LNG projects the industry was guaranteed an effective allocation rate for any facility starting no lower than 50%. The 'full shielding' approach depicted would be much more generous to LNG overall than the JCP era. Overall savings for border adjustment versus JCP would be even larger with a stricter approach to LNG.

[7] The level of savings will be heavily shaped by the scope of EITE policy and by shifts in Australia's industry. The importance of the treatment of LNG has been noted above. Including a new EITE activity like coal mining, which was previously dealt with outside the JCP, would also come at a significant net permit cost. Petroleum refining, cement and steel, as trade exposed activities which mostly service the domestic market, account for most of the savings of a border adjustment versus JCP; if these sectors were to become more export oriented, the balance of savings would reduce (though the net economic impact of increased export activity would surely be positive). Reductions in local production might not affect relative savings at all, since all domestic consumption would be a source of permits or revenue to the government. If activity ceases altogether Australia could choose to continue the adjustment, on the basis of competitive neutrality for any new investment in the activity.

purposes, from emissions reduction to assisting vulnerable citizens and communities to pro-growth tax reform. This is a powerful motivator.

Two is that the lower cost to government does not arrive by magic: the carbon border adjustment ultimately raises more money from consumers, who are exposed to more of the costs of the emissions associated with their consumption than under a carbon constraint without a carbon border adjustment. While the mechanics are very different, a carbon price with a carbon border adjustment would have a similar incidence and economic effect to a consumption tax set based on product emissions intensity.

The impact on final product prices facing consumers is likely to be very small in most cases. For instance, in 2011 PwC reported that the materials in relatively large and heavy Australian-made motor vehicles represented 6-7.8 tonnes of embodied emissions.[8] Thus every $10 per tonne of carbon price would add $60-$80, or around 0.2%, to retail prices for similar cars if passed through.[9] Impacts would be even smaller for most consumer products. Table 3 depicts the impact of a simple $10/t carbon price on steel and several products that incorporate steel. Higher value added products are less affected by carbon costs.

Table 3 - Carbon price impacts are diluted in higher value added products

Product	Carbon intensity (tCO2e/t product)	Selling price ($AUD)	Carbon cost as % selling price, per $10 carbon price
Steel, hot rolled coil	2.3	$1,200/t	1.9%
Tinned tomatoes, 400g[10]	2.9	$1.4/unit $3,500/t	0.8%
Car, SUV	7.8	$40,000/unit $20,000/t	0.2%
Pen, stainless steel	2.2	$30/unit $1,500,000/t	0.001%

Nonetheless the cumulative consumer cost impact would need to be assessed and would have some policy implications – particularly for assistance to vulnerable households. It would also have political implications, given the complex politics of the existing GST (and indeed carbon pricing). However, the introduction of the GST itself shows that significant reform accompanied by significant compensatory changes to the tax and transfer system is feasible.

Importantly, consumers would also have the ability to reduce their exposure to carbon costs by shifting their consumption to less emissions intensive products as they become increasingly available and affordable.

[8] PwC, *Potential impact of a carbon price on the Australian automotive industry* (May 2011) p7 https://www.fcai.com.au/library/Final%20Automotive%20Industry%20Report%2011%20May%202011%20.pdf.

[9] Assuming ex-carbon car prices of $30-40k, the impact would be 0.15-0.27%. Given the end of Australian passenger motor vehicle manufacture this particular adjustment would not be needed from a trade point of view.

[10] Based on data in Del Borghi et al, 'An evaluation of environmental sustainability in the food industry through Life Cycle Assessment: the case study of tomato products supply chain', *Journal of Cleaner Production* (10.1016/j.jclepro.2014.03.083). Note that emissions from steel packaging are only about half the total, with the remainder from cultivation and processing.

2.3.4 Adaptability objective

A carbon border adjustment could be adapted over time through dynamic design features that adjust automatically; through regular and well flagged review processes; or through intermittent and reactive intervention. The latter is likely to undermine confidence and investment, and should be avoided. Overall, a carbon border adjustment is at least as adaptable as free allocation, though this is an area that remains challenging for any approach.

The main issues here are that the costs of the export rebate need to remain manageable (the import adjustment benefits the public carbon and financial budgets) and the adjustment needs to be seen as fair domestically and overseas as action and emissions change.

The lower net cost of a carbon border adjustment compared to JCP should make it sustainable for longer. However, if the costs of the export rebate do not fall, it will account for a growing share of the financial budget and emissions budget. That would reduce the resources available for other uses, and require either a mix of faster reductions and more sequestration from other sectors and trade in international emissions rights and offsets; or a scaling back of the export rebate, perhaps in coordination with customer countries.

If a carbon border adjustment does not evolve to reflect changes in domestic and international emissions and climate policy, it risks creating trade distortions or friction.

Ultimately it is essential to reduce the actual emissions associated with exports. A carbon border adjustment design that preserves abatement incentives (as outlined at section 2.3.2) would help. Additional public policies to reduce emissions in trade exposed activities (such as financial assistance with investment in major low-emissions upgrades) could also be considered if they are cost effective compared to the value of future rebates.

A second approach is to design or redesign the calculation of the carbon border adjustment to control costs. Options include:

- Update the domestic emissions intensity factors. These should be updated annually anyway to ensure that the import adjustment is non-discriminatory. If the actual intensity of domestic production is falling, updates will reduce the value of both export and import adjustments. The net effect will depend on the balance of imports and exports, and progress in emissions reduction, for each product type. Using a multiyear rolling average would slow the change in rebates, likely increasing policy costs but also increasing the expected returns to an exporter who invests to reduce their emissions. Slower updates could thus encourage faster emissions cuts.
- Base the emissions intensity factor on a high performance sample – for instance, the top 10% most efficient producers. This would produce lower refunds and sharpen incentives to reduce emissions. But it would also increase the risk of trade distortion, and may be complex to apply, particularly in Australia where many products have few (or one) domestic producers.
- Base the emissions intensity factor on an international sample – for instance, a rolling global average intensity by product type. Whether this would lower or raise the cost of the export rebate would depend on Australian and international relative emissions intensities over time. Data on international emissions intensities exists but is patchier, less rapidly updated and more dependent on modelling and extrapolation than domestic data. An international average would be 'sticky' – Australian producers who invested in cleaner production would cut their carbon price exposure by much more than they reduced global averages, enabling a strong incentive.

- Introduce an allocation rate of less than 100%, and reduce this further over time. If reduced on a regular schedule this would be like the old JCP decay rate, providing predictability but risking arbitrariness. Allocation at less than 100% leaves a risk of trade distortion. If an allocation rate were applied symmetrically to imports as well it would reduce the effective carbon price for domestic consumers and reduce the inflow of cash or units surrendered to government by importers.

A third family of options relates to changing how adjustments are applied to trade with particular countries. In JCP allocation could only be adjusted for entire activities, based on necessarily blunt judgments about effective carbon constraints across all relevant international competitors. A carbon border adjustment could potentially be varied depending on the destination of exports and origin of imports.

- The carbon border adjustment could be fully or partly waived on trade with certain countries, based on the actual level of carbon price applied in each.[11] This would need to navigate the legal issues considered in Chapter 3, and would best be done based on formal bilateral or plurilateral agreement and information exchange to avoid gaps, double counting or other distortions. The underlying challenge of understanding effective carbon prices would remain significant, but could at least be addressed one economy at a time.
- The export adjustment could be maintained, but Australia could provide sufficient information about production emissions to enable destination economies to apply an accurate charge or constraint on imported emissions.

Finally, higher permit requirements for export rebates could be offset by extending the import adjustment to a wider range of emissions intensive products including those not currently made locally, such as cars.

On balance the best approach is likely to vary for different products over time: an initial default approach of frequently and automatically updated emissions intensities to reflect falling emissions; and variations by product and country where there is clear evidence or agreement about the typical emissions produced and effective carbon constraint being applied overseas.

[11] This means any applicable explicit carbon price minus any shielding or free allocation policies that also apply. The question of adjustment for other forms of climate policy is considered further on page 27.

3 Legal context

A carbon border adjustment can be designed to fully comply with international trade obligations. The most crucial requirements are that the adjustment be non-discriminatory and not operate as a form of trade protection. Valid approaches include an adjustment that is fully *compliant* with the core obligations; or an adjustment that is partly *excepted* from these obligations thanks to careful invocation of environmental defences.

A carbon border adjustment would not be a serious option for globally connected economies like Australia unless it was compatible with our legal commitments and obligations under international trade law. These include obligations relating to the World Trade Organization (WTO) and the bilateral and plurilateral trade agreements to which Australia is a party.

3.1 Key treaty commitments

There are several key provisions of trade agreements to which Australia is party that will govern the legality of a carbon border adjustment. The General Agreement on Tariffs and Trade (GATT) of 1994, which underpins the WTO trade law framework, is particularly important.[12]

3.1.1 Most favoured nation

GATT Article I:1 sets out the principle that signatories will not discriminate among each other in the customs duties or charges that they apply to imports and exports to and from each other:

> Article I: General Most-Favoured-Nation Treatment
>
> With respect to customs duties and charges of any kind imposed on or in connection with importation or exportation or imposed on the international transfer of payments for imports or exports, and with respect to the method of levying such duties and charges, and with respect to all rules and formalities in connection with importation and exportation, and with respect to all matters referred to in paragraphs 2 and 4 of Article III,* any advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.

3.1.2 Prohibition on charges beyond scheduled tariffs (and an exception)

GATT Article II sets out the principle that signatories will not apply duties or charges on top of the scheduled tariff rates they agree through the GATT. However, it also provides an important exception at Art II:2:

[12] The full text of the GATT and other WTO documents can be found at https://www.wto.org/english/docs_e/legal_e/legal_e.htm#subsidies.

2. Nothing in this Article shall prevent any contracting party from imposing at any time on the importation of any product:

(a) a charge equivalent to an internal tax imposed consistently with the provisions of paragraph 2 of Article III* in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part;

3.1.3 Rules on application of internal taxation and regulation to imports

GATT Article III is particularly important (and is referred to by the exception in Art II:2). It sets out principles for how signatories may apply the equivalent of internal charges or regulation to imports: avoiding protection to domestic production, and ensuring treatment no less favourable than that given to domestic production ('national treatment'):

Article III*

National Treatment on Internal Taxation and Regulation

1. The contracting parties recognize that internal taxes and other internal charges, and laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products, and internal quantitative regulations requiring the mixture, processing or use of products in specified amounts or proportions, should not be applied to imported or domestic products so as to afford protection to domestic production.*

2. The products of the territory of any contracting party imported into the territory of any other contracting party shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no contracting party shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1.*

[…]

4. The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use. The provisions of this paragraph shall not prevent the application of differential internal transportation charges which are based exclusively on the economic operation of the means of transport and not on the nationality of the product.

3.1.4 Defence for environmental policies

GATT Article XX provides a potentially important exception or defence where a party takes measures that may breach other provisions but are necessary for environmental reasons. The *chapeau* or introductory text for this provision places important limits on the use of this defence, and reliance on the environmental exceptions has rarely been successful in trade disputes.

Article XX: General Exceptions

Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

[…]

(b) necessary to protect human, animal or plant life or health;

[…]

(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption;

3.1.5 Restrictions on subsidies

GATT Article XVI:3 discourages, and the subsequent Agreement on Subsidies and Countervailing Measures (SCM) prohibits, subsidies for exports. However, both provisions include the following note:

> The exemption of an exported product from duties or taxes borne by the like product when destined for domestic consumption, or the remission of such duties or taxes in amounts not in excess of those which have accrued, shall not be deemed to be a subsidy.

Note that free allocation approaches also need to step carefully with respect to trade law. The SCM established rules to discipline countries that provide subsidies to specific industries or activities where these have adverse effects to the interests of other countries.[13] It would be possible for a free allocation system to fall afoul of these provisions and lead to authorized countervailing measures.[14] As noted at 2.2 above, this was a real fear in the development of Australia's JCP.

3.1.6 Other relevant agreements

Australia's other bilateral and plurilateral free trade agreements (FTAs) are drafted to be compatible with GATT and in particular they incorporate GATT Art III and Art XX. These include the following:

- Australia-Chile Free Trade Agreement (ACLFTA);[15]
- Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA);[16]
- Australia-US Free Trade Agreement (AUSFTA);[17]
- China-Australia Free Trade Agreement (ChAFTA);[18]
- Japan-Australia Economic Partnership Agreement (JAEPA);[19]

[13] See https://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm.
[14] See, e.g., Ingrid Jegou and Luca Rubini, *The Allocation of Emission Allowances Free of Charge: Legal and Economic Considerations* (2011) https://www.ictsd.org/sites/default/files/downloads/2011/08/the-allocation-of-emission-allowances-free-of-charge.pdf.
[15] See ACLFTA Chapter 3 Art 3.3 and Chapter 22 Art 22.1 https://dfat.gov.au/trade/agreements/in-force/aclfta/fta-text-implementation/Pages/table-of-contents.aspx.
[16] See ANZCERTA Art 4.13 and 18 https://dfat.gov.au/trade/agreements/in-force/anzcerta/Documents/anzcerta1.pdf.
[17] See AUSFTA Chapter 2 Art 2.2 and Chapter 22 Art 22.1 https://dfat.gov.au/trade/agreements/in-force/ausfta/official-documents/Pages/official-documents.aspx.
[18] See CHAFTA Chapter 2 Art 2.3 and Chapter 16 Art 16.2.1 https://dfat.gov.au/trade/agreements/in-force/chafta/official-documents/Pages/official-documents.aspx.
[19] See JAEPA Chapter 1 Art 1.9 and 2.3 https://dfat.gov.au/trade/agreements/in-force/jaepa/full-text/Pages/full-text-of-jaepa.aspx.

- Korea-Australia Free Trade Agreement (KAFTA);[20]
- Malaysia-Australia Free Trade Agreement (MAFTA);[21]
- Singapore-Australia Free Trade Agreement (SAFTA);[22]
- Thailand-Australia Free Trade Agreement (TAFTA);[23]
- ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA);[24] and
- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).[25]

Future agreements will certainly include similar provisions.[26]

Other major economies' trade agreements, like the Comprehensive and Economic Trade Agreement (CETA) between Canada and the EU, are similar in these respects.[27]

3.2 Implications for a carbon border adjustment

The foregoing provisions are the legal foundation for the border adjustment that many economies, including European nations and Australia, currently make with respect to their Value Added Taxes and Goods and Services Taxes, which are rebated on exported products and imposed on imports. These provisions suggest that a nondiscriminatory carbon border adjustment could be consistent with both GATT/WTO and bilateral and plurilateral trade commitments. Import and export adjustments raise different issues but their respective designs could impact the other's defensibility.

3.2.1 Alternate forms of nondiscrimination for import adjustment

There are two broad pathways to a legally robust carbon border adjustment on imports:

1. *'Compliant'*. Design an adjustment that fully complies with the GATT principles, including Most Favoured Nation (GATT Art I:1) and National Treatment (GATT Art III:2).

[20] See KAFTA Chapter 2 Art 2.2 and Chapter 22 Art 22.1 https://dfat.gov.au/trade/agreements/in-force/kafta/official-documents/Pages/full-text-of-kafta.aspx.
[21] See MAFTA Chapter 2 Art 2.5 and Chapter 18 Art 18.1 https://dfat.gov.au/trade/agreements/in-force/mafta/Pages/malaysia-australia-free-trade-agreement.aspx.
[22] See SAFTA Chapter 2 Art 2 and 18 (b) and (g) https://dfat.gov.au/trade/agreements/in-force/safta/official-documents/Pages/default.aspx.
[23] See TAFTA Art 202 and 1601 https://dfat.gov.au/trade/agreements/in-force/tafta/fta-text-and-implementation/Documents/aus-thai_FTA_text.pdf.
[24] See AANZFTA Chapter 2 Art 4 and Chapter 15 Art 1 https://dfat.gov.au/trade/agreements/in-force/aanzfta/official-documents/Pages/agreement-establishing-the-asean-australia-new-zealand-free-trade-area-aanzfta.aspx.
[25] CPTPP adopts the text negotiated for the original Trans-Pacific Partnership, including most relevantly TPP Chapter 2 Art 2.3 and Chapter 29 Art 29.1 https://dfat.gov.au/trade/agreements/in-force/cptpp/official-documents/Pages/official-documents.aspx.
[26] See, e.g., proposals put by the European Union for a possible EU-Australia Free Trade Agreement, including Trade in Goods chapter Art X.4 and X.17 http://trade.ec.europa.eu/doclib/docs/2018/july/tradoc_157196.pdf.
[27] See CETA Art 2.3 (National Treatment) and Art 28.3 (Exceptions) https://ec.europa.eu/trade/policy/in-focus/ceta/ceta-chapter-by-chapter/.

2. *'Excepted'*. Design an adjustment that does not fully comply with GATT principles, but fully satisfies the requirements for an environmental or natural resource conservation defence under GATT Art XX, including the *chapeau*.

These two pathways imply substantially different designs.

A *Compliant* design must not discriminate between different exporting nations, nor between domestic and imported products. In other words, it must extend the most favourable treatment granted one country to all, and impose charges on imports no higher than those applied to local products. That may well rule out an adjustment based on an effort to calculate actual embodied carbon, or the actual carbon price or constraint borne by imports in their countries of origin. On the other hand, an adjustment would likely be defensible if it applied a single charge to all imports of a given product based on the average of emissions costs in domestic production of the same product, regardless of policy or emissions intensity in the country of origin.[28] There is a developing body of legal opinion that a carbon border adjustment along these lines would be fully legal, though there have not been any definitive rulings by authoritative bodies.[29] The economic implications of this approach for different suppliers are considered at Section 5.1 below.

This non-discriminatory adjustment would be very much easier to apply in practice than a full assessment of imports' embodied emissions and policies. It would limit carbon leakage, prevent trade distortions, and improve the traction of the domestic carbon price signal with producers and consumers. But it could not be used to penalise countries without carbon prices – or recognise countries that had introduced prices. However, this may not be a major loss: other countries' policies are primarily influenced by their own politics and internal ruminations, and secondarily by perceptions of the breadth and credibility of global action. Compulsion or penalties have little role, particularly if wielded by a mid-sized economy like Australia. On balance, the Compliant approach appears practical and attractive.

An *Excepted* design would rely on GATT Art XX to overcome any respect in which it violated the Most Favoured Nation and National Treatment principles. On first glance at the Art XX exceptions, to avoid other GATT restrictions entirely, an adjustment would simply need either to amount to a measure necessary to protect human, animal or plant life or health; or to conserve exhaustible natural resources in conjunction with domestic restrictions. However, the Art XX *chapeau* requires that these measures must not 'constitute arbitrary or unjustified discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.' The latter phrase is not too problematic – the kind of adjustment considered in this paper is not intended to constitute trade protection or confer an advantage on domestic producers. The form of non-discrimination required by the first phrase of the *chapeau* is quite different to that in other GATT provisions, however, and greatly complicates the design of an adjustment.

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[28] Other domestically derived values could be an alternative to an average, such as a metric of domestic best practice or worst practice. However, a figure higher than the average increases the likelihood that the adjustment is discriminatory. A figure lower than the average reduces the effective shielding of domestic producers from trade distortions and reduces the emissions reduction incentive facing domestic consumers. On the other hand, it could sharpen the emissions reduction incentive facing domestic producers.

[29] See e.g., Hillman, Jennifer, *Changing climate for carbon taxes: who's afraid of the WTO?* (2013) http://www.gmfus.org/publications/changing-climate-carbon-taxes-whos-afraid-wto; Pauwelyn, Joost, "Carbon leakage measures and border tax adjustments under WTO law" in Van Calster, Geert and Prevost, Denise, Research Handbook on Environment, Health and the WTO (2013); Trachtman, Joel P, WTO Law Constraints on Border Tax Adjustment and Tax Credit Mechanisms to Reduce the Competitive Effects of Carbon Taxes (January 2016) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2738752.

Whereas the best way to comply with Arts I and III is to treat all nations alike and not inquire deeply into the particulars of imports, several legal analysts believe that the Art XX reference to 'countries where the same conditions prevail' makes it vitally important to determine the actual conditions – of emissions and of policy – that prevail in each exporting nation affected by the adjustment.[30] To do such an analysis without arbitrary or unjustifiable discrimination could be impossible unless the legal standard defers to practicality.

Scholars also suggest that a valid Art XX exception would require:

- Good faith efforts to negotiate a cooperative international arrangement (whether multilateral or bilaterally with each affected nation) before imposing the adjustment policy;
- A clear focus in the whole policy (and supporting legislation and statements) on the environmental outcome that justifies the exception, rather than on legally extraneous matters like trade competitiveness. This would include any corresponding export adjustment, which would need to be consistent in purpose and design with the import adjustment; and
- Potentially different and more favourable treatment of imports from developing or least-developed countries. This would be in answer to equity concerns relating to levels of national economic development and the 'common but differentiated responsibilities' principle in the UN Framework Convention on Climate Change. An alternative possibility would be the commitment of aid or a stream of carbon price revenue to benefit such countries.[31]

These questions have not yet come before an international trade adjudicatory body, and alternate interpretations are possible. But all in all, relying on Art XX appears to entail a policy design that is more complex and unwieldy, less likely to meet policy objectives, and potentially more politically vulnerable.[32] While it may seem fairer to draw distinctions between countries based on their actual emissions or domestic policies, fully fair distinctions are likely impractical and practical distinctions are likely to be unfair.

In short, any carbon border adjustment must be nondiscriminatory. The two approaches to nondiscrimination are to treat all countries alike, or to treat them all according to their specific conditions. Both could be legally defensible but the latter may be less practical or useful.

A possible hybrid approach would be to treat all countries alike in the first instance, but to hold out the possibility of applying a tailored adjustment to particular products or countries if sufficiently robust and credible information can be provided about them. Given the practical difficulties the tailored option might remain merely theoretical, but offering it could still be diplomatically important. GATT Art XXIV, which allows customs unions and FTAs that go beyond most favoured nation treatment,[33] might also be applicable to agreements between nations to recognize each other's emissions data or carbon constraints for purposes of carbon border adjustments. Such agreements would need careful drafting to fall within the scope of Art XXIV.

[30] Ibid.

[31] See eg Mehling, Michael; van Asselt, Harro; Das, Kasturi; Droege, Susanne; Verkuijl, Cleo *Designing Border Carbon Adjustments for Enhanced Climate Action* (December 2017) https://climatestrategies.org/wp-content/uploads/2017/12/CS_report-Dec-2017-4.pdf.

[32] If granting more favourable adjustments to developing countries were required this would be particularly problematic, since these are home to some of the key competitors in emissions intensive trade exposed sectors like steel.

[33] See https://www.wto.org/english/docs_e/legal_e/gatt47_02_e.htm#articleXXIV.

3.2.2 Products and the point of liability in domestic policy and adjustments

GATT Art II and III refer to domestic policies and import charges on *products*. Domestic climate policies can be designed to apply directly to products – such as the fuel excise adjustments that Australia applied from 2012-14. Consumption taxes like Australia's GST can reach into every business and nearly every consumer transaction. However, most carbon policies – including the structure of existing Australian emissions measurement and reporting – focus scrutiny and liability on the point at which emissions are produced. Among other benefits, this reduces the number of liable parties and hence administrative burdens, since for most products retailers and importers greatly outnumber Australian producers.

It would be possible to design an entirely new carbon pricing scheme that applied directly to products, potentially borrowing GST infrastructure. Access Economics co-founder Geoff Carmody has proposed just this, with an associated carbon border adjustment.[34] But can a more familiar production-focused climate policy use a carbon border adjustment that satisfies Art II and III?

The applicability of Art II and III to production-based taxes has not been definitively settled:

- In 1970 a GATT Border Adjustments Working Party agreed a report setting out the parties' shared understanding of many related issues; at that time they concluded that 'indirect taxes' levied on products (such as Value Added Taxes) were certainly eligible for adjustment, and that 'direct taxes' levied on businesses that make products (such as income or payroll taxes) were not eligible. However, the adjustability of so-called *taxes occultes*, explicitly including energy taxes (most comparable to carbon prices in application and effect), was noted to be the subject of divergent opinion.[35]
- In 1987 a GATT Panel concluded that the United States was in principle acting consistently with GATT Art III:2 by imposing a charge on imported substances that was equivalent to the cost on domestic equivalents from a tax on certain chemical precursors to those substances.[36]

In short there are reasons to think a production-process-based carbon policy is compatible with GATT Art III, but it will not be certain until and unless the issue comes up for adjudication or is clarified by Members of the WTO. Legal advocates for a carbon border adjustment argue that the more a policy resembles a charge on a product, the more WTO-robust it will be.[37] This is an area for further work.

[34] See Carmody, Geoff, 'Consumption-based emissions policy: A vaccine for the CPRS 'trade flu'?' in Committee for Economic Development of Australia, *A Taxing Debate: Climate policy beyond Copenhagen* (August 2009) 40-51 https://www.ceda.com.au/Research-and-policy/All-CEDA-research/Research-catalogue/Growth-61-A-Taxing-Debate-Climate-policy-beyond.

[35] See GATT, Border Tax Adjustments: Report of the Working Party (1970) GATT Doc. L/3464.

[36] See GATT Panel, *United States - Taxes on Petroleum and Certain Imported Substances* (June 17th 1987) (L/6175 - 34S/136) https://www.wto.org/english/tratop_e/dispu_e/gatt_e/87superf.pdf.

[37] See Hillman, above n 29, 6.

3.3 Adjustment for policies other than explicit carbon prices

In order to achieve either of the forms of nondiscrimination considered above it is necessary to have a clear idea of the actual carbon constraint on domestic producers and the ability to translate this into a comparable adjustment. This is relatively straightforward for domestic policies that take the form of explicit carbon prices. Is adjustment potentially legally valid for other policy structures?

The answer is very dependent on policy specifics. In 2011 Australia's PC was asked to advise on the effective carbon prices applying in other major economies, but they concluded that it was extremely difficult to derive robustly comparable equivalent carbon prices from other forms of policy, such as regulatory standards, clean energy targets, subsidy schemes and so on.[38]

In the case of regulatory mandates, such as an emissions performance standard for steelmaking, it would be necessary to understand and compare the costs of new production or emissions control technologies and the existing technologies they would replace or supplement. Over time this would involve an increasing reliance on counterfactuals – what costs would have been if another path were not being pursued.

Many varieties of electricity sector carbon policy can be much more complex to assess than relatively straightforward energy taxes. Some relevant policies, such as Australia's Large-scale Renewable Energy Target (LRET) or the Victorian Energy Upgrades (VEU) scheme, have an easily observable cost in the form of traded certificates and an obligation on electricity retailers to purchase them. However, these schemes have often been accompanied by economic modelling indicating an offsetting reduction in wholesale electricity prices from the supply increases or demand moderation involved. Conversely, given the fall in the levelized costs of renewable energy below the costs of new coal and gas generation, new clean energy goals might appear to have no costs at all; but there are additional systemic costs to integrate variable renewables, and the degree to which policies accelerate these costs beyond what would have happened anyway is not straightforward to assess.

Overall, translating non-pricing policies into legally robust adjustments will be more challenging the more it is reliant on economic modelling rather than direct observation. Transparency and dialogue will be especially important to establish confidence in more modelling-dependent adjustments.

3.4 Interaction of carbon border adjustments and anti-dumping

Anti-dumping measures are a very important feature of the trade landscape. Broadly, dumping occurs when imports are sold for less than their price in the country of manufacture. Many countries including Australia impose special customs duties where they determine that goods are being dumped and material injury to domestic industry is being caused.[39] This issue interacts with potential carbon border adjustments in three ways.

[38] See Productivity Commission, Emissions Reduction Policies and Carbon Prices in Key Economies (June 2011) https://www.pc.gov.au/inquiries/completed/carbon-prices/report.

[39] For more information on Australia's system see https://www.industry.gov.au/regulations-and-standards/anti-dumping-and-countervailing-system.

First, adjustments may fall on parties who are already subject to dumping duties; for instance, Russian suppliers of some steel products to the EU. The reasons and mechanisms for the two measures are legally and factually distinct,[40] but they both add to supply costs and may compound difficulties faced by these suppliers. Ensuring that the rationales for any measures are transparent and consistent with trade commitments is essential, as is minimizing transaction costs (further considered in Section 4.1 below).

Second, export adjustments could themselves be perceived as dumping, since they may result in an export selling for less in the destination country (carbon-exclusive price) than the same product sells for in the country of origin (carbon-inclusive price). A similar risk also exists for free allocation approaches like JCP. This can be managed by designing the export adjustment to avoid subsidy (reimbursement beyond typical costs); and by full transparency on the approach and rebates involved. The most obvious response for a destination country concerned by an export adjustment is not anti-dumping, but the introduction of a nondiscriminatory carbon border adjustment of their own.

Third, if a border adjustment were to effectively block product from one market it might lead to the redirection of supply to other markets, potentially leading to dumping concerns. This is considered further at section 0 below.

3.5 Evolution of trade rules

The recent upsurge in international consideration of carbon border adjustments has led to some speculation that WTO rules or their interpretation could evolve to more clearly endorse and facilitate adjustments. Useful areas for development could include:

- resolving the issue of products versus production processes;
- clarifying the scope for the practicality of data gathering to be taken into account in use of Art XX defences; and
- establishing common databases, methodologies and/or institutions for aligning and adjudicating adjustments.

Expansion and reform of the trade regime has proven challenging over the past two decades – for instance, a WTO agreement on fisheries subsidies has been under negotiation since 2001[41] – and the likelihood of significant and sensitive changes would ordinarily seem very low. On the other hand, the multiple challenges the trade regime has faced in recent years may create either or both momentum for reform to remain relevant, or scope for coalitions of the willing to move faster.

[40] Though some rhetoric is ambiguous, such as references by members of the European Parliament to carbon border adjustments being needed to prevent "climate dumping": https://www.europarl.europa.eu/news/en/headlines/society/20210303STO99110/carbon-leakage-prevent-firms-from-avoiding-emissions-rules.

[41] See https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_intro_e.htm.

3.6 Conclusion

Trade law provides considerable scope to design a compliant carbon border adjustment. The least risky approach may be the simplest – a carbon border adjustment that

- relies on GATT Art III, not Art XX, if possible;
- adjusts all relevant product imports at a single rate, without distinctions on the basis of national origin, method of production or climate policy in the country of production;
- keeps the adjustment rate no higher than the cost imposed on domestic production of the same goods;
- focuses on policies that are directly and robustly comparable to carbon prices.

If such an approach was successfully challenged, such as through the WTO dispute settlement system, a range of adjustments could be made to bring it into compliance: tweaks to adjustment parameters; alterations to the domestic policy; or, most dramatically, justifying the adjustment under Art XX – which would entail significant redesign to allow for distinctions by origin.

4 Practical implementation context

A carbon border adjustment designed to make maximum use of existing emissions information and customs processes would be practical to implement. While it would need hard work and government investment, it need not increase administrative burdens for businesses.

A theoretically elegant carbon border adjustment would be useless if it could not be implemented in practice, or would carry excessive costs.

4.1 Administrative costs

The principal implementation worry is that a carbon border adjustment would impose large administrative costs on government to run a complex scheme, and on exporters and importers to comply with it. New and unfamiliar paperwork requirements would mean substantial regulatory burdens.

This worry can be almost entirely averted by three measures:

- using the simplified approach discussed above of relying on domestic emissions intensities;
- focusing on products that are locally produced and have a sufficiently high emissions intensity; and
- relying on existing administrative infrastructure and reporting processes.

4.1.1 Using domestic data

Major economies like Australia and the EU have high-quality domestic emissions intensity data readily available via their own existing policy mechanisms. Establishing the actual embodied emissions of all products from overseas, including the details of their production, the various countries of origin of the components and materials, and the applicable carbon prices and climate policies effectively applied to all of them, is a much larger challenge (of trust as well as logistics) than relying on domestic data.

Acceptance of overseas data may be possible at some point in the future, at least for some countries with good information. Australia could provide such information itself to both establish the transparency and probity of its carbon border adjustment, and to help other countries using this approach to treat Australian goods according to actual embodied emissions if they wish. Existing rules of origin in FTAs such as the United States-Mexico-Canada Agreement (USMCA) might also provide a helpful model or direct assistance, though they can be very complex to navigate.[42] The EU has also negotiated agreements with other jurisdictions to recognize their emissions accounting and link carbon markets;[43] considerable work is needed to establish mutual confidence. In the meantime, focusing the adjustment on sufficiently emissions intensive products, and using

[42] See https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/04-Rules-of-Origin.pdf.
[43] Including, at one point, Australia. See European Commission, *Australia and European Commission agree on pathway towards fully linking emissions trading systems* (28 August 2012) https://ec.europa.eu/clima/news/articles/news_2012082801_en.

readily available information about the intensity of Australian production as the basis of inward and outward adjustments, will greatly ease the practical application of an Australian carbon border adjustment.

4.1.2 Using relevance thresholds

While a border adjustment for a given product type offers benefits, even applying a simplified approach based on domestic data has administrative costs to establish definitions, collate and update the data, and apply the adjustment. For export adjustments there is also a cost to the public fiscal and carbon budgets. There are many product types. A basis is needed for limiting adjustments to only those product types that are most relevant.

The same challenge exists in free allocation approaches such as Australia's JCP, where it has typically been dealt with through a two-part relevance threshold:

Table 4 - Tests for sector relevance of competitiveness measures

Element	Australian approach (JCP)	EU approach (Leakage List)
Is the relevant sector sufficiently trade exposed that they may be unable to pass through carbon costs?	Trade share greater than 10% in pre-scheme years, and demonstrated lack of capacity to pass through costs.[44]	The sector's trade intensity with non-EU countries (imports and exports) is above 10%.[45]
Is the relevant sector sufficiently emissions intensive that unrecovered carbon costs could materially impact their competitiveness?	Pre-scheme industry average emissions intensity of at least 1,000 tCO2e per $1m revenue or at least 3,000 tCO2e per $1m value added.[46]	Direct and indirect costs induced by the implementation of the EUETS would increase production cost, calculated as a proportion of the gross value added, by at least 5%.[47]

Like any thresholds these were somewhat arbitrary and induced arguments at the margin. However they are basically reasonable and a border adjustment could adopt them with limited adaptation. The resulting list of relevant activities is likely to be very similar that previously covered by free allocation, but could differ in two ways.

Firstly, a reassessment of relevance based on up to date data may see some sectors enter or fall out. Trade share and emissions intensity have evolved in some sectors.

Secondly, the imposition of a border adjustment would increase the prices of emissions intensive inputs to other products. This effect would be minor for most elaborately transformed manufactures, where other input costs and value added are typically large enough to greatly dilute the impact of an increase in the cost of, for example, steel components of a passenger vehicle. But the cost of embodied emissions in inputs might be large

[44] See Australian Government, *Securing a clean energy future* (2011) 114-115 https://webarchive.nla.gov.au/awa/20110709072631/http://pandora.nla.gov.au/pan/127961/20120509-0039/www.cleanenergyfuture.gov.au/wp-content/uploads/2011/07/Consolidated-Final.pdf.

[45] See EC, above n 3.

[46] Ibid. This threshold was for the lower rate of free allocation (starting at 66%); the higher rate starting at 94.5% was contingent on a stricter threshold of 2,000tCo2e/$m revenue or 6,000 tCO2e/$m value added.

[47] Ibid. There is also provision for a sector to enter the leakage list if it has either a sum of direct and indirect costs that is at least 30%; or a non-EU trade intensity above 30%.

enough in some cases to push an activity above the emissions intensity threshold – if it was taken into account. The EU assessment considers direct and indirect costs induced by the carbon price and would be sufficiently flexible. The JCP assessment applied to Scope 1 (direct) emissions and Scope 2 (embodied in electricity use) emissions, but not Scope 3 (other upstream and downstream supply chain emissions). A hypothetical Australian carbon border adjustment should take account of embodied emissions in all relevant inputs.

4.1.3 Using existing processes

Advanced economies possess considerable existing administrative machinery that can support a carbon border adjustment. Details will differ between jurisdictions, but the Australian example is instructive.

In Australia the Department of Home Affairs (Home Affairs), and the Australian Border Force (ABF) within it, administers our Customs system. This requires all importers and exporters to report the nature of the goods involved (by reference to well established tariff codes, the Harmonised System (HS) Codes) and the weight of the goods of each type. Invoices are issued, and for pre-approved clients sums are automatically electronically debited, where the goods involve a tariff or duty. A significant IT system, the Integrated Cargo System (ICS), supports these arrangements.

As noted at 4.1.2 above, the Australian Government has already developed detailed definitions and supporting emissions intensity data for a wide range of emissions-intensive trade-exposed activities. While the underlying data is now more than a decade old in most cases, it would not be difficult to update it if necessary using more recent data reported under the National Greenhouse and Energy Reporting System (NGERS), the RET exemption arrangements, and the production adjusted baselines developed for the Safeguard Mechanism.

A carbon border adjustment that relied on Australian emissions intensity data would not need any additional information from importers and exporters beyond what they already report. The already-reported weight of products in an emissions intensive category could be used to calculate an emissions liability (or credit) based on the established Australian emissions intensity for the relevant activity.

A significant but practical exercise would be needed in government to cross-reference the tariff codes with the relevant EITE activities. This would be effort-intensive for two reasons:

- there are around 5,300 HS Codes, including many for irrelevant products but many that may be relevant, such as several hundred varieties of steel product; and
- because it will likely be necessary to extend the adjustment to a range of finished goods largely composed of EITE products, such as towers or vessels of steel.[48]

There is no theoretical difficulty with this exercise, but it will take time and effort in government and need consultation with importers and local customers and producers. If this was not done carefully there could be increased opportunities to game the system by reporting goods against a lower-carbon code or substituting imports of finished goods for imports or local production of the underlying materials.

The greatest potential for new administrative burdens is associated with the imposition and acceptance of the carbon liability on importers. Exporters would likely be liable parties under the underlying domestic climate policy anyway, and would face administrative procedures very similar to those previously applied under the administratively successful EITE program. Importers, by contrast, will have had no such experience and are

[48] The proposed EU CBAM, outlined in greater detail at Chapter 6, specifies covered goods at the 4 digit and 6 digit levels – in other words, considerable detail.

numerous, going against the grain of climate policy practice which has sought to maximize coverage while minimising liable parties.

However, Home Affairs already has the capability to issue invoices to importers and take payments. If a carbon liability were reflected in cash terms, adding this to the existing system would not appear to be a great stretch, and would not present new administrative burdens to importers.

It may well be preferable to impose a liability in terms of permits, rather than cash. Assuming that domestic policy involved a permit or offset liability, rather than a carbon tax, this would minimise the potential for significant differences between the market price of units and the cost imposed or rebated at the border. That is important to avoid trade distortions, and also to ensure the closest equivalence between the domestic policy and the carbon border adjustment to demonstrate compliance with Article III:2 of the GATT, as discussed in the trade law section above.

A permit liability could be unfamiliar and potentially onerous for importers. On the other hand, importers are presumably used to dealing with a range of markets for products, insurance, shipping and other services; a well-functioning liquid and transparent carbon market need be no different. International markets already exist for Certified Emissions Reductions and other carbon units potentially accepted under an Australian scheme. There is already a domestic market for Australian carbon offsets and a method for crediting outperformance by Safeguard Mechanism entities is being developed. The practical challenges are more likely to be around administering the liability than acquiring the necessary units.

The administrative challenge would be to knit together Home Affairs' invoicing and cargo systems with the emissions liability and unit registries maintained by the Clean Energy Regulator in a manner that is seamless to end users. That is perfectly achievable, but would require hard work and investment by government. Australia's current work on the Simplified Trade System, Australian Trade Single Window and experiments with blockchain-based trade verification systems would be a good fit with such efforts.[49]

More broadly, all the practical challenges addressed above hinge on adequate resourcing and lead time, particularly for Home Affairs. Major IT projects are rarely as easy as expected, and the ICS has been reported by trade stakeholders to be already stretched and imperfect even after major (if troubled) upgrades. Millions of dollars of investment would be needed in further upgrades to ICS and the Clean Energy Regulator's systems. Training would be needed for Home Affairs staff. And it would be even more important than it currently is that enforcement at the border be effective and efficient. All of this needs resources. However, given the scope of the savings to government presented by a carbon border adjustment compared to free allocation, these investments would be very worthwhile.

Stakeholders consulted in the preparation of this paper suggested that import agents might be unduly affected in two further ways by a carbon border adjustment. First, many may have contracts with their clients that do not provide for the pass-through of a cost associated with carbon border adjustment. Secondly, the cost of insurance may go up to reflect the carbon price and associated risks of noncompliance and penalties.

The pass-through issue could be addressed in three ways. First, sufficient notice could be given of the introduction of the carbon border adjustment system to enable contracting parties to take account of it and incorporate the issue into their arrangements.[50] Notice would be sensible in any case. However, some import

[49] See https://www.infrastructure.gov.au/department/statements/2020_2021/ministerial-statement/home-affairs.aspx and https://newsroom.abf.gov.au/releases/abf-blockchain-trial-with-singapore.

[50] ABF's Australian Trusted Trader system would be a useful means of alerting affected parties and easing their transition. https://www.abf.gov.au/about-us/what-we-do/trustedtrader/benefits.

agent contracts extend up to five years; it may not be practical to give five years' notice before introducing a system. Two years' notice should give parties sufficient time to negotiate amendments to their contracts.

Second, the carbon border adjustment could be imposed in a legal and practical form that made it more likely to be covered by existing contracts. These already deal with issues like the pass through of customs duties and tariffs.

Thirdly, the legislation underpinning a carbon border adjustment could intervene in contracts to some degree by either declaring that all such contracts provide for the pass through of carbon border adjustments, or declaring that for the purposes of such contracts carbon border adjustments are equivalent to import tariffs.

4.2 Transitional risks and stockpiling

There could be transitional risks when a carbon border adjustment is first introduced. A particular risk is that importers or local producers stockpile product ahead of introduction, which would not attract an adjustment, and then feed it into the market after introduction. This could enable stockpiling suppliers to either undercut suppliers who have borne carbon costs, or to profit from selling goods at a carbon-inclusive price. This appears to have actually happened in Australia with the introduction of a carbon-equivalent levy on imports of synthetic greenhouse gases under the Clean Energy Future package. Imports of these widely used refrigerant gases surged prior to introduction of the carbon price, and consumers reported immediate price rises in the aftermath. The perception of windfall profits under a carbon border adjustment would be damaging, while even a transient period of undercutting compliant producers would violate the basic purpose of the adjustment: to avoid trade distortions.

There are three reasons to think that this transitional problem can be avoided in the case of a carbon border adjustment for a wider range of products.

Firstly, relevant products like steel, aluminium, cement and so on are vastly less emissions-intensive than synthetic greenhouse gases (SGGs), making the benefits of transitional stockpiling much more marginal. For instance, a tonne of aluminium may have a market value of $2,000 and involve production emissions of 17 tonnes of CO2-equivalent; each $10 per tonne of carbon price would imply a carbon cost of around 8% of the product value. A tonne of HFC134a, a popular refrigerant, may sell for $18,000 and represent potential emissions (if leaked to the atmosphere) of 1,300 tonnes of CO2-equivalent; each $10/t of carbon price would imply a carbon cost of around 70% of the product value. The potential returns to an importer of aluminium from stockpiling are therefore low and would need to be set against the holding costs of a stockpile and the risk associated with volatile commodity prices – losses from falls in prices between the purchase of a stockpile and its sale could easily surpass any carbon-related profit.

Secondly a carbon border adjustment and associated carbon policy regime could be introduced more gently than Australia's former carbon tax. This might involve lower initial carbon prices or a smaller base of liability (as in a baseline-and-credit scheme). Either way, this would soften the transition and reduce the attractiveness of stockpiling.

Finally, many of the relevant emissions intensive product markets are more diverse than the SGG market, where all product is imported. With both domestic producers and importers and a larger number of actual and potential players, windfall profits would be harder to sustain and domestic producers might have as much scope to stockpile as importers.

In summary, the potential for transitional distortions associated with stockpiling appears low and could be mitigated by a gentle beginning to any scheme. The latter would be wise in any case.

5 International policy context

Properly implemented a carbon border adjustment should equalize, not penalize. This would not disadvantage exporters from any nation versus their situation if no carbon cost was implemented at all. Trade partners should be able to be reassured through transparency and respectful dialogue. This is equally true of Australian fears about the carbon border adjustments now being considered or implemented by major economies around the world.

The international context to consideration of a carbon border adjustment extends well beyond questions of strict legality. How would an adjustment affect and be perceived by trading partners?

5.1 Impacts on trading partners

The prospect of carbon border adjustments in an economy may be expected to raise fears among those who export to that economy that they will be treated unfairly or simply lose out in practice, leading to a loss of price competitiveness or profit.

The nondiscriminatory WTO-Compliant carbon border adjustment considered in section 3.2.1 above – which adjusts relevant imports based on the adjuster's domestic emissions intensities and ignores overseas policies – might lead to additional concerns. Relatively clean suppliers might be upset if adjustments do not recognise their cleanliness. Suppliers from economies with carbon pricing might be concerned if adjustments make no allowance for any carbon costs they may have already paid at home.

However, closer analysis shows that a Compliant border adjustment need not disadvantage any supplier compared to scenarios where the economy has no form of carbon price, or introduces a carbon price but uses free allocation to address trade competitiveness.

Careful, transparent and consultative policy development should be able to prevent or resolve sincere trading partner concerns.

5.1.1 Comparing impacts on profits of a hypothetical carbon border adjustment

Judging impacts and fairness requires clarity about the scenarios being compared. The most relevant comparators for an implementable carbon border adjustment are alternative implementable policies, not a theoretical but unattainable perfect adjustment.

The following sections explore this through several scenarios for hypothetical Australian policies and their relative impacts on Australian, European and generic international suppliers of an imaginary emissions intensive product. The analysis considers a core set of assumptions and a series of variations around European policy or supplier characteristics.

The carbon border adjustment considered in this chapter is an abstract ideal consistent with the findings of previous sections. Analysis of the potential impacts of the EU's proposed CBAM, based on the specifics of that proposal as known at the time of writing, can be found in Chapter 6 below.

A critical assumption across the analysis in the current chapter is that carbon costs are not reflected in Australian selling prices for traded goods, except under an Australian carbon border adjustment. In the Compliant border adjustment scenario considered, Australian producers' average carbon costs are reflected in local selling prices, since all potential suppliers bear these costs. Thus under an adjustment, importers' revenue increases in line with their carbon costs.

The imaginary product considered is similar to primary steel:

- World market price of $500/t, reflecting typical carbon-exclusive production costs of $417/t and suppliers targeting a 20% return on invested capital;
- A spread of emissions intensities of production:
    - European suppliers at 1.8 tCO2e per t product;
    - Generic international suppliers at 2.3 tCO2e/t;
    - Australian suppliers at 2 tCO2e/t.

The European Union Emissions Trading System (EUETS) is assumed to apply a $40/tCO2e cost to the relevant production emissions, and to treat the producer as a 'leakage sector' with JCP-like free allocation set at 100% of an efficient benchmark of 1.8 tCo2e/t. [51]

Generic imports are assumed to face no home-economy carbon constraint.

European, generic international and Australian suppliers profit margins are then considered under the following scenarios for Australian climate policy:

1. No Australian climate policy – no formal carbon price or meaningful constraint (the status quo at the time of writing);
2. An Australian carbon price of $40/tCO2e without any accompanying measures to address trade exposure;
3. An Australian carbon price of $40/tCO2e with 97.5% free allocation to EITE activities as in JCP; and
4. An Australian carbon price of $40/tCO2e with a Compliant border adjustment imposing this cost on imports based on an Australian emissions intensity benchmark with no variation for overseas policy.

[51] Under the EU ETS, "Installations in sectors exposed to a significant risk of carbon leakage in principle are eligible to receive free allocation at 100% of [production times benchmark intensity]", but "Since the benchmarks are based on the performance of the most efficient installations, only the most efficient installations in each sector receive enough free allowances to cover all their needs." https://ec.europa.eu/clima/policies/ets/allowances/leakage_en.

5.1.2 Scenario comparison: core assumptions

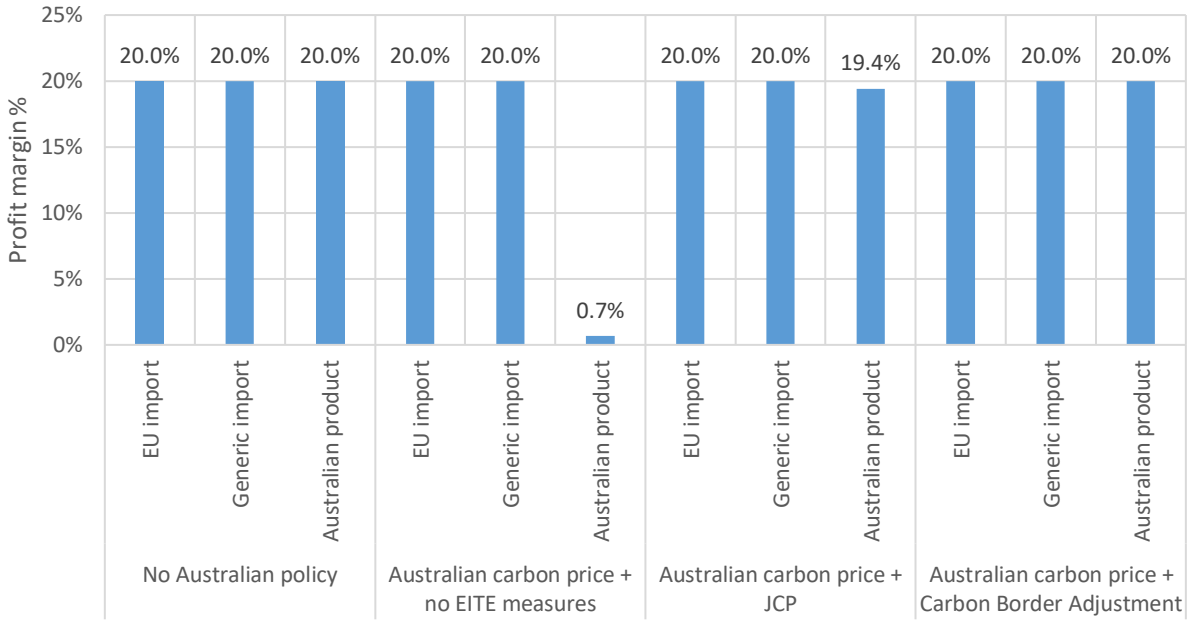

Figure 2 - Comparison of product profitability under different Australian climate policies – core assumptions

This comparison illustrates several important points.

- An Australian carbon price with no trade competitiveness measures could substantially reduce the profitability of Australian producers of high emissions intensity goods. It would not alter the profitability of other suppliers, which would continue to depend on global pricing and policy in their own countries.
- JCP-style free allocation to Australian EITE producers substantially reduces or eliminates their loss of profitability, depending on the rate of allocation, but does not affect the profit margins of other suppliers.
- Compliant carbon border adjustment in Australia leaves Australian profits unchanged and does not reduce profit margins for importers, regardless of their emissions intensity or home policy. This is because selling prices increase in line with the carbon cost imposed on imports.
- Suppliers from low carbon intensity economies with strong policies, such as the EU, do not derive any advantage from this under any of the Australian policies considered.

5.1.3 Scenario comparison: what if the EU supplier gets cleaner?

Figure 3 depicts a variant scenario where the relevant EU supplier invests in a much cleaner production process, cutting their emissions by 50% but raising their production costs by 5%; their level of free allocation under the EUETS remains unchanged at the industry benchmark.

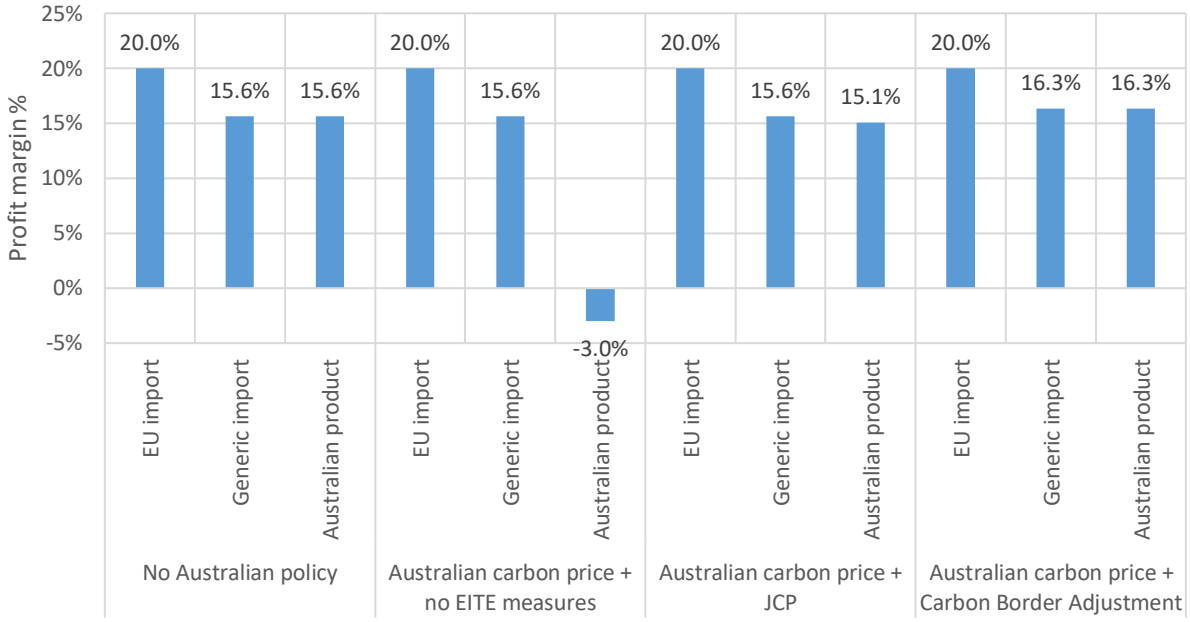

Figure 3 - Comparison of product profitability under different Australian climate policies – cleaner EU supplier

In this variant the relativities between producers are different, but the impacts of Australian policy choices are the same as in the primary scenario:

- EU imports are the most profitable in all policy scenarios because of the combined effect of the EU ETS (the carbon revenue from sale of excess freely allocated units outweighs the increased cost of clean production, making the EU-based supply the cheapest) and this simple model's assumption that the lowest-cost supplier will shape the selling prices that customers will expect from all suppliers. Thus the EU supplier sets the selling price in Australia and other suppliers can only maintain market share by accepting somewhat lower profits.
- Beyond this the results for the impact of Australian policy choices are the same. Australian suppliers are slightly less profitable with a carbon price with high levels of free allocation, and unprofitable with an uncompensated carbon price. Both Australian suppliers and generic imports are slightly more profitable with a Compliant border adjustment. This is because the carbon cost increment facing all suppliers is identical; is recovered in selling prices at the price-setting supplier's target rate of profit; and thus dilutes the lower profitability of other suppliers benefiting from the carbon-related selling price uplift.
- Overall, no supplier is less profitable with a border adjustment than without one.

5.1.4 Scenario comparison: what if the EU supplier gets dirtier?

Figure 4 depicts a variant scenario where the relevant EU supplier is much higher-emitting than the applicable EUETS industry benchmark, and close to the generic importer average. Production costs are otherwise similar. Thus the EUETS free allocation only covers a portion of the EU supplier's carbon costs, and their carbon-inclusive net cost to supply is higher.

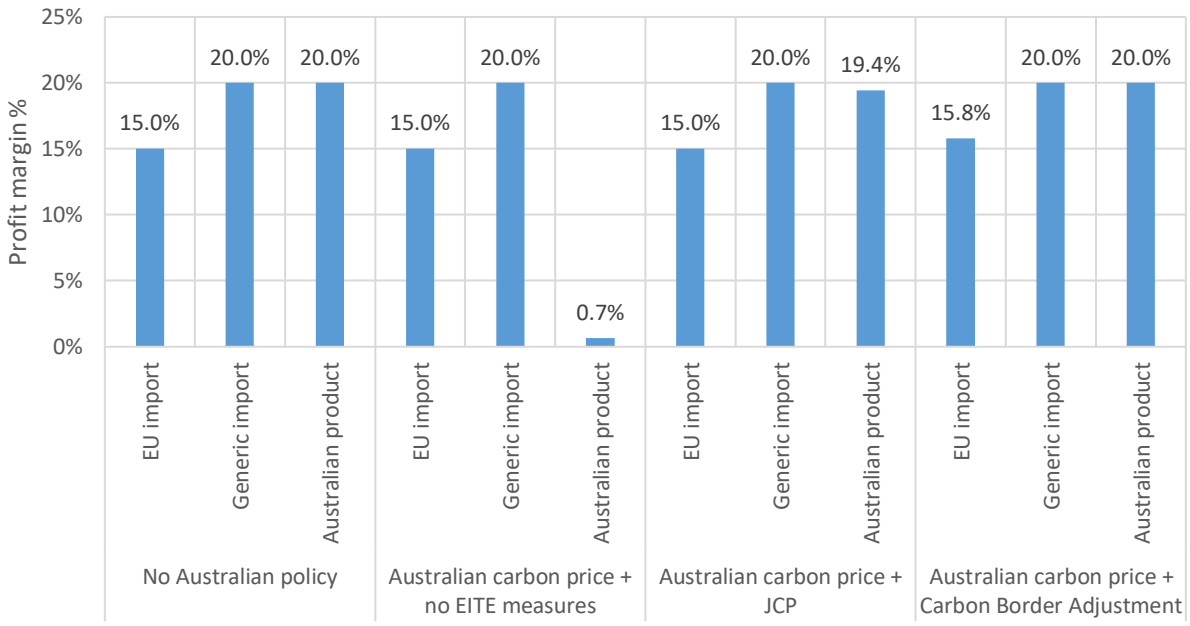

Figure 4 - Comparison of product profitability under different Australian climate policies – dirtier EU supplier

In this variant the relativities between producers are again different, but the impacts of Australian policy choices are the same as in the primary scenario.

- EU imports are less profitable in every scenario because their home-economy net cost of production is higher and in the simple model selling prices in Australia are shaped by generic imports and Australian suppliers, who have the lower costs.
- Otherwise the policy scenarios play out with the same relative effects. In this case it is EU imports whose profitability is slightly improved by the Compliant border adjustment, for the same reasons of dilution explained in 0 above.

5.1.5 Scenario comparison: what if the EUETS halves its shielding?

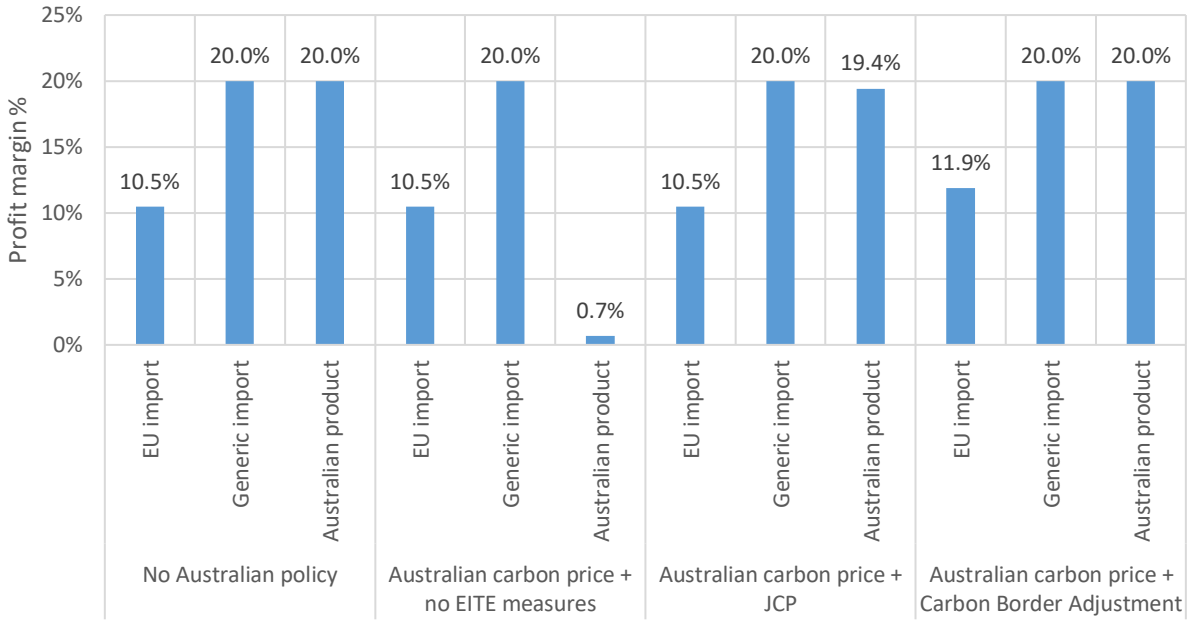

Figure 5 - Comparison of product profitability under different Australian climate policies – EU halves shielding

The interaction of overseas suppliers' emissions intensity with the carbon policy settings and competitiveness measures in their home jurisdictions can be quite important to the profitability of their production, including any exports to Australia, whereas Australian policy settings do not matter.

Further analysis of specific actual products would be useful, but the basic insight is that if a carbon border adjustment allows average Australian carbon costs to be passed through to Australian consumers, imported products subject to a border adjustment are at no disadvantage versus their prior position or any other coherent scenario. Their cost to supply customers increases, but so does the selling price that customers must accept (since all potential suppliers bear a carbon cost), so importers are left whole. If a carbon border adjustment is to be pursued, it will be important to take trade partners through this analysis.

5.1.6 Introduction of EU CBAM

The above does not specifically consider the impact on the introduction of the EU's CBAM on the profitability of EU suppliers under Australian policy. There are two reasons.

First, as will be explored in greater detail in Chapter 6 below, there is some ambiguity in how EU carbon pricing with CBAM will ultimately impact exporters from the EU. The current proposal does not include an export adjustment, but still phases down free allocation. It would establish a significant fund for low-carbon innovation in the EU, particularly in CBAM sectors.

Second, including EU CBAM in this simplified analysis would not produce results materially different from those in the scenarios considered above. If the EU maintained free allocation and did no export adjustment; or if it replaced free allocation with a full export adjustment; EU supplier profitability would be the same as in the core scenario depicted in Figure 2 above.

5.1.7 Interaction of multiple economies' carbon border adjustments

If multiple countries operate carbon border adjustments, it might appear attractive to coordinate in some way – to exempt each other from adjustment, or harmonise adjustments, or exchange information about emissions, for instance. This could allow more accurate pricing, or the perception of fairer treatment. It might also reduce the potential administrative and compliance costs of double-handling.

However, we need to keep in mind the choice outlined in section 3.2.1 above between different forms of legal nondiscrimination. If a nation is trying to comply with GATT Art III without the use of Art XX exceptions, it cannot differentiate between countries based on whether they have adjustments of their own.

In addition, double-handling need not impose significant costs. The design imperative is to minimise costs for all participants in a carbon border adjustment, by relying on existing customs and emissions reporting processes to the maximum extent possible; the practical context for this is considered further in Chapter 4 above. If this is done, there is little benefit to exempting trade between two jurisdictions that practice border adjustment.[52] However to the extent that residual transaction costs remain, they are an economic loss to all.

On the other hand, if Australia chooses an Art XX path, then coordination with other countries could greatly ease the practical and diplomatic barriers. It may be possible, as considered above, to pursue a compliant approach by default and offer openness to Art XX tailoring where sufficiently robust information can be provided. In any case it would be useful and demonstrate good faith for Australia to publish transparent information about the emissions intensity of domestic production and the methods underlying our adjustment. We should likewise seek this from other economies making their own adjustments.

[52] 'Double handling' of border adjustments on trade between economies with value added taxes or goods and services taxes is commonplace.

6 Assessing proposed international carbon border adjustment policies

The European Union Carbon Border Adjustment Mechanism (EU CBAM) is a substantial and pragmatic proposal reflecting many of the issues considered in this paper. It is unlikely to have much direct impact on Australian trade, since of our exports to Europe only aluminium and steel are affected (0.25% of our total goods exports to the EU); and because under the current proposal these exports are likely to remain roughly as profitable as without CBAM.

Border adjustments by other major trade partners could impact more trade, but would likely also have a neutral effect. The climate risk to Australian trade is not border adjustments, but the impact of our trade partners' emissions reduction policies and energy transitions on their demand for our thermal coal, coking coal and gas exports. Diversification into exports related to clean energy is a sensible hedge.

The potential for border adjustments overseas has raised concerns that Australia could be disadvantaged, given our high per-capita emissions and emissions-intensive economy. Will we be targeted for punitive carbon tariffs, or simply harder hit by more neutral adjustments? There is a real potential for international pressure, including via trade, if Australia is not perceived to be constructive and ambitious on climate. However, the analysis in this paper suggests that Australia will not be crushed by overseas carbon border adjustments:

The EU is likely to implement its CBAM in the next few years and this is attracting intense attention. Other major economies are considering such adjustments. This chapter looks at the EU proposal in light of the analysis in previous sections, considering how it would work; how it compares to the theoretical options outlined previously; and how Australia would be affected. The scope and impacts of other economies' potential adjustments are also assessed, albeit more speculatively.

6.1 Carbon border adjustment by Australia's major trading partners

While carbon border adjustments have been proposed for many years, the idea is undergoing a renaissance in advanced economies. These international currents make it less likely that further new carbon border adjustments will be seen as threatening.

Until very recently carbon border adjustments have been considered "Frequently Proposed, Rarely Implemented".[53] By 2017 Europe had thrice considered border adjustments as part of the EU ETS, in response to proposals from the European Commission and successive French governments,[54] but instead opted for its variant of free allocation. In the United States, a landmark 2009 climate bill included both free allocation and a border adjustment, with the latter commencing only if global action in trade exposed sectors was inadequate.[55] This bill passed the House of Representatives but was never taken up in the Senate. The US State of California has incorporated a limited form of border adjustment into its climate legislation, applying only to electricity imported from other States.

There has been a massive recent upswing in international interest in border adjustment, however. In 2015 influential economist William Nordhaus proposed 'climate clubs', including a system of trade penalties, to discourage nonparticipation in meaningful climate agreements.[56] In 2017, French President Emmanuel Macron began pushing for a European border adjustment.[57] In the same year a US-based group formed by eminent Republicans and major businesses, the Climate Leadership Council, issued the Baker-Schultz Plan for a US carbon tax with a border adjustment to address trade issues.[58] In 2019 3,554 US economists endorsed a statement on the broad principles of the Baker-Schultz Plan.[59] In 2020, the Biden campaign stated:

> As the U.S. takes steps to make domestic polluters bear the full cost of their carbon pollution, the Biden Administration will impose carbon adjustment fees or quotas on carbon-intensive goods from countries that are failing to meet their climate and environmental obligations.[60]

These proposals have encouraged further research and practical advice from leading researchers and policy entrepreneurs.[61]

By far the biggest development is that the European Union now looks likely to implement a Carbon Border Adjustment Mechanism (CBAM) from 2023. The European Commission proposed this as part of the EU Green

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[53] Mehling et al, above n 31, 9.
[54] Ibid, 10.
[55] American Climate and Energy Security Act (HR 2454), Title IV https://www.congress.gov/111/bills/hr2454/BILLS-111hr2454pcs.pdf.
[56] William Nordhaus, 'Climate Clubs: Overcoming Free-riding in International Climate Policy', *American Economic Review* (2015), 105(4) https://pubs.aeaweb.org/doi/pdf/10.1257/aer.15000001. Note that Nordhaus specifically did not advocate a border adjustment, accepting earlier arguments for its impracticality, but called for across-the-board tariffs in the order of 2% on all imports from nonparticipants.
[57] See, e.g. https://www.reuters.com/article/us-france-eu-carbon/french-president-macron-says-europe-needs-significantly-higher-carbon-price-idUSKCN1C12H7.
[58] Climate Leadership Council, *The Conservative Case For Carbon Dividends* (February 2017) https://www.clcouncil.org/media/2017/03/The-Conservative-Case-for-Carbon-Dividends.pdf. Note that while the CLC includes former Republican Cabinet-level officials and leading Republican economists, current Republican officials, institutions and media are still typically hostile to action on climate issues.
[59] Akerloff et al, *Economists' Statement on Carbon Dividends* (January 2019) https://www.clcouncil.org/economists-statement/.
[60] https://joebiden.com/climate-plan/
[61] See e.g. the 2017 legal and design advice in Mehling et al, above n 31; a 2018 model from US think tank Resources for the Future for an upstream US carbon tax and detailed methodologies for WTO-compliant border adjustments in Brian Flannery, Jennifer Hillman, Jan Mares, Matthew Porterfield, *Framework Proposal for a US Upstream Greenhouse Gas Tax* with *WTO-Compliant Border Adjustments* (March 2018). https://www.rff.org/publications/working-papers/framework-proposal-for-a-us-upstream-greenhouse-gas-tax-with-wto-compliant-border-adjustments/; and insightful economic and practical advice in Adele C Morris, *Making Border Carbon Adjustments Work In Law And Practice* (July 2018) https://www.brookings.edu/wp-content/uploads/2018/07/TPC_20180726_Morris-Making-Border-Carbon-Adjustments-Work.pdf.

Deal in 2019;[62] heads of government endorsed the concept as part of the EU budget and stimulus deal in 2020;[63] the Environment committee of the European Parliament has endorsed broad directions for CBAM on a cross-party basis;[64] and the Commission has now released its proposal for a detailed design as part of the large and ambitious 'Fit for 55' package of proposals for policies to help the EU achieve its commitment to reduce emissions by 55% by 2030.[65] Further work by EU member states, the Commission and the Parliament, with input from industry, diplomats and other stakeholders, will be required to finalise and implement the CBAM. Details of the current proposal are in the next section.

Europe's CBAM has raised the profile of carbon border adjustment worldwide, inspiring considerable attention from other governments, businesses and industry organisations and interest in the potential for coordinated approaches rather than unilateralism. The **United States** Trade Representative has disclosed that the Biden Administration is considering carbon border adjustments alongside other potential options to address greenhouse gas emissions in the global trading system,[66] and Democratic lawmakers have included a US carbon border adjustment as part of a major proposed budget package (discussed further at section 6.4.1 below). **Japan** recently commenced a review of its own possible carbon border adjustment options.[67] The **United Kingdom** is also considering a border adjustment, as well as assessing how to navigate an EU CBAM post-Brexit.[68]

While Europe's CBAM appears very likely to be implemented, there are many practical and political barriers to these initiatives, especially in the United States where all national policy initiatives are typically difficult to enact and sustain. Nonetheless, the idea of a carbon border adjustment has never been more current or widely considered.

One reason for this, perhaps surprisingly, may be the former Trump Administration. The Administration's decision to withdraw from the Paris Agreement has highlighted the problem of free riders. More importantly, former President Trump's aggressive rhetoric and policy moves on trade have shaken up the international scene. The political and intellectual dominance of a certain flavor of trade policy purism is over. When the world's largest economy has recently fought trade wars with rivals and threatened or actually imposed tariffs against its closest allies for the stated reason of national security, the use of WTO-compliant carbon border adjustments becomes not just thinkable but comparatively moderate – and supportive of the global trade

[62] European Commission, *The European Green Deal* (COM(2019) 640 final) https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1596443911913&uri=CELEX:52019DC0640#document2.
[63] European Council, *Special meeting of the European Council (17, 18, 19, 20 and 21 July 2020 – Conclusions* (EUCO 10/20) 64 https://www.consilium.europa.eu/media/45109/210720-euco-final-conclusions-en.pdf.
[64] European Parliament, *Carbon levy on EU imports needed to raise global climate ambition* (5 February 2021) https://www.europarl.europa.eu/news/en/press-room/20210201IPR96812/carbon-levy-on-eu-imports-needed-to-raise-global-climate-ambition.
[65] European Commission, *Proposal for a Regulation of the European Parliament and of the Council establishing a carbon border adjustment mechanism* (COM(2021) 564 final). https://ec.europa.eu/info/sites/default/files/carbon_border_adjustment_mechanism_0.pdf.
[66] United States Trade Representative, *2021 Trade Policy Agenda and 2020 Annual Report* (March 2021) 3 https://ustr.gov/sites/default/files/files/reports/2021/2021%20Trade%20Agenda/Online%20PDF%202021%20Trade%20Policy%20Agenda%20and%202020%20Annual%20Report.pdf.
[67]'Ministry of Economy, Trade and Industry considers introduction of border carbon tax', *Nikkei* (Tokyo) 11 February 2021 https://www.nikkei.com/article/DGKKZO69029070Q1A210C2EE8000/.
[68] Parker et al, 'Tory pressure mounts for cross-border carbon levy', *Financial Times* (London) 27 May 2021 https://www.ft.com/content/514058ab-fd27-4318-82e0-dd5501356ebc.

regime's legitimacy and continuity. In the United States itself the demonstration of the breadth of Presidential discretion on trade may well suggest options to apply this to climate aspects of trade.

6.2 EU CBAM in detail

The EU CBAM proposed by the Commission is a substantial and pragmatic effort that clearly reflects considerable thought about the economic, legal and practical issues considered in this paper, though its responses are not always identical to those suggested here.

It is now very likely that a CBAM will be implemented, given the seriousness of the proposal, the high level of political support already evident from member state leaders and the Parliament, and the fact that a CBAM can be adopted by a qualified majority of members rather than requiring unanimity. The full proposal therefore deserves close scrutiny, though it will likely evolve further as it is agreed, implemented and evolved. The key features of the current proposal are sketched below.

6.2.1 Form

The EU CBAM will be implemented as a part of the EU ETS,[69] not as a tariff or a tax. It will commence in a transitional form in 2023, requiring only reporting by liable importers; financial obligations will only commence from 2026.[70]

Liable *importers* will need to buy CBAM units from designated European authorities at a price pegged to the average price of EU ETS allowances (EUAs) traded in the previous week.[71] CBAM units cannot be banked for long and once bought can only be either retired for compliance, or redeemed for the price originally paid for that specific unit.[72]

There is no proposal for an export adjustment.

The likely reasons for these arrangements are:

- Under EU rules the adoption of a new European tax requires unanimous agreement of member states, whereas modifications to the EU ETS may be adopted by a qualified majority;
- Imposing a cost on imports related as closely as possible to the cost faced by domestic industry increases the likelihood of WTO compatibility; but
- EU industry expressed concerns about the possible impact on EUA prices and adequacy of supply if there were demand from importers; and
- The EU ETS has previously experienced problems with the accumulation of large surpluses of EUAs and international offsets that persisted for years and suppressed prices.

The lack of an export adjustment may reflect concern that these need to be either consistent with the SCM Agreement or defended through GATT Art XX, but are harder to justify under an Excepted approach using GATT

[69] EC, above n65, Art 1(2).
[70] Ibid, Arts 32 and 36.
[71] Ibid, Arts 20-21.
[72] Ibid, Arts 22-24.

Art XX defences.[73] Other elements of the Fit for 55 package are relevant. Proposed reforms to the EU ETS would phase down the existing system of free allocation for leakage sectors covered by CBAM (discussed further at 6.2.6 below).[74] However, a large volume of the EUAs thus freed up are proposed to be allocated to an Innovation Fund which will support low carbon technologies and processes in many sectors, with special attention to projects in CBAM sectors.[75] The Commission may thus intend the Innovation Fund to substitute for an export adjustment, by helping reduce the underlying emissions exposure of covered sectors rather than rebating them for their carbon costs. We can expect further EU discussion of whether this solution is adequate and the merits of an export adjustment.

6.2.2 Scope of products and emissions covered

CBAM is described as progressively becoming an alternative to the previously established mechanisms of free allocation to address the risk of carbon leakage.[76] The proposal only covers goods that are specified in Annex I to the CBAM Regulation, which initially comprise aluminium, cement, electricity (as an import in its own right, rather than as an input to other imports), fertilisers and iron and steel in certain specified tariff codes.[77]

The proposal only applies to the direct emissions (Scope 1) from the production of covered goods[78] – for example the burning of coal or gas within the boundaries of the factory of origin. It does not apply to indirect emissions from off-site electricity generation (Scope 2, very important to aluminium) or embedded emissions from transportation (part of the broad Scope 3).

The Commission would be required to report before the end of the transition period in 2025-26 on matters including assessment of options to extend CBAM to other goods at risk of carbon leakage, to goods further down the value chain and services that may become subject to leakage risk (unstated: because of the pass through of carbon costs on their inputs that CBAM will enable), to indirect emissions from electricity, and potentially to embedded emissions from transportation.[79] The listed products are relatively basic materials already included on the existing EU ETS leakage list, along with some simple derivative products like steel pipes and fittings. While there is future review, there is no current listing of more elaborately transformed goods incorporating covered materials, though there are anti-circumvention provisions to cover slight modifications to covered products.[80]

The likely reasons for the selection of initial covered goods are:

- Adjusting beyond the bounds of the leakage list would increase the complexity of the scheme for little gain, since the listing process already prioritises the sectors most impacted by carbon pricing;

[73] See Chapter 3 above.
[74] European Commission, *Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757* (Brussels, 14.7.2021, COM(2021) 551 final) Art 1(12) https://ec.europa.eu/info/files/revision-eu-emission-trading-system_en.
[75] Ibid, Art 1(12)(g).
[76] EC, above n65, Art 1(3).
[77] Ibid, Annex I.
[78] Ibid, Art 3(16).
[79] Ibid, Art 30.
[80] Ibid, Arts and 27

- The sectors selected from within the leakage list include those that have been most apprehensive about the impact of declining EU ETS emissions caps and increasing EUA prices on the sustainability of free allocation and their own competitiveness;
- In practice the bulk of the affected trade in the specified products is from Russia and Turkey, rather than China Japan or the United States. The EU may feel more comfortable experimenting on trade with the former before extending to products that affect the latter more intensely.

The likely reasons for the initial coverage of direct emissions only are:

- Attribution of electricity sector emissions to a given energy-using facility can be complex and contested;
- Electricity systems within Europe vary widely in their emissions intensity, making it difficult to specify a Europe-wide default emissions factor for adjustment that would both satisfy producers in higher-emissions (and higher carbon cost) member states, while also being nondiscriminatory in WTO terms;
- Existing free allocation for the indirect costs of electricity emissions to leakage risk sectors is also complicated by the diversity of electricity systems, and is done on a varying basis across member states. Withdrawing this varied free allocation in favour of a consistent CBAM is fraught and controversial with electricity-intensive activities, especially primary aluminium producers.
- Considering embedded emissions from transport and upstream material inputs can greatly complicate a scheme and the costs may outweigh benefits.

With more time to consider the issues and assess available data the Commission is likely to find a workable approach to electricity emissions. Embedded emissions are a harder problem and may not be included for some time, if ever.

6.2.3 Scope of economies affected

The import adjustment would apply to imports to the EU from all nonmember countries and regions except for those specified at Annex II, a list that the Commission may add to primarily on the basis that the country in question is integrated with or linked to the EU ETS.[81] Currently exempted countries include Iceland, Liechtenstein, Norway and Switzerland.[82] These provisions might be particularly important for policy development in the United Kingdom, and negotiations between the UK and EU, on the extent to which post-Brexit UK carbon pricing arrangements are connected to the EU ETS.

The likely reasons for these arrangements are:

- Exempting imports from certain countries can add to the risk that CBAM is discriminatory for WTO purposes, and the risk that unadjusted imports create a competitive distortion.
- Adjustments on imports from economies linked to the EU ETS would increase economic friction and discourage linking.
- Exempting only those economies actually linked to the EU ETS minimizes the risk of distortions and presents a strong case for nondiscrimination.

[81] Ibid, Art 2.
[82] Ibid, Annex II.

6.2.4 Approach to assessing emissions intensity

The emissions intensity of covered imports would be established either by:

- the importer's declaration of specified data on the direct emissions embodied in the relevant products, verified by persons approved according to EU rules on the basis of site visits to the originating installation; or
- if the information is not declared or the declaration is not adequately verifiable, default values will be applied.[83]

The verification system looks rigorous and demanding, though there are provisions for streamlining. It would be possible for a facility outside the EU to register with the EU authorities at a verified emissions intensity for five years at a time, with this data being used for all imports of that facility's products.[84] Verification can only be done by persons accredited by EU authorities.[85] It is imaginable that this accreditation could be given to regulatory authorities in other jurisdictions, such as Australia's Clean Energy Regulator.

It is possible that the verification system will prove navigable, especially over time as familiarity grows and accredited verification options become more widespread. However, it is probable that either through choice or because the EU does not accept their data as verified many importers will use the default approaches, particularly in the early years. The defaults are thus very important.

There are two default approaches for covered goods:

- When reliable data for the specific importer cannot be adequately determined, the default is the average emissions intensity of production of the relevant good in the country of origin; or
- If reliable data for the country of origin is also unavailable, the default is the average emission intensity of the 10 per cent of worst performing EU installations producing the relevant goods.[86]

Overall the emissions intensity assessment approach is quite pragmatic. It appears to represent a bet each way between the Compliant and Excepted approaches canvassed in section 3.2.1 above: using domestically based defaults for reasons of practicality and nondiscrimination (closer to Compliant); but offering the prospect of differentiated treatment based on rigorous data (closer to Excepted). The selection of the worst domestic performers, rather than the average, as the basis for the second default may make it harder to argue that the WTO commitment to national treatment is being met; but it provides a stronger incentive for importers to supply validated data, and allows a sharper domestic carbon price signal. This may be an area for further argument.

6.2.5 Approach to carbon constraints in other economies

Importers may claim a reduction in their CBAM liability if they can verify that the relevant emissions were subject to a carbon price in the country of origin, that an amount was actually paid, and that there was no export rebate or other export-linked compensation.[87]

[83] Ibid, Art 7.
[84] Ibid, Art 10.
[85] Ibid, Art 18.
[86] Ibid, Annex III point 4.1.
[87] Ibid, Art 9.

This is a reduction of the value of liability, not an exemption from liability. If an importer has verifiably paid the equivalent of €10/t in its home country for all its direct emissions, and the EU ETS price at the time of import is €50/t, the importer's liability would be reduced to €40/t, not to zero.

This is a critical provision that ensures relevant imports from economies with carbon pricing will, in practice, mostly pay CBAM in full. That is because, as previously noted, most existing carbon pricing policies involve high levels of free allocation, especially to the sectors CBAM focusses on. The proposed approach is flexible and would remain relevant if nations phase down free allocation (or introduce export border adjustments, for that matter).

The approach prioritises the competitive neutrality goal over the goal of influencing other countries' policies – for example, China could not escape CBAM on its (small) steel exports to Europe simply by extending its national ETS to steel.

6.2.6 Approach to EU free allocation

CBAM liabilities will be reduced to the extent that there is free allocation to EU producers of like products.[88] This is intended to ensure WTO compliance, by not asking importers to pay a cost that domestic producers are spared.

The Commission's related proposals for reform of the EU ETS specify that free allocation to sectors covered by CBAM is to reduce by 10 percentage points each year from the end of 2025, phasing out entirely after the tenth year.[89] Shifting the competitiveness approach to rely on CBAM instead of free allocation means that large volumes of allowances become available for auction, with the resulting revenue directed to innovation and other purposes.

A future complexity lies in the treatment of free allocation within the EU for indirect costs via electricity impacts. As noted, indirect emissions are not part of the initial proposal but will be considered for inclusion later. If and when they are included, WTO compatibility demands that EU free allocation for the same sort of indirect costs be also taken into account in setting importer liabilities. However this will be economically and politically complex for the EU, given the previously noted diversity of electricity systems, consequential differences in member state approaches to indirect free allocation, and the high electricity intensity of aluminium in particular.

[88] Ibid, Art 31.
[89] EC, above n74, Art 1(12)(c).

6.3 EU CBAM impacts on Australia

Australia is not a focus of the EU CBAM, which will most heavily affect trade with Russia and Turkey. However, exploring the potential impacts on Australian trade is important given the apprehension surrounding CBAM in Australia, and useful as an illustration of how CBAM may work. The same analytical approach will also be useful if the EU expands the range of covered products.

6.3.1 Covered Australian exports

Australia exports a modest amount of covered steel products to the EU, small volumes of covered aluminium products, and zero or negligible volumes of the other products (see Table 5 below). We can conclude that Australia as a whole does not currently have a lot of trade directly at stake with respect to CBAM, though the exposure of individual businesses might be higher. If impacts were significant it may not be difficult to find different markets for impacted products.

Table 5 - Australian exports to Europe covered by current CBAM proposal[90]

Product	Australian exports to EU, average 2017-19 ($A/yr, m)[91]	% of total Australian exports of that product, average 2017-19
Aluminium	13.5	0.35%
Cement	0	0%
Electricity	0	0%
Fertiliser	1.2	0.54%
Iron and Steel	60.8	4.99%

It is likely that CBAM will expand in future to cover other products, including those of other sectors in the leakage list and potentially further products for which leakage sector products are significant inputs. Australia's largest goods exports to the EU, and the potential for impacts, are considered in Table 6 below. Overall it seems unlikely that there will be substantial impacts on these exports, given the combination of likelihood of future coverage, modest emissions intensity, and the offsetting impacts on profitability that will be considered in greater detail in the aluminium and steel assessments in the next sections.

However it should be noted that Australia's coking coal exports to Europe face a much more serious potential indirect impact from CBAM. The emissions from producing coking coal are much smaller than the emissions from using coking coal, primarily in primary steelmaking. The existing EU ETS provides a price signal to steelmakers to reduce emissions, and an increasingly prominent option for deep emissions reductions in steel is to use hydrogen instead of coking coal to reduce iron oxide to iron. To the extent that it maintains the expected long term competitiveness of EU steelmakers who reduce emissions, CBAM will sharpen that incentive and erode demand for coking coal in the EU over time.

[90] Based on data from UN Comtrade https://comtrade.un.org/data/. The 2018 steel result is unusually high as a result of a single very large shipment to the UK, which may be a one-off and may not be relevant to CBAM given Brexit.
[91] UN Comtrade https://comtrade.un.org/.

Table 6 - Major Australian exports to EU not covered by current CBAM proposal

Product	Exports ($A/yr, m)[92]	EU ETS leakage list status[93]	Likelihood of future CBAM coverage	Australian impact if covered by CBAM
Gold	2,807	Not listed	Unlikely – low emissions intensity, unlikely to be added to leakage list	Headline cost ~3% of pre-CBAM sale price, negligible final impact[94]
Coal	2,675	Listed (hard coal mining, no benchmark; coke)	Possible	Headline cost <1% of pre-CBAM sale price, negligible final impact[95]
Oil seeds	910	Not listed	Very unlikely; agriculture not covered by EU ETS	Headline cost ~5% of pre-CBAM sale price, negligible final impact[96]
Wine & beverages	597	Not listed	Very unlikely; low intensity, agriculture not covered by EU ETS	Headline cost <1% of pre-CBAM sale price, negligible final impact[97]
Lead	461	Listed (Lead, zinc and tin, no benchmark)	Possible	Headline cost perhaps 5% of pre-CBAM sale price, negligible final impact[98]

[92] Average of 2014-15 to 2016-17 data published in Department of Foreign Affairs and Trade, *Australia's goods trade with the European Union* (December 2017) 3 https://www.dfat.gov.au/sites/default/files/australias-goods-trade-with-the-eu.pdf.

[93] See European Commission, *ANNEX to the Commission Delegated Decision supplementing Directive 2003/87/EC of the European Parliament and of the Council concerning the determination of sectors and subsectors deemed at risk of carbon leakage for the period 2021 to 2030*, C(2019) 930 final ANNEX (February 2019) https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1146-Carbon-Leakage-List-2021-2030_en.

[94] Headline impact is an Ai Group calculation based on gold prices around AUD$55m/t, a €50 EU carbon price and emissions intensity data reported in SP Global, *Landmark Australian gold mine emissions study warns on impact of falling grades* (30 June 2020) https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/landmark-australian-gold-mine-emissions-study-warns-on-impact-of-falling-grades-59247681. Final impact reflects expectations based on the detailed calculations for aluminium and steel.

[95] Headline impact is an Ai Group calculation based on metallurgical coal prices around AUD$200/t, a €50 EU carbon price and emissions intensity data in Europe's free allocation for coke at https://ec.europa.eu/clima/sites/default/files/ets/allowances/docs/gd9_sector_specific_guidance_en.pdf. Final impact reflects expectations based on the detailed calculations for aluminium and steel.

[96] Headline impact is an Ai Group calculation based on canola prices around €480/t, a €50 EU carbon price and emissions intensity data reported in CSIRO, *Greenhouse gas emissions from the cultivation of canola oilseed in Australia* (November 2017) http://australianoilseeds.com/__data/assets/pdf_file/0010/11440/Australian_Country_Report_for_Canola_Nov2017-_Updated_with_CO2_MJ_FAME.pdf. Final impact reflects expectations based on the detailed calculations for aluminium and steel.

[97] Headline impact is an Ai Group calculation based on average export wine prices around €7/bottle, a €50 EU carbon price and emissions intensity data reported in Abbott et al, 'Assessing the environmental credentials of Australian wine', *Wine and Viticulture Journal* (Jan/Feb 2016). Final impact reflects expectations based on the detailed calculations for aluminium and steel.

[98] Headline impact is an Ai Group calculation based on average lead prices around €1,500/t, a €50 EU carbon price and emissions intensity of1.475tCO2e/t taken from Australia's EITE activity definitions. Final impact reflects expectations based on the detailed calculations for aluminium and steel.

6.3.2 Modelling CBAM impacts

Assessing the product-specific impacts of CBAM is complex, especially since the proposal has not yet been implemented and its full ramifications may not be clear. Many simplifying assumptions must be made, of which the most important is CBAM's impact on product selling prices inside Europe.

As noted throughout this paper, the broad imposition of an import adjustment will lead to higher selling prices within the adjusting economy for affected products, since all suppliers will face a carbon cost (whether paying the carbon price or paying the relevant premium for cleaner production)[99] and customers will not be able to escape this except by shifting their consumption. This increase will reflect the costs facing those suppliers who are in a position to shape prices based on supply and demand to the relevant market, cost structures of the relevant producers and the price elasticity of demand by the relevant consumers. These factors will shift over time and are complex to assess.

This paper makes the simplifying assumption that since Turkey and Russia are the leading sources of European imports of primary aluminium and steel, the supply costs facing these producers after taking account of CBAM impacts will be the most influential in shaping selling prices for these goods. It also assumes that detailed emissions data from these countries will not initially be accepted as valid within the EU, leading to the use of the EU-derived second default approach to emissions intensity.[100]

Impacts on Australian and European producers are assessed under four policy scenarios:

- **Scenario A – Status Quo**: in Europe, the existing ETS with a €50/t carbon price and existing free allocation benchmarks for direct emissions, and an assumption of effective full free allocation for electricity impacts for relevant sectors. In Australia, no binding carbon constraint. This captures the pre-CBAM status quo.
- **Scenario B – CBAM**: in Europe, as per scenario A but CBAM liabilities commence as currently proposed. EU free allocation for direct emissions is at 90% of previous levels and CBAM liabilities are reduced accordingly. In Australia, as per scenario A. This captures the initial implementation of CBAM.
- **Scenario C – CBAM & Safeguard+**: in Europe, as per scenario B. In Australia, the Safeguard Mechanism covering aluminium and steel production becomes a driver of emissions reductions, with baselines reduced by 10% and excess emissions covered by Australian offsets averaging AUD$25/t. This captures any differences a more aggressive Australian policy may have on CBAM exposure.
- **Scenario D – CBAM+**: In Europe all free allocation for direct emissions is phased out and CBAM operates at full strength. In Australia, as per Scenarios A and B.

[99] While in electricity generation new renewables have become cheaper than new fossil generation, even allowing for integration costs, it currently looks likely that fully clean aluminium, cement and steel will have cost premiums over high-emissions alternatives in the absence of a carbon price. These premiums are competitively significant but modest for end consumers. See Energy Transitions Commission, *Mission Possible* (November 2018) https://www.energy-transitions.org/publications/mission-possible/#download-form.

[100] Actual results could vary. Russian and Turkish suppliers may be able to get their own data validated; about 70% of Turkish steelmaking capacity relies on the much less emissions-intensive recycling of scrap in electric arc furnaces. Other exporters with lower intensities and better prospects of validating data might increase their market share. Europe's least efficient steelmakers are likely to close or upgrade their production technologies in the longer term. These and other variables could alter the impact of CBAM on steel prices, along with the many other factors that already shape the steel market.

- **Scenario E – CBAM++:** In Europe, as per Scenario D but CBAM has been expanded to indirect emissions and free allocation for these within Europe has been fully phased out. In Australia, as per Scenario A, B and D.

The analysis uses publicly available data for the typical levels in recent years of product prices, production costs, direct emissions intensities and national electricity system typical emissions. Some of these are volatile; EU steel prices are currently double their recent-year average, for instance.

The analysis is static, representing impacts of policy assumptions at a single point in time, with no responses by industry, evolution of carbon prices, or improvements from current emissions intensity in industry or electricity generation. In the real world commodity price shifts can substantially alter facility profitability, for example.

European data includes indicators of the average, most efficient and least efficient producers in terms of production cost, direct emissions and electricity system emissions; the analysis makes the simplifying assumption that these are correlated, though in reality they may mix and match – a facility with lower direct emissions might imaginably be located in a country with a more carbon intensive grid and higher operating costs, for example. The European estimates for 'most efficient' and 'least efficient' facilities should thus be taken as indicating the range of potential outcomes.

Australian data is for generic representative facilities in 2021, using a combination of:

- Scope 1 emissions intensity data from recent industry disclosures where available and JCP activity definitions elsewhere (now out of date, but comparable to individual corporate disclosure where visible);
- recent national and State-level Scope 2 electricity intensity benchmarks and JCP-era electricity intensities, and similar assumed renewable contracting strategies to actual Australian facilities; and extrapolations of production cost from global cost curves (comparable to individual company disclosures where visible). The results describe generic aluminium smelters and steel blast furnaces in different Australian locations; as they do not incorporate data specific to actual individual facilities, they do not predict the specific outcomes for those real facilities.

The quantitative results that follow are thus only broadly indicative of the kinds of difference CBAM and other policy scenarios may make under simple assumptions. They are definitely not forecasts and should not be relied on for financial decisions. Reality will be much more dynamic and complex.

6.3.3 Impacts on Australian aluminium exports

Table 7 - Impacts on EU aluminium prices

	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
Selling prices (post policy, € / t Al)	2,000	2,060	2,060	2,140	2,528

Selling prices for aluminium within the EU rise only modestly with CBAM (Scenario B) versus the status quo (Scenario A). This is because most aluminium emissions are associated with electricity use that is not covered, and free allocation within Europe remains substantial at the outset so CBAM liabilities are heavily discounted. A more aggressive Australian emissions policy (Scenario C) has no direct effect on product prices in the EU. When free allocation for EU producers' direct emissions phases out (Scenario D) higher costs to all producers lead to somewhat higher selling prices. Bringing indirect emissions into CBAM (Scenario E) substantially increases liabilities and selling prices too.

Table 8 - Impacts on aluminium supplier costs

Net cost from EUETS (€ / t Al)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
EU (best 10%)	0	9	9	90	97
EU (average)	12	21	21	101	289
EU (worst 10%)	51	60	60	140	515
Australia (national default)	0	16	16	97	636
Australia (EU default)	0	60	60	140	693
Australia (Coal-intensive facility)	0	16	13	97	705
Australia (Renewables-intensive facility)	0	16	13	97	225

The least efficient EU suppliers have moderate costs from the EU ETS at present, given partial free allocation for their direct emissions costs and likely full free allocation for their electricity exposure (Scenario A). Those costs increase with CBAM with the phasedown of free allocation for direct costs (Scenario B), while the impact on Australian producers depends on whether they are able to get their own data validated or must rely on defaults. If individual or national average data is accepted Australian suppliers' carbon costs are below the EU average, while if no Australian data is accepted our suppliers would face default costs as high as the least efficient EU suppliers.

A tougher Australian climate policy (Scenario C) reduces CBAM liabilities, but only if individual facility data can be validated, and only to the extent of their Australian liabilities; their total cost of supply to the EU would be

identical between Scenarios B and C. Eliminating EU free allocation for direct carbon costs (Scenario D) increases net carbon costs versus Scenario B but maintains relativities.

If the EU brings indirect electricity emissions into CBAM (Scenario E), carbon costs increase for all suppliers, but how much depends on the emissions intensity of their electricity supply. Australia's current national average electricity emissions intensity is higher than Europe's and major exporters Russia and Turkey, and would be a significant disadvantage under default approaches and for facilities in high-emissions grids. Conversely, a smelter in a low-intensity grid region that was able to get its own data validated would have much lower costs and potentially a competitive advantage.

Table 9 - Impacts on aluminium supplier profitability

Profitability of EU sales (% of sale price)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
EU (best 10%)	26.5%	28.2%	28.2%	27.1%	38.0%
EU (average)	15.4%	17.4%	17.4%	16.8%	22.1%
EU (worst 10%)	3.0%	5.3%	5.3%	5.1%	4.9%
Australia (national default)	12.5%	14.2%	14.1%	13.7%	5.6%
Australia (EU default)	12.5%	12.1%	12.0%	11.7%	3.4%
Australia (Coal-intensive facility)	12.5%	14.2%	14.2%	13.7%	2.9%
Australia (Renewables-intensive facility)	12.5%	14.2%	14.2%	13.7%	21.9%

The most and least efficient EU suppliers differ in their baseline profitability, with the generic Australian supplier comparable to the EU average (Scenario A). Initial introduction of CBAM (Scenario B) slightly improves the profitability of all EU suppliers, since they were already paying some uncompensated carbon costs and the increase in selling prices exceeds the initial reduction in their free allocation. Australian suppliers would slightly improve profitability if they were able to get national data or individual data validated, since their Scope 1 emissions intensity is slightly better than the EU average. If no data is accepted and Australian suppliers are subject to EU-based defaults profitability would slightly fall.

If Australia toughens its emissions policies (Scenario C) and suppliers are able to get their own data accepted by the EU there is no direct change in the profitability of their EU sales, as higher costs within Australia are offset one-for-one by reduced costs at the border.[101] Profitability is slightly reduced if individual data about costs paid in Australia is not accepted.

Eliminating free allocation within the EU (Scenario D) is broadly stable for profitability, as the increase in gross supply costs to all suppliers is offset by the increase in selling prices. Again Australian suppliers would be worst off if Australian data cannot be validated by the EU and the EU-based default applies.

[101] In the real world, dynamic effects and responses would be important; any reductions in emissions intensity in response to Australian policy would reduce exposure to EU carbon costs.

Bringing indirect emissions from electricity into CBAM dramatically changes the relative outcomes for different suppliers (Scenario E). This is because aluminium smelting requires large amounts of electricity and the generation-related emissions can be much larger than direct emissions at the smelter. EU sales by suppliers with the cleanest electricity, whether in Europe or at renewables-intensive sites in Australia that get their data validated, become substantially more profitable. The cleanest Australian suppliers might more actively target that market. Conversely coal-intensive suppliers would see little profit in EU sales. However, it should be expected that over time the EU aluminium sector will respond to carbon price incentives and invest to cut emissions; while the mix of EU aluminium imports would shift as less emissions intensive suppliers targeted it. Both might change the supply curve, alter the impact of CBAM on prices, and further reduce the profitability of Australian supply unless they too reduced emissions.

The absolute impact of lost or gained profits is small in all scenarios because of the small existing volume of trade. It is overall negative in Scenario E because most existing Australian aluminium smelters are coal-intensive.

Table 10 - Absolute value of profit impact on Australian aluminium trade with EU

Absolute impact estimates (AUD$m)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
National default		0.18	0.17	0.13	-0.88
EU default		-0.04	-0.05	-0.09	-1.17

6.3.4 Impacts on Australian steel exports

Table 11 - Impacts on EU steel prices

	Scenario A - Status Quo	Scenario B - CBAM	Scenario C - CBAM & Safeguard+	Scenario D - CBAM+	Scenario E - CBAM++
Selling prices (post policy, € / t steel)	500	562	562	640	645

As with aluminium, steel prices in the EU rise in CBAM scenarios, reflecting the impact of CBAM costs on leading Russian and Turkish suppliers and the difficulty of EU customers in meeting demand with carbon cost-free alternatives. Price impacts are leap when free allocation ends (Scenario D), but increase only slightly more when indirect emissions are included (Scenario E) as primary steelmaking is only modestly electricity-intensive.

Table 12 - Impacts on steel supplier costs

Net cost from EU ETS (€ / t steel)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
EU (best 10%)	0	9	9	87	87
EU (average)	25	34	34	112	114
EU (worst 10%)	53	62	62	140	145
Australia (national default)	0	22	22	100	118
Australia (EU default)	0	62	62	140	145
Australia (NSW generic)	0	22	19	100	112
Australia (SA generic)	0	22	19	100	108

Less efficient EU steel producers already face significant carbon costs (Scenario A), and these grow for all EU suppliers as free allocation phases down (Scenarios B and D), though only slightly more when indirect emissions are included (Scenario E).

Australian suppliers to the EU would bear costs slightly below the EU average if they can get their own emissions data or Australian national averages accepted, but would face high costs if the EU default applies. As for aluminium, a more ambitious Australian climate policy (Scenario C) reduces costs at the border for exports to the EU, but only to the extent of increased costs for production in Australia. The high emissions intensity of Australian electricity systems compared to European ones becomes an issue with the inclusion of indirect emissions, though location in a cleaner region like SA or the procurement of renewable energy can make individual outcomes better than a national default.

Table 13 - Impacts on steel supplier profitability

Profitability of EU sales (% of sale price)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
EU (best 10%)	21.6%	28.7%	28.7%	25.2%	25.8%
EU (average)	3.4%	12.5%	12.5%	11.0%	11.3%
EU (worst 10%)	-15.5%	-4.3%	-4.3%	-3.8%	-3.7%
Australia (national default)	26.1%	30.3%	29.7%	26.6%	24.4%
Australia (EU default)	26.1%	23.2%	22.6%	20.4%	20.2%
Australia (NSW generic)	26.1%	30.3%	30.3%	26.6%	25.4%
Australia (SA generic)	26.1%	30.3%	30.3%	26.6%	26.0%

All EU steel suppliers would be more profitable under CBAM (Scenario B) than today (Scenario A), since the rise in selling prices benefits the most efficient and enables the less efficient to recover some of the carbon costs they currently absorb. This boost persists at a lower level even with the removal of all free allocation within the EU (Scenario D) and the inclusion of indirect electricity emissions (Scenario E).[102]

Australian suppliers' profitability would be only slightly affected by the introduction of CBAM – slightly reduced if they rely on default intensities, or slightly improved if they are able to validate individual intensities, and basically stable if the EU abolishes free allocation in favour of full reliance on CBAM. Introduction of a more ambitious Australian emissions policy (Scenario C) does not affect the profitability of EU sales.

Table 14 - Absolute value of profit impact on Australian steel trade with EU

Absolute impact estimates (AUD$m)	Scenario A (Status Quo)	Scenario B (CBAM)	Scenario C (CBAM & Safeguard+)	Scenario D (CBAM+)	Scenario E (CBAM++)
National default		2.17	1.88	0.32	-0.99
EU default		-1.48	-1.77	-3.33	-3.44

Total potential impacts on profits relating to steel are larger than for aluminium due to the greater volume of Australian steel exports to the EU, though still quite small. Impacts would be positive overall if national or individual Australian data is accepted by the EU, and negative if EU defaults apply.

[102] The analysis suggests that some EU steelmakers are currently unprofitable in the status quo scenario. This is possible – the steel industry has been under great pressure and policy has sometimes intervened to keep nationally sensitive production going. However, the specific numbers are more likely an artefact of the simplifying assumption that the lowest cost, highest efficiency and lowest grid intensity of producers are correlated.

6.3.5 Overall impacts of CBAM as proposed on Australian trade

The analysis above suggests very little immediate direct net impact on Australian trade from the introduction of CBAM as proposed by the European Commission. In aluminium the affected volume of trade is miniscule. In steel the volume is small. Profitability would be roughly stable if Australian data is accepted by the EU, or reduced if defaults apply.

This is a largely reassuring picture for suppliers of aluminium and steel. However there are important caveats to keep in mind.

As already noted the assumptions and analysis used are simplified and static.

If the marginal suppliers who shape the price outcomes in the EU turn out to have lower emissions than assumed, prices may rise by less and more emissions intensive suppliers will be less profitable. Over time it is likely that the strong carbon price signal inside Europe and other supportive policies will see cleaner EU production using new technologies expand greatly. If and when near-zero emissions suppliers' potential output is enough to meet most demand, their cost structures will determine whether higher emissions producers can recover all, some or none of their carbon costs.

Demand for aluminium and steel within the EU might reduce in response to higher prices, reflecting either competition from other materials used for the same purposes, or a shift towards different forms of consumption and investment. If so, suppliers might sell lower volumes; or, for fear of this, forego full cost recovery and accept lower profits. Such shifts are likely over time, though limited by the level of suppliers' success in reducing emissions. They might be painful for more emissions intensive suppliers inside and outside the EU, but they would not be discriminatory or inefficient unless the price signal was distorted. This could happen in at least two ways:

- Exclusion of relevant materials or emissions from CBAM. It would be important to ensure that CBAM and the EU ETS covered the significant emissions of all materials that meaningfully compete. For instance, structural steel, cement and cross laminated timber (CLT) compete in some construction contexts; CLT can have emissions associated with manufacture that are covered by the EU ETS but it is not yet proposed for inclusion in CBAM. Expanding CBAM is complex but could address concerns about equitable treatment of industries.
- Recycled materials and additionality. Recycled aluminium and steel can have significantly lower emissions than primary production, and an efficient universal carbon price would encourage greater recycling. EU CBAM increases the returns to recycling covered products. Anti-avoidance measures, including the emphasis on validated data, seek to ensure that high-emissions materials are not fraudulently passed off as recycled. However there is already substantial recycling around the world. If genuine recyclers shift more of their output into the EU, and higher emissions producers fill the gap left behind in non-EU markets, the carbon intensity of EU consumption would improve but world emissions would be unchanged. This is comparable to concerns about the effect of past EU incentives for biomass energy. The effect is limited by the differing suitability of recycled materials for some use cases and the availability of scrap for recycling. The EU will nonetheless need to monitor trends in markets covered by CBAM and devise responses if an individually genuine but globally meaningless shift in the destination of recycled materials ensues. The adoption of carbon border adjustments by other major economies would greatly help.

Another potential indirect impact would arise if the EU CBAM effectively shut some suppliers out of the EU market, leaving them to seek markets elsewhere without a border adjustment – potentially including Australia.

The result could be reduced prices and volumes for existing Australian suppliers. There are some limits on this concern.

- The analysis in this chapter of direct CBAM impacts on Australian suppliers is broadly applicable to other exporters to the EU – it is not likely that any supplier will be immediately shut out of the EU market by CBAM. Over time, though, the growth of clean producers might indeed lead remaining high-emitting producers outside the EU to attempt 'carbon dumping'.
- Australia's existing anti-dumping regime would be the obvious solution if carbon dumping became a reality. Industry and government, particularly the Anti-Dumping Commission, will need to monitor the situation closely.
- An Australian carbon border adjustment would also be a solution to carbon dumping.

A more sophisticated economic modelling exercise could potentially illustrate these indirect and longer term impacts more comprehensively, though it would be no more likely than the simpler analysis in this paper to predict the specific numerical outcomes. At this point it is fair to say that these indirect and longer term impacts are important to monitor, and Australia's exposure will increase if there is no improvement in our emissions intensity or development of our climate policy regime. The future expansion and reform of CBAM and the broader EU ETS will also alter its effects on Australia. Overall, however, the biggest effect of the EU CBAM on Australia might be the learning opportunity it provides to us – and to other economies with whom we have more trade.

6.4 Impacts of other potential border adjustments on Australia

As noted, other major economies are also considering carbon border adjustments, albeit at an earlier stage and with much less available detail compared to the EU. Japan, the United Kingdom and the United States are globally important economies as well as large Australian trade partners. Should they actually adopt carbon border adjustments these might affect a larger share of Australian trade, and a wider range of exports, than the EU CBAM as proposed.

Analysis is difficult in the absence of detailed proposals. However there are strong reasons to expect that Australia would have little to fear from additional carbon border adjustments:

- The trade law questions considered in Chapter 3 constrain our partners as well as us; punitive or discriminatory adjustments are much less likely to pass WTO muster;
- A nondiscriminatory WTO-Compliant overseas adjustment similar to the Australian adjustment considered in Section 5.1.2 above would not disadvantage an Australian exporter relative to other suppliers; the analysis in this Chapter suggests EU CBAM will be similar to this;
- Per Section 5.1.2, a Compliant adjustment would also not remove an existing advantage that Australian suppliers might be imagined to enjoy due to the lack of a strong carbon constraint at home. In fact

there is no such advantage to lose, since economies with strong carbon constraints such as the EU also heavily shield their EITE sectors from a loss of competitiveness;[103] and

- At most, overseas carbon border adjustments might decrease demand for products that are emissions intensive to produce (like current primary steel), in favour of lower-emissions substitutes (like recycled steel). If substitute products have significant unpriced and/or unadjusted emissions, this could provide a distorted incentive; otherwise the incentive is efficient.

6.4.1 United States – Polluter Import Fee

At the time of writing US Democratic lawmakers were proposing a 'polluter import fee' (PIF) as part of a major budget package.[104]

If enacted the PIF proposal would:

- Impose a tariff from 2024 on imports of fuels including coal, gas and petroleum and products including aluminium, cement, iron and steel, and other sectors subsequently designated;
- Exempt least developed countries; and countries with enforced climate measures that are at least as ambitious as Federal US measures (as determined by the US Secretary of the Treasury) and which do not also impose a carbon border adjustment on US exports;
- Set the tariff for each covered fuel or product according to:
    - The average cost on US producers of like fuels or products from complying with all Federal, state, regional and local regulations and programs to reduce emissions (as determined by the Secretary of the US Treasury); and
    - The emissions from producing the fuel or product; or if these can't be reliably determined, the emissions intensity of the least efficient 1% of US production of the like good.
- Allocate revenues to scheme administration, emissions reduction and social equity purposes.

The future of the PIF and the larger budget package are uncertain. Given that Republican support for either is not expected, passage requires:

- Continued support by Democratic leadership to retain the measure in an omnibus bill of Democratic priorities that can be passed by a procedure known as 'reconciliation', enabling a simple majority of the Senate to pass it rather than the super-majority needed to break a filibuster;
- Agreement by the Senate Parliamentarian that this measure meets the complex requirements for passage through reconciliation;

[103] In the past Australian producers of energy-intensive products enjoyed a competitive advantage from stranded fossil fuels and fossil-intensive electricity available at low cost. However this advantage has largely evaporated as local fossil resource prices have become closely influenced by export markets and international pricing; extraction costs have risen; and legacy supply contracts have expired. If a new advantage can be constructed it is likely to center on renewable energy, though moderating the integration costs of variable renewables is a significant challenge.

[104] Reported in Lisa Friedman, 'Democrats Propose a Border Tax Based on Countries' Greenhouse Gas Emissions', *New York Times* (July 19 2021) https://www.nytimes.com/2021/07/19/climate/democrats-border-carbon-tax.html. Legislative text for the initial version of the border adjustment proposal is at https://www.coons.senate.gov/imo/media/doc/GAI21718.pdf.

- Support by nearly all Democrats in the House of Representatives; and
- Support by every Democratic-aligned Senator.

Greater scrutiny will be needed if the proposed PIF advances. However some early observations can be made.

The United States does not currently have a clear objectively observable national carbon constraint, but a patchwork of measures in different sectors and jurisdictions, many of them regulatory. Translating those into a robust equivalent carbon cost is complex and the answer is likely to be contested. There are two broad scenarios for PIF implementation:

- *Aggressive adjustment:* the US might impose swingeing tariffs on major economies, especially China, based on pessimistic assessments of current US compliance costs and the level of enforced cost in other economies. This would be harder to justify as either WTO-compliant or WTO-exempted, and would likely provoke similar levels of trade tension to other recent disputes in US trade relations.
- *Adjustment two-step:* the US might implement PIF in a cautious way with limited near-term effects. The Federal Government's preferred regulatory impact assessments of its own policies indicate modest cost; there is heavy free allocation in existing State and regional carbon pricing schemes; and much US policy relies on tax credits and other instruments without a direct cost to emitters. These low domestic costs could lead to many countries being exempted due to their more ambitious policies; and to low tariffs on unexempted imports. However, having established this safeguard, the US may become more comfortable with subsequently ramping up domestic policy, which would flow through to fewer exemptions and higher tariffs on covered imports. This approach would be much more defensible as WTO-consistent.

Of the products initially proposed to be covered by PIF, Australia exports significant volumes of aluminium and steel to the US.

Table 15 - Australian exports to the United States potentially covered by the proposed Polluter Import Fee

Product	Australian exports to US, average 2017-19 ($AUD)	% of total Australian exports of that product, average 2017-19
Aluminium	$468.3m	10.3%
Cement	$0m	0.04%
Coal, gas, oil and other mineral fuels and distilled products	$22.5m	0.03%
Iron and Steel	$280.5m	15.7%

Given the low level of current detail around PIF it is not yet possible to meaningfully estimate the gross cost impacts on these Australian exports. The larger volume of trade compared to our exports to the EU suggests greater absolute impacts. However, it is plausible that the US PIF, if implemented in a nondiscriminatory fashion on a substantial share of covered US imports, would lead to an increase in selling prices for those products within the US. If so, the results would be similar to those calculated for the EU CBAM: impacts on profitability would be much smaller than impacts on gross costs of supply.

6.4.2 Climate policy and energy transition impacts on Australian trade

There is a much larger risk to demand for current Australian exports than the impact of carbon border adjustments. That is the effect of emissions commitments, climate policies and energy transition in Australia's major trade partners on their demand for coal, gas and oil over coming years. Most of Australia's fossil exports go to economies which have now committed net zero emissions by 2050 or 2060.

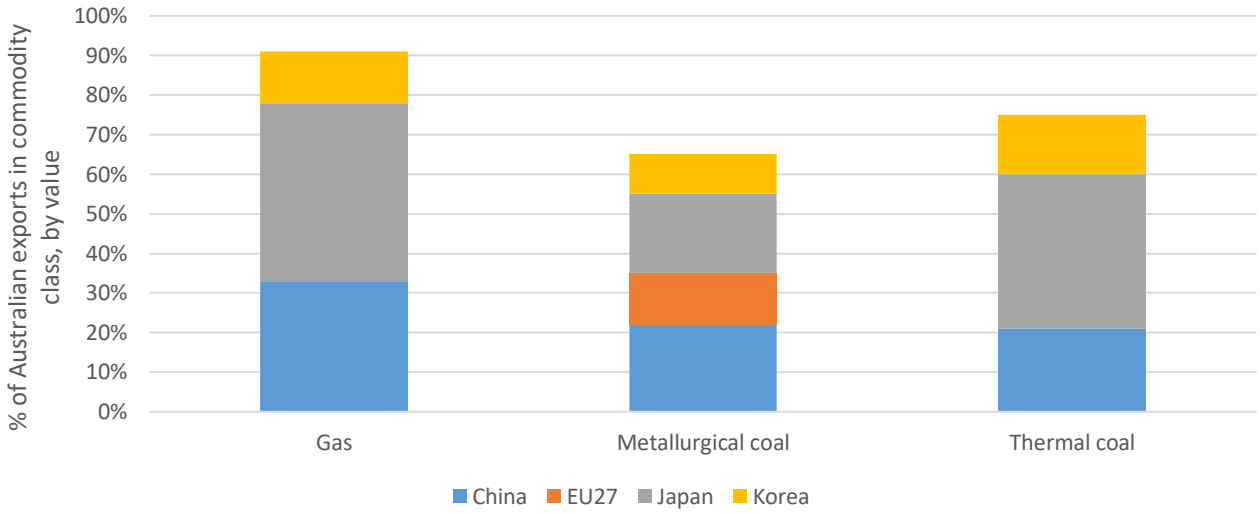

Figure 6 - Share of Australian 2018 fossil exports going to economies committed to net zero emissions by midcentury[105]

The same economies have also recently deepened their 2030 goals and are elaborating more policies to meet them; for instance, Japan's draft Basic Energy Plan would target sharply lower consumption of coal and gas in 2030 than previous plans or current demand.[106] The impact of their domestic emissions policies on Australian trade will be much larger than that of any border adjustments they may make.

Europe's ETS illustrates the dynamic: if the coking coal production emissions covered by the EU ETS were subject to border adjustment, at a €50 carbon price the cost of supplying coking coal to Europe might increase by €2.[107] But the same carbon price adds €138 to the cost of *using* coking coal in the EU. Coking coal prices have ranged from USD$100-250 in recent years. This is simply because the emissions from combusting a fossil fuel are much larger than the emissions from producing it, important as the latter are to Australia's national emissions inventory. Thus carbon constraints, even with a border adjustment, provide a much stronger incentive to reduce emissions from use of fossil fuels than they do to prefer one fossil fuel supplier over another.

The pace and extent of any long term decline in demand for fossil exports depends on decisions in Beijing, Seoul, Tokyo and other customer capitals, not Canberra. Responding to this decline will be complex and is beyond the scope of this paper. However, diversifying Australia's exports, for instance through a major move into clean hydrogen or other clean energy-intensive exports, seems sensible.

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[105] Department of Industry, Science, Energy and Resources, *Resources and Energy Quarterly* (March 2019) https://publications.industry.gov.au/publications/resourcesandenergyquarterlymarch2019/.
[106] Reuters, 'Japan boosts renewable energy target for 2030 energy mix', *Reuters* (July 21 2021) https://www.reuters.com/business/energy/japan-boosts-renewable-energy-target-2030-energy-mix-2021-07-21/.
[107] The full emissions involved are larger than this implies, but they are not all covered by the EU ETS.

Glossary

AANZFTA	ASEAN-Australia-New Zealand Free Trade Agreement
ACLFTA	Australia-Chile Free Trade Agreement
ANZCERTA	Australia-New Zealand Closer Economic Relations Trade Agreement
AUSFTA	Australia-United States Free Trade Agreement
ABF	Australian Border Force, agency responsible for customs
Carbon Leakage	The risk that emissions constrained in one economy are simply shifted to another, along with associated economic activity
CBAM Authority	Proposed body to administer EU CBAM
CBAM Units	Proposed units for CBAM compliance, with a value tied to the recent average of EUA prices in the week before initial purchase
CER	Certified Emissions Reductions – offset units issued under the United Nations Clean Development Mechanism
CER	Clean Energy Regulator, agency responsible for administering emissions reporting, the RET and the Safeguard Mechanism in Australia
CETA	Comprehensive and Economic Trade Agreement between Canada and the EU
ChAFTA	China-Australia Free Trade Agreement
Chapeau	In diplomacy generally, an agreed statement that sits above a piece of text and shapes its interpretation. In the WTO context, the chapeau emphasises the manner in which the measure in question is applied.
CLC	Climate Leadership Council, a US pressure group
CO2e	Carbon Dioxide Equivalent, a means of treating the impacts of different greenhouse gases on a common basis
Compliant adjustment	A concept in this paper for border adjustments that comply with the core obligations of the GATT
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership – a plurilateral trade agreement
DFAT	Department of Foreign Affairs and Trade, Australia's foreign ministry
Direct emissions	Emissions released by activity at a site, not up or down stream of it
EC	European Commission, the EU administrative organisation
EITE	Emissions Intensive Trade Exposed, a term for industries at risk of carbon leakage

Emissions intensity	The amount of emissions produced per unit of output, whether physical or economic
ETS	Emissions Trading Scheme, a form of carbon pricing involving emissions caps and floating prices
EUA	European Union Allowances, the emissions permits issued, traded and retired in the EU ETS
EU	European Union
EU CBAM	European Union Carbon Border Adjustment Mechanism
EU ETS	European Union Emissions Trading System, a major ETS
European Parliament	Legislative body of the EU
Excepted adjustment	A concept in this paper for border adjustments that achieve trade law consistency through the use of exceptions and defences to the core obligations
FTA	Free Trade Agreement, an agreement between two or more nations or economies to liberalise trade beyond their existing multilateral commitments
GATT	General Agreement on Tariffs and Trade, the multilateral trade agreement underlying the WTO and many other agreements
GST	Goods and Services Tax, a form of consumption tax
Home Affairs	Department of Home Affairs, Australian agency that contains ABF
HS Codes	Harmonized System Codes, product categories used to apply tariffs
Indirect emissions	In the EU ETS, emissions associated with the generation of electricity outside the boundaries of a liable facility for the use of that facility
ICS	Integrated Cargo System, the IT system supporting Australian Customs
JAEPA	Japan-Australia Economic Partnership Agreement
JCP	Jobs and Competitiveness Program, a system of free allocation of emissions permits used in Australia from 2011-2014 to address carbon leakage
KAFTA	Korea-Australia Free Trade Agreement
LNG	Liquefied Natural Gas
LRET	Large-scale Renewable Energy Target
MAFTA	Malaysia-Australia Free Trade Agreement
NGERS	National Greenhouse and Energy Reporting System
Paris Agreement	The multilateral agreement under the UNFCCC through which nations agree to pledge action and periodically review and update it to constrain global warming
PC	Productivity Commission, Australian agency for policy advice
PIF	Polluter Import Fee, a proposed carbon border adjustment for the United States

RET	Shorthand for the LRET, or for the totality of the LRET and the corresponding Small-scale Renewable Energy System applying to distributed renewables
Safeguard Mechanism	Australian carbon regulatory policy since 2014 that penalises large facilities that exceed emissions baselines
SAFTA	Singapore-Australia Free Trade Agreement
SCM	Agreement on Subsidies and Countervailing Measures, a multilateral trade treaty
Scope 1 emissions	Direct emissions
Scope 2 emissions	Indirect emissions
Scope 3 emissions	Emissions produced outside a facilities' boundaries but inside its supply chain, other than those associated with generation of electricity consumed
SGG	Synthetic Greenhouse Gasses, including many widely used refrigerants
TAFTA	Thailand-Australia Free Trade Agreement
Trade intensity	The sum of exports and imports, divided by gross product
Trade share	Another term for trade intensity
UNFCCC	United Nations Framework Convention on Climate Change, the multilateral treaty underpinning the Paris Agreement
VAT	Value Added Tax, a form of consumption tax
VEU	Victorian Energy Upgrades, an Australian provincial energy efficiency trading scheme
WTO	World Trade Organization