

An aerial photograph showing a coastal road. On the left, there's a beach with white sand and turquoise water. A long, multi-lane road curves along the coast. A large truck with multiple trailers is driving on the road. To the left of the road, there are stacks of colorful shipping containers (red, blue, yellow, orange) and a small crane. The road is bordered by a rocky shoreline and some sparse vegetation. A red semi-circle graphic is on the left side of the image, partially covering the beach and water.

Carbon border adjustment mechanisms: Implications for Australian agriculture

by Deloitte Access Economics Pty Ltd
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Carbon border adjustment mechanisms:
Implications for Australian agriculture

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Foreword

The Paris Agreement on Climate Change, signed in December 2015, has motivated many countries, including some of Australian agriculture's major trading partners, to implement various carbon taxes with the aim of meeting emissions targets. The implications of these taxes for Australian agriculture could be significant.

In 2022, Australia's Labor Government committed to an ambitious target to reduce emissions by 43 per cent by 2030, and achieve net zero emissions by 2050. Additionally, Australia recently joined 122 others in signing the Global Methane Pledge. Neighbouring New Zealand has unveiled a plan to tax sheep and cattle burps in a bid to reduce emissions nationally.

Australian agriculture needs to understand the implications of this activity to inform future policy-making and to arm Australian producers with the tools and knowledge required to prepare for, and navigate, the complex carbon taxing environment.

As part of this project, Deloitte Access Economics undertook a global scan of carbon taxes being implemented globally, including the European Union's (EU) Carbon Border Adjustment Mechanism (CBAM), and investigated what this

means for Australian agriculture and what the economic impact might be. This report also provides an international comparison of the policies of seven jurisdictions – the EU, New Zealand, the United States, the United Kingdom, Canada, China and Brazil – and their potential impacts.

The analysis found in relation to products covered by the current EU CBAM, the cumulative impact on Australian agriculture is negligible: between 2026 and 2040, the impact is \$34 million in present value terms relative to the baseline.

If agricultural products were to be included in the future, we would expect a cumulative reduction of \$1 billion in output for Australia's agriculture industry in present value terms relative to the baseline. On average, this is equivalent to a \$71 million reduction in output annually relative to the baseline, with these losses concentrated in the initial years after the CBAM is introduced.

The immediate recommendations include monitoring and learning from the policy decisions of other jurisdictions, including the EU CBAM and the New Zealand emissions price on agriculture; periodically reviewing the risks of the EU CBAM; and investing in data standards and emissions accounting frameworks for the Australian agriculture industry.

This report supports our priority of identifying, understanding and responding to national challenges and opportunities impacting Australian rural industries. Most of AgriFutures Australia's publications are available for viewing, free download or purchase online at www.agrifutures.com.au.

Michael Beer

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The authors acknowledge the Grains Research and Development Corporation for the insights and time provided during the course of the project.

General use restriction

This report has been prepared for Rural Industries Research and Development Corporation, trading as AgriFutures Australia. Deloitte Access Economics accepts no duty of care to any other person or entity. The report has been prepared for the purpose of providing a

clear overview of any planned carbon tax programs being implemented globally that will have a direct or indirect impact on Australian agriculture and producers. You should not refer to, or use, Deloitte Access Economics’ name for any other purpose.

Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics	DFAT	Department of Climate Change, Emissions, Energy and Water
AIG	Australian Industry Group	EPA	Environment Protection Agency
AOF	Australian Oilseeds Federation	ETS	emissions trading scheme
CBAM	carbon border adjustment mechanism	GDP	gross domestic product
CGE	computable general equilibrium	GTAP	Global Trade Analysis Project
DAE	Deloitte Access Economics	IPCC	Intergovernmental Panel on Climate Change
DAFF	Department of Agriculture, Fisheries and Forestry	OECD	Organisation for Economic Cooperation and Development
DCCEEW	Department of Climate Change, Emissions, Energy and Water	PFC	poly fluorocarbons
		WTO	World Trade Organization

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Executive summary

Australia and its trading partners are raising their ambitions to reduce emissions and reach net zero. As of November 2022, 140 countries, accounting for approximately 90 per cent of global emissions, had either announced or were considering a net zero target. Indeed, 78 per cent of Australia’s agricultural exports in 2020 went to countries that have at least pledged to achieve net zero emissions.

However, the pace and scale of emissions reduction is not uniform across jurisdictions. Countries that are decarbonising faster than others may introduce trade policies to manage the impacts of national emissions reduction policies on their international competitiveness. Carbon border adjustment mechanisms (CBAMs) are a price-based approach to ‘level the playing field’ in the absence of a global approach to carbon pricing.

The European Union (EU) was the first jurisdiction to announce a program for implementing a CBAM. The mechanism is designed to reduce carbon leakage and create a level playing field for domestic producers in industries that pay a carbon price as part of the EU emissions trading scheme (EU ETS) (European Parliament, 2022). Other countries, in response, have similarly announced consideration of adopting similar policies.

This report aims to build understanding of the current state of CBAM policies around the world and the potential implications for the Australian agriculture industry. As the long-term economic cost of emissions-reducing technologies declines, and countries decouple

economic growth from emissions, climate and the associated transition will become a central driver of trade and foreign investment. New trade and investment opportunities will emerge, and countries that can reduce emissions in trade-exposed sectors will benefit by increasing their competitive advantage.

Review of potential carbon border adjustment measures

Seven countries and regions were selected for analysis in this report. Their selection was based on their progress to date in the development and adoption of climate and environmental trade policies, their agricultural trade relationship with Australia, and whether they are key competitors of Australia in global agriculture markets. The jurisdictions are the EU, New Zealand (NZ), Brazil, Canada, China, the United Kingdom (UK) and the United States (US). Combined, these countries have accounted for about 45 per cent of the value of Australian agriculture exports over the past five years (DFAT, 2022a).

Based on a review of the current state of climate policy, the exposure of Australia’s trade relations to these jurisdictions and our consultations with policy makers and experts, an overall assessment has been made on the potential impacts to Australian agriculture of changes to trade policy motivated by emissions reductions. Overall, there are no current CBAM policies in place that will directly impact Australian agriculture – the EU CBAM policy does not currently cover agricultural products. While no jurisdiction currently imposes a CBAM on agricultural exports, climate commitments to reduce emissions are likely to increase pressure on countries to introduce trade policy responses, CBAM or otherwise.

The US, UK and Canada have carbon price arrangements that do not include agriculture, and all three are yet to adopt a CBAM on other sectors. China and Brazil are seeking to peak their emissions in the near term and are also not looking to their agricultural sector to reduce emissions.















Jurisdictions	Climate policy status	Trade relationship	Potential impact on Aust. agriculture
EU	 Economy-wide carbon price	5% Share of Australian agriculture exports	Modest <ul style="list-style-type: none">Advanced CBAM policyAgriculture unlikely to be affected in the medium term
	 CBAM proposed	Emissions reduction commitments that may impact future policy	
	 Inclusion of agriculture in CBAM or other policies		
NZ	 Economy-wide carbon price	3% Share of Australian agriculture exports	Low <ul style="list-style-type: none">Assessing merits of a CBAMAgriculture unlikely to be affected in the short to medium term
	 CBAM proposed	Emissions reduction commitments that may impact future policy	
	 Inclusion of agriculture in CBAM or other policies		
US UK Canada	 Economy-wide carbon price	10% Share of Australian agriculture exports	Low <ul style="list-style-type: none">CBAM possible in the medium termAgriculture unlikely to be affected in the short to medium term
	 CBAM proposed	Emissions reduction commitments that may impact future policy	
	 Inclusion of agriculture in CBAM or other policies		
China Brazil	 Economy-wide carbon price	27% Share of Australian agriculture exports	Low <ul style="list-style-type: none">CBAM unlikely in the medium to long termAgriculture unlikely to be affected in the medium term
	 CBAM proposed	Emissions reduction commitments that may impact future policy	
	 Inclusion of agriculture in CBAM or other policies		

Figure 1. Review and assessment of jurisdictions. Note: Export share reflects the total sum of all jurisdictions in the group.

Modelling the impacts of the EU CBAM on the Australian economy and agriculture sector

Deloitte Access Economics undertook modelling to quantify the economic impacts of the currently proposed EU CBAM on Australia’s agricultural sector. The modelling was undertaken using Deloitte’s in-house climate-augmented computable general equilibrium (CGE) model, D.Climate. Given the maturity of the EU CBAM proposal, current sector coverage announcements have been used as the foundation for this analysis.¹

In 2026, when the CBAM is introduced, the tariff-inclusive price of imports into the EU increases by about one per cent on average, relative to the baseline, for commodities in covered sectors, including cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen.

Between 2026 and 2040, the cumulative impact of the CBAM on Australian agriculture is negligible, but slightly positive, at \$34 million in present value terms. Employment in the Australian agriculture industry is resilient to these changes in production and exports over time, with little net change in employment outcomes expected over the period.

Australia’s agricultural production is lower than the baseline in the first few years of the policy in response, but rapidly improves to have higher-value production as a result of the CBAM in the long run.

While the EU comprises approximately eight per cent of total Australian export value, Australian exports of CBAM-covered goods to the EU are less than one per cent of total Australian exports, and only seven per cent of Australian goods exported to the EU. As a result, the estimated impact of the CBAM on the Australian economy overall is also minimal.

¹ Collectively referred to as CBAM commodities.

The EU economy itself is much more affected by the policy, as it faces higher import prices relative to the baseline for key industries like heavy manufacturing. As a result, other regions benefit on balance.

A ‘what if’ scenario was also modelled to understand the implications of agriculture’s inclusion in a future EU CBAM. Since the agricultural sector is directly impacted by the CBAM in this scenario, there are more significant implications for industry output in the short to medium term, in particular for the grains and livestock sectors. Between 2026 and 2040, there is a cumulative loss of \$1 billion in output for Australia’s agricultural industry in present value terms, with these losses concentrated in the initial years after the CBAM is introduced. On average, this is equivalent to a \$71 million decline in industry output annually. However, in the context of the Australian agricultural sector’s annual contribution to gross domestic product (GDP) (\$93 billion in 2021-22), this impact is small (ABARES, 2023a). Over time, Australian exports are expected to be able to adjust and find new markets, reducing the impacts of the measure. Reducing emissions in Australian agriculture also lessens the economic impact over time.

Conclusions and recommendations

Policy makers, industry bodies and Rural Research and Development Corporations can play an important role in preparing for, and responding to, the potential development of CBAMs. While the EU CBAM in its current form is unlikely to have a significant impact on Australia’s agricultural sector, the design, implementation and scope of CBAMs is likely to continue to change over time. Given

this evolving policy context, this research has identified five recommendations to support the preparedness and response of the Australian agricultural sector to trade-related climate policies such as CBAMs. These recommendations are summarised in Table 1.

Continue to invest in emissions reduction and broader sustainability in Australian agriculture

Continuing to invest in Australian agriculture’s sustainability credentials while adding value through production will ensure the sector is well-prepared for the potential future adoption of carbon border adjustments.

The agriculture industry has already reduced emissions by 55 per cent since 2005 (DISER, 2021). Through sustainable land management and adoption of new technologies and processes, agriculture in Australia can continue to drive rapid rates of emissions reductions.

In seeking to level the playing field, the cost of CBAMs reduces in cases where exporting producers face emissions pricing in their domestic market. As such, CBAMs will systematically reward less-emissions-intensive exports. This will favour emerging agricultural production processes and commodities, which is an area of increasing strength for Australia.

Recommendation for industry: The agriculture industry should continue to pursue decarbonisation opportunities. Proactive accounting and management of emissions within Australian agriculture can be an opportunity to stay ahead of this policy landscape and potentially take advantage of new market trends.

The relative emissions intensity within the agriculture sector will differ by product. Our modelling shows the impacts of CBAMs and other policies will vary. Firms and subsectors not able to reduce emissions faster than their competitors could face higher carbon costs.

Recommendation for policy makers: Policy makers should endeavour to support industry-led research, development and knowledge-sharing initiatives to reduce emissions intensity in agriculture. Where there is rationale for public intervention, policy makers should be prepared to address these issues to limit the potential fallout.

Although the Australian Government has ruled out pricing emissions as part of its current climate policy strategy, it is worth noting that eventually doing so would reduce the potential burden of CBAMs for exporters. It would also mean emissions tax revenue could remain onshore and be available to incentivise emissions reduction in sectors facing a carbon price.

Monitor implementation of the EU CBAM

Paying close attention to the development of the EU CBAM, particularly processes to expand the product coverage, will be of interest not only to climate policy makers around the world, but also to industries not initially covered, such as agriculture.

Recommendation for policy makers: A focused assessment of the implications of the EU CBAM mechanism for the Australian agriculture industry would only be required after 2026, once the full scheme comes into effect.

Watch the New Zealand emissions price on agriculture and learn

New Zealand is the first country in the world to commit to pricing agricultural emissions. There are expectations that the pricing of emissions may cause carbon leakage. This may spur a trade policy response by NZ, similar to the EU, to balance these, although there is no current suggestion of a CBAM.

Recommendation for industry: Engaging with NZ industry organisations, particularly through the He Waka Eke Noa (Primary Sector Climate Action Partnership), can facilitate learning on preparing the agriculture industry for emissions pricing.

Recommendation for policy makers: Monitor the development of a potential CBAM on high-emissions sectors that compete globally, such as the NZ cement sector.

Periodically review the risks of CBAM introduction in other jurisdictions

As jurisdictions accelerate their emissions reductions in line with current commitments to achieve net zero emissions, industries around the world will come under increasing pressure. In the absence of significant multilateral cooperation to harmonise climate policies across borders, the likelihood of carbon border adjustments or other responses being introduced will increase to limit carbon leakage. This report considered seven jurisdictions for detailed analysis, based on their current climate policies and relevance to Australia’s agricultural trade. A similar framework could be applied in extending this analysis to other jurisdictions, as climate and trade policies develop further.

Recommendation for policy makers: Continue monitoring the evolving landscape of CBAMs in jurisdictions other than the EU. Given the implementation timeline of the EU CBAM, a similar review is unlikely to be required in the near term. Another major economy adopting similar policies should, however, trigger a more detailed review.

Invest in data standards and emissions accounting frameworks

A robust emissions accounting framework is a necessary pre-requisite for any kind of carbon pricing or CBAM-like policy. The experience of NZ is an example of how these reporting and accounting systems can be mobilised collaboratively across industry and government. Work by Agricultural Innovation Australia on the *Know and Show Your Carbon Footprint* initiative is a step in the right direction domestically.

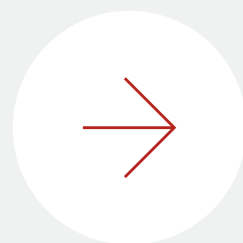
Recommendation for policy makers: As has been advocated for the current EU CBAM proposal, negotiating carbon border adjustment data recognition agreements would benefit Australian agricultural products if they were to be incorporated into similar schemes.

Recommendation for policy makers and industry: Consider investing in emissions accounting initiatives in the agriculture sector, as this will lower the regulatory cost of CBAM-like arrangements in the future. Initiatives are required at both the farm level to understand carbon footprints and the national level to ensure consistency through frameworks and standards. These should be designed in partnership with industry to lower the costs of uptake and measurement should future policies change.

Table 1. Summary of policy recommendations.

Recommendation	Led by industry with some policy support	Led by policy makers, with support from industry
Continue to invest in emissions reduction and broader sustainability in Australian agriculture	✔	
Monitor implementation of the EU CBAM		✔
Watch the New Zealand emissions price on agriculture and learn	✔	✔
Periodically review the risks of CBAM introduction in other jurisdictions		✔
Invest in data standards and emissions accounting frameworks	✔	

Introduction



According to the Intergovernmental Panel on Climate Change (IPCC), rapid, deep and, in most cases, immediate greenhouse gas (GHG) emissions reduction in all sectors – including agriculture – is required this decade to limit global warming to 1.5 °C (IPCC, 2023).

Australia and its trading partners are adopting more ambitious emissions reduction targets to align with commitments made under the Paris Agreement and limit global warming. Achieving net zero emissions is now a critical goal, with countries also setting strong interim targets for 2030. In this context, Australia's trade-oriented and emissions-intensive agriculture industry faces rapidly shifting market dynamics.

To date, these policies have been adopted unevenly, with some countries adopting more ambitious policies than others. This unevenness may impact the competitiveness of trade-exposed domestic industries that face domestic carbon prices. In the absence of a global carbon price, producers facing domestic carbon prices may choose to shift their operations and emissions to other jurisdictions where regulatory standards are less stringent, resulting in 'carbon leakage' (IPCC, 2007).

To address this issue, cross-border approaches to carbon pricing are increasingly gaining traction (World Bank, 2022). One such approach is a carbon border adjustment mechanism (CBAM). The aim of imposing a CBAM is to level the playing field between goods produced domestically and imports of the same good. By introducing a carbon cost on imported goods, both products can compete fairly in the local market.

The EU is most advanced in its policy development on this issue and has legislated a CBAM to be phased in from 2023. It will initially cover carbon-intensive industries deemed most at risk of carbon leakage, including iron and steel, cement, fertilisers, aluminium, electricity, and hydrogen.

The emissions intensity and export-oriented nature of the Australian agriculture industry means changes to trade policy are particularly influential in economic outcomes:

- In 2021-22, the agriculture sector accounted for 2.4 per cent of GDP, and 11.6 per cent of goods and services exports (ABARES, 2023a), with about 72 per cent of production exported overseas.
- The agricultural sector is also a substantial emitter of GHGs, averaging about 14-16 per cent of national GHG emissions (DCCEEW, 2022b).
- The agriculture industry has already reduced emissions by 55 per cent since 2005 (DISER, 2021). However, as other sectors in Australia reduce emissions more rapidly, it is projected to have a larger share of national emissions.

The Australian agriculture sector is currently exempt from a direct price on emissions and is therefore potentially vulnerable to the impacts of a CBAM imposed by major trading partners. Given the recent increased commitment of more ambitious emission targets in Australia, and the growing number of carbon taxes being proposed globally, it is important to understand the potential implications on Australian agriculture to inform future policy making. Preparing Australian producers for a zero-emissions world, and thus maintaining access to key export markets, is also important.

Several recent studies have considered the potential implications of an EU CBAM for the Australian economy, including by the Climate Council (2021b) and Australian Industry Group (2021). Notably, no existing work has specifically assessed the relevance and impact of CBAM policies, in the EU and potentially elsewhere, for Australian agriculture. A detailed analysis of CBAM policies can equip the Australian agricultural industry and policy makers with a clear understanding of the evolving international policy landscape and support informed decisions on the growth and long-term prosperity of Australian rural industries.

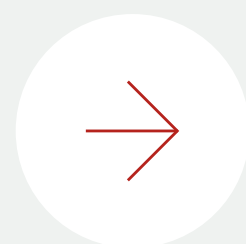
This project

Deloitte Access Economics was engaged by AgriFutures Australia to assess the potential implications of carbon prices at the border on Australian agriculture. The project sought to:

- Provide a clear overview of any planned carbon tax programs (including CBAMs) being implemented globally that will have a direct or indirect impact on the Australian agriculture industry;
- Assess the implications of various carbon tax programs for Australian agriculture and producers; and
- Identify any opportunities industry may have to derive benefits from these changes, considering both AgriFutures Australia's levied and emerging industries and the agriculture sector more broadly.

This report is structured as follows. The first section contextualises the evolving emissions reduction targets and climate policies, and their implications for trade policy among Australia's export destinations. The second section presents an overview of the EU CBAM and the modelled implications for Australian agriculture. The section also assesses the state of play of CBAM policies in other jurisdictions, including NZ, the UK, the US, Canada, China and Brazil. The third section concludes the report and presents recommendations. Lastly, appendices A, B and C detail the jurisdictional assessment framework, stakeholder consultation and CGE modelling approach employed in this report, respectively.

Emissions reductions and a changing trade policy environment



Jurisdictions are adopting domestic climate policies to achieve net zero targets

Australia and its trading partners are raising their ambitions to reduce emissions and achieve net zero.

As of November 2022, 140 countries, accounting for approximately 90 per cent of global emissions, had either announced or were considering a net zero target (Climate Action Tracker, 2022a). Indeed, 78 per cent of Australia's agricultural exports in 2020 went to countries that have at least pledged to achieve net zero emissions (DFAT, 2022a; Energy & Climate Intelligence Unit, 2023).²

To achieve these targets, alongside changing consumer preferences and private sector investment, governments are implementing policies to accelerate emissions reduction. Economy-wide or sector-focused carbon pricing tools are becoming increasingly prevalent policy tools to incentivise these outcomes.

Emissions reduction policies in agriculture

To date, carbon prices have not been used as a policy lever to drive emissions reduction in agriculture. Though an explicit carbon price is an economically efficient way to reduce emissions, it is often difficult to implement across all sectors of the economy.

Technical and technological limitations in measuring and accounting for land-based emissions make agricultural emissions accounting, and therefore pricing, difficult.

Factors such as inconsistent frameworks for measuring land use-based emissions, variability and impermanence of land-based sinks (e.g., carbon storage in soil), and volatile market prices increase the complexity of implementing and regulating emissions in agriculture through a carbon price. Additionally, mitigation efforts in the agricultural sector should support technological change and productivity gains to reduce emissions from agriculture while securing appropriate food supply.

Although Australia does not have a specific emissions reduction target for agriculture, a suite of policies, including the Emissions Reduction Fund, have been implemented to reduce emissions from this sector. Australia is a signatory to the Global Methane Pledge, a voluntary commitment made by 122 signatories representing 45 per cent of global methane emissions, to reduce emissions associated with methane by at least 30 per cent below 2020 levels by 2030 (Bowen, 2022). Notably, the Australian Government has stated it "will not legislate or introduce taxes or levies to reduce livestock emissions" in its signing of the pledge (Bowen, 2022).

Whether through emissions pricing or otherwise, as Australia and the rest of the world pursue deeper decarbonisation, there will be a need to reduce emissions in hard-to-abate sectors such as agriculture. As easier-to-access and more consistent approaches to measuring on-farm emissions emerge, such as the *Know and Show Your Carbon Footprint* initiative, technical barriers to price-related emissions reduction policies are also likely

to reduce (Agricultural Innovation Australia, 2023). Indeed, the announcement of New Zealand's (NZ) carbon levy on agricultural emissions signals a changing climate policy context for agriculture, in Australia and globally.

As emissions accounting measures become more sophisticated, along with growing ambition to reduce emissions from this sector, emissions reductions in agriculture will become increasingly important, with opportunities emerging for those that can demonstrate more emissions-efficient production systems.

CBAMs are one trade policy response to manage the impacts of climate policy

Although there is global ambition to reach net zero emissions, **the pace and scale of emissions reduction is not uniform across jurisdictions.** As countries introduce more ambitious policies to decarbonise their domestic industries, these measures may be accompanied by trade policies to manage competitiveness impacts.

In the absence of a global carbon price, a domestic price on GHG emissions could also mean producers who now face higher costs may choose to offshore activities to another jurisdiction, effectively polluting elsewhere. **A CBAM can help level the playing field between domestic producers and international exporters to ensure a domestic carbon price does not result in carbon leakage, through the offshoring of production of emissions-intensive commodities to other jurisdictions** (European Parliament, 2022) (Figure 2). In doing so, a World Trade Organization (WTO)-compliant CBAM that does not create additional trade barriers can be an effective policy intervention to ensure economic efficiency and enable emissions reduction in high-polluting sectors (CSIS, 2023).

To date, there has been little empirical evidence of carbon leakage. This is in part due to relatively low carbon prices in many jurisdictions coupled with the distribution of free allowances of carbon certificates in industries that are highly trade-exposed (World Bank, 2022). For example, the availability of free allowances has allowed the EU to minimise the impacts of an EU ETS on domestic industries, with some industries receiving 100 per cent of their allowances for free (CSIS, 2023). While free allowances support domestic industries, they also weaken incentives for firms to reduce emissions. The retirement of free allowances from the EU ETS scheme will mean domestic industries in trade-exposed sectors, including upstream sectors like fertilisers, will begin to bear additional costs with the phase in of the CBAM.

The introduction of measures such as the CBAM signal a changing trade and policy environment, which will have ramifications for Australian agriculture. Australia's agricultural sector is highly export-oriented. Monitoring, evaluating and adapting to a changing international policy context has always been an important consideration for this sector. Since agriculture is also an emissions-intensive activity, it is becoming increasingly important to review and monitor the climate policies of major trading partners to understand and manage the impacts of a changing trade context.

As the long-term economic cost of emissions-reducing technologies declines, and countries decouple economic growth from emissions, climate and the associated transition will become a central driver of trade and foreign investment. New trade and investment opportunities will emerge, and countries that can reduce emissions in trade-exposed sectors will benefit by increasing their competitive advantage. Harder-to-abate, trade-exposed sectors such as agriculture will also need to monitor and adapt to this changing trade environment, given their growing contribution to national and global emissions. For producers in Australia who are able to rapidly reduce emissions, CBAMs represent an opportunity – these are policies that will reward climate action in global markets.

² This analysis includes national targets to achieve net zero emissions by 2060 or earlier, where they are legislated or proposed in legislation, in a policy document, or in a high-level political pledge. Targets under consideration and not yet formalised are not included.

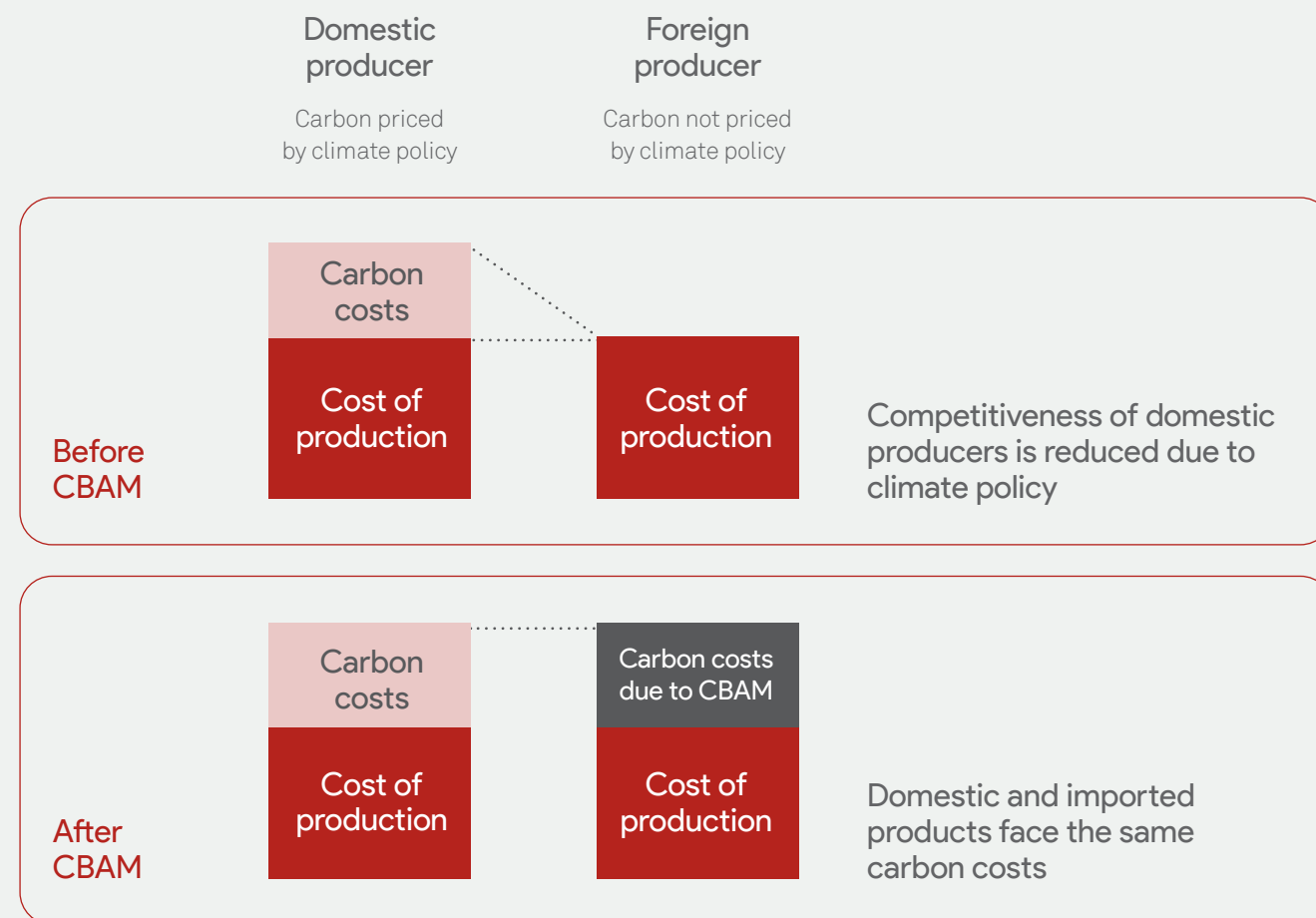


Figure 2. Illustration of a carbon border adjustment mechanism (IGES, 2018).

Legal feasibility of a carbon border adjustment

The implementation and design, and ultimately the likely impact, of CBAMs will depend on their compliance with international trade obligations. The *General Agreement on Tariffs and Trade* (GATT) of 1994, which underpins the WTO trade law framework, is particularly important for Australia and other major trading partners in considering the design, implementation and adoption of CBAMs.

It is likely a carbon border adjustment can be designed to fully comply with existing obligations. To do so, the adjustment would need to be non-discriminatory and not operate as a form of trade protection. Valid approaches could be fully compliant with the core obligations; or a

case would need to be made that an adjustment is partly excepted from these obligations thanks to careful use of environmental defences (as stated in GATT Article XX). The validity or otherwise of any CBAM would depend on its implementation and on any future challenges within the WTO system.

The purpose of this report is not to comment on the potential compliance of any particular CBAM proposal. At the time of this report's publication, the Australian Government does not have a publicly stated position on the compatibility of the EU CBAM with WTO obligations.



Review and assessment of potential carbon border adjustment mechanisms

This section summarises the current state of CBAMs globally and the potential impact their development may have on Australian agriculture. Seven countries/regions were selected for analysis. This was based on their progress in the development and adoption of climate and environmental trade policies, their agricultural trading relationship with Australia, and whether they are key competitors of Australia in the global agriculture market. The jurisdictions are:

- European Union (27 members)
- New Zealand
- Canada
- United Kingdom
- United States
- China
- Brazil

Combined, these countries have accounted for about 45 per cent of Australian agriculture exports over the past five years (DFAT, 2022a). China is the largest destination for Australian agriculture exports, accounting for approximately 27 per cent of exports. However, this share has dropped since 2019 following the introduction of large tariff barriers on certain agricultural goods. The US has the second-largest share, accounting for about eight per cent of total exports between 2017 and 2021. The remaining jurisdictions each represent less than five per cent of Australia's agricultural exports.

These countries have a range of carbon pricing arrangements and progress to date in reducing emissions in agriculture (Figure 3). Only the EU has a developed and adopted CBAM policy. NZ has announced a plan to price agricultural emissions starting in 2025, which may spur further changes to trade policy.

Jurisdiction assessment

The chosen jurisdictions were analysed according to an assessment framework developed for this report (Figure 4). This framework considered a range of legal and policy factors that drive decision-making around the implementation of CBAMs. Australia's current trade relationship with each country was also considered alongside these factors to assess the materiality of potential measures for Australian agriculture. For more detail on the assessment framework, refer to Appendix A: Assessment framework. The findings from these assessments are complemented by stakeholder consultations with subject matter experts. A complete list of stakeholders consulted is available in Appendix B.

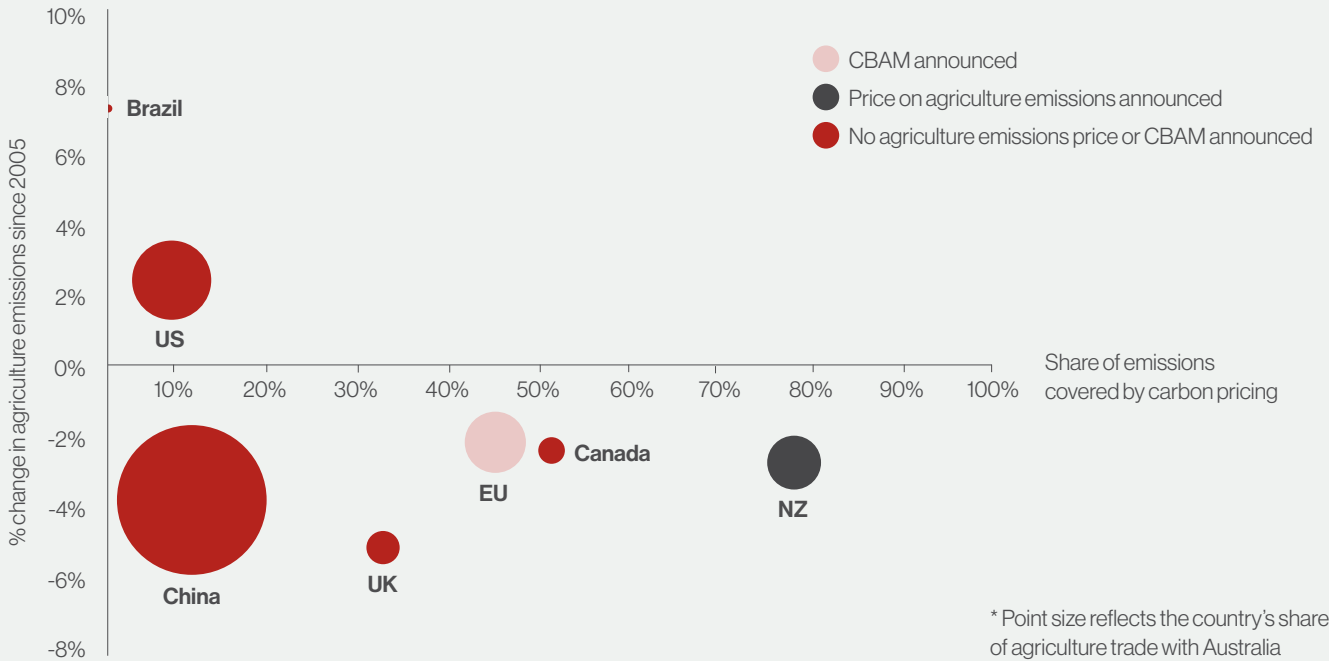


Figure 3. Summary of climate, agriculture and CBAM policies, by assessed jurisdiction (Resources for the Future, 2022; EPA, 2023; EEA, 2023).

Jurisdictions	Climate policy status	Trade relationship	Potential impact on Aust. agriculture
EU	<div><div>✓</div>Economy-wide carbon price</div> <div><div>✓</div>CBAM proposed</div> <div><div>✗</div>Inclusion of agriculture in CBAM or other policies</div>	5% Share of Australian agriculture exports Emissions reduction commitments that may impact future policy	Modest <ul style="list-style-type: none">• Advanced CBAM policy• Agriculture unlikely to be affected in the medium term
NZ	<div><div>✓</div>Economy-wide carbon price</div> <div><div>✗</div>CBAM proposed</div> <div><div>✓</div>Inclusion of agriculture in CBAM or other policies</div>	3% Share of Australian agriculture exports Emissions reduction commitments that may impact future policy	Low <ul style="list-style-type: none">• Assessing merits of CBAM• Agriculture unlikely to be affected in the short to medium term
US UK Canada	<div><div>✓</div>Economy-wide carbon price</div> <div><div>✗</div>CBAM proposed</div> <div><div>✗</div>Inclusion of agriculture in CBAM or other policies</div>	10% Share of Australian agriculture exports Emissions reduction commitments that may impact future policy	Low <ul style="list-style-type: none">• CBAM possible in the medium term• Agriculture unlikely to be affected in the short to medium term
China Brazil	<div><div>✗</div>Economy-wide carbon price</div> <div><div>✗</div>CBAM proposed</div> <div><div>✗</div>Inclusion of agriculture in CBAM or other policies</div>	27% Share of Australian agriculture exports Emissions reduction commitments that may impact future policy	Low <ul style="list-style-type: none">• CBAM unlikely in the medium to long term• Agriculture unlikely to be affected in the medium term

Figure 4. Review and assessment of jurisdictions. Note: Export share reflects the total sum of all jurisdictions in the group.

The EU CBAM is a world-leading initiative

The EU is a global leader in climate action and has been proactive in implementing policies that support emissions reduction goals. It has an established carbon market administered through its ETS and is the most advanced jurisdiction globally in development and implementation of a CBAM.

For this reason, the EU CBAM is likely to serve as a foundation for similar policies developed by other countries. Furthermore, the most detailed information and research available on CBAM policy design features, coverage and potential impacts relates to the EU. In addition to policy analysis, this report has used quantitative scenario analysis to model the potential impacts of this policy on the Australian economy and agriculture industry. The results of this modelling are presented in the next section.

Current EU commitments include a 55 per cent below 1990 levels emissions reduction target by 2035 and climate neutrality by 2050 (European Commission, 2023b). Central to achieving these commitments is the EU ETS, the longest-operating ETS worldwide, introduced in 2005. The scheme imposes a carbon price on activities from the power sector, manufacturing industry and aviation that in total represent approximately 40 per cent of the territory's emissions. An agreed set of emissions-intensive and trade-exposed (EITE) industries considered as being at risk of carbon leakage currently receive up to 100 per cent of their allowances for free.

In the EU, emissions associated with agriculture are regulated under that Effort Sharing Regulation.³ Collectively, these sectors aim to reduce emissions by 40 per cent below 2005 levels by 2030. Notably, no price is levied on agricultural emissions.

The EU is the only jurisdiction globally to have formally legislated a CBAM (European Council, 2023). The CBAM has been designed to complement the EU ETS and will concern imports from all third countries (European Commission, 2023a). It will replace the free allocation of ETS allowances to EITE industries under the current system, including cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen.

Under the proposed design, a transitional phase will begin in October 2023 and finish at the end of 2025. This period will focus on building reporting capabilities among importers, with no financial adjustment payable.

After this transition phase, the CBAM will enter into force from 2026 until 2034 while free allowances under the EU ETS are phased out. Importers will be required to surrender CBAM certificates corresponding to the quantity of embedded emissions contained in their goods. CBAM certificates will mirror the ETS price calculated as the weekly average auction price of EU ETS allowances. If goods have been produced in a jurisdiction that already levies a carbon price, importers will be allowed to claim a reduction in the adjustment to be paid under the CBAM.

The CBAM will initially cover only direct emissions from the production of imported goods. There are plans to review whether to extend coverage to indirect emissions towards the end of the transition period. However, questions have been raised about the practicality of this change as only direct emissions are covered under the EU ETS (ERCST, 2022).

An assessment will be made before the end of the transitional period on whether to extend the CBAM to other industry sectors, such as organic chemicals and polymers (European Parliament, 2022). All ETS industry sectors are expected to be covered by 2030 (European Commission, 2023a).

Implications for Australian agriculture

The EU currently accounts for approximately five per cent of the value of Australian agriculture exports. The major export product is oilseeds, which represent about 50 per cent of the value of Australian agriculture exports to the EU. Australian canola has been demonstrated to be less emissions intensive than European canola and meets the emissions requirements for the EU biodiesel market (AOF, 2022; CSIRO, 2017). This suggests that if agriculture was included under the EU CBAM, the overall direct impact on Australian producers would be relatively small.

However, the likelihood of agriculture being included in the EU CBAM is low. The EU agriculture sector is neither included in the EU ETS nor in preliminary plans for the CBAM, and there is little evidence to suggest this will

change in the short term. In addition, the immature state of emissions accounting methodologies necessary to link agricultural emissions with climate policies means emissions reduction in the sector will likely be pursued through different pathways. The combination of these factors means any immediate risk to Australian agriculture exports to the EU appears limited.

While the direct risk to agriculture is low, there may be important indirect impacts for the industry and exporters to be aware of:

- Food and beverage manufacturing products are included in the EU ETS phase 4 carbon leakage list (European Commission, 2019). This list identifies sectors at risk of carbon leakage and that therefore receive free allowances under the ETS. These allowances will be gradually removed under the CBAM, meaning the list also forms the basis of products to be included in future revisions for expansion of the scope of the CBAM. Since agriculture provides the raw materials, any impact on demand for these manufactured products would ultimately flow through to primary producers.
- Fertiliser products are covered by the CBAM. In a global market, the impact on prices in the EU may have flow-on impacts to the price of fertiliser imports into Australia (DAFF, 2022). The net effect of this price change is analysed through D.Climate modelling in the next section.

Quantitative analysis of the impacts of the EU CBAM on Australian agriculture

The EU is a relatively small market for Australian agricultural commodities. Agricultural exports to the EU account for approximately 5.6 per cent of total Australian agriculture exports (DFAT, 2022a). The impacts of the CBAM on the Australian agricultural sector are therefore expected to be minimal; there is, nevertheless, uncertainty surrounding the magnitude and scope of such impacts. Deloitte Access Economics has modelled the potential

economic impacts of the proposed EU CBAM on the Australian agricultural industry, alongside a stylised scenario to test the magnitude of impacts if the EU was to expand its range of covered products to agricultural goods.

Modelling approach

Deloitte Access Economics' in-house climate-economy model, D.Climate, was used to model the impacts of the EU CBAM on the Australian agriculture sector. This model augments our standard computable general equilibrium (CGE) model by including an emissions module, linking all economic activity, including production, consumption, employment, taxes and trade, to different climate scenarios and associated changes in emissions. This model can run scenarios through time involving multiple industries, occupations and regions.

In the baseline, Australia and the rest of the world continue to reduce emissions in line with reaching net zero emissions by 2050. In the policy scenario, the CBAM commences in 2026 as announced, covering cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen.⁴ A 'what-if' scenario (Scenario 2), where the current scope of the EU CBAM is expanded to include all agricultural products, was also tested in this analysis.

For the purposes of this modelling, the CBAM price was calculated based on the current EU ETS price.⁵ The total cost of the CBAM was calculated based on estimated values of embedded emissions for each sector and source country pair. This framework draws on an emissions accounting framework from the Global Trade Analysis Project (GTAP) database.

Impacts of the EU CBAM on Australian agriculture

Australia's agricultural industry is largely unaffected by the EU CBAM in its current proposed form. Key themes arising from the modelling include the flow-on effects of increased fertiliser prices, tariff-inclusive price effects, and GDP and employment changes.

³ As well as waste, buildings and transport.

⁴ There are limitations associated with disaggregating GTAP sectors to the specific commodities covered by the CBAM. To this end, the GTAP sectors encompassing the covered commodities have been levied a CBAM. Fertilisers are included in the chemical products sector. Other CBAM commodities are mapped to ferrous metals, non-ferrous metals and the mineral product sectors in the GTAP framework. The commodities included in each modelled scenario are detailed in Table 6 (Appendix C).

⁵ As of April 2022, US\$87 per tonne of CO₂-e (World Bank, 2022).

Though the most direct economic costs of the policy are ultimately borne by consumers and firms within the EU, the **introduction of the policy results in flow-on price and trade effects across the global economy**. These impacts can be distilled into three categories:

- Direct price effect:** The CBAM increases the price of imports in covered sectors to reflect the carbon costs paid by domestic producers and households within the EU. Relative to the baseline, this causes a reduction in demand for these imports in the EU (Figure 5).
- Trade effect:** Increased costs to import these commodities into the EU may be expected to reduce demand for Australia's agricultural products, particularly among food processors and manufacturers. Similarly, agricultural producers in the EU, by facing increased import costs, become less competitive relative to overseas Australian agricultural producers.
- Indirect price effect:** By raising the costs of fertiliser imports into the EU, there may be flow-on impacts on the price of fertiliser imports into Australia, a significant input in agriculture production.

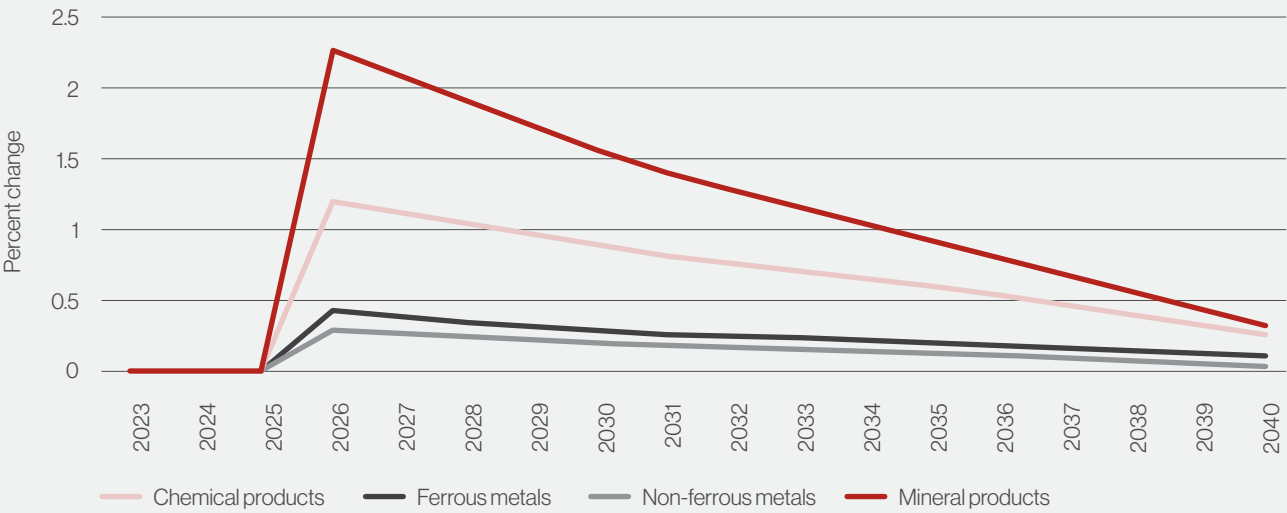


Figure 5. Percentage change in tariff-inclusive price of imports relative to the baseline (Deloitte Access Economics, 2023).

Direct impact of the CBAM on EU import prices

The introduction of the CBAM increases the price of imports into the EU. In 2026, when the CBAM is introduced, the tariff-inclusive price of imports into the EU increases by about one per cent on average, relative to the baseline, for commodities in covered sectors (Figure 5). By 2040, the average tariff-inclusive price of commodities in covered sectors is only about 0.2 per cent higher than the baseline. The impact of the CBAM diminishes over time as countries pursue emissions reduction in line with the emissions pathway used within the model. This denotes the role of the CBAM as a transitional policy, which is most effective in levelling the playing field when the pace of decarbonisation is uneven between jurisdictions in the short to medium term.

The largest increases in input prices are faced by importers of mineral and chemical products (including fertilisers), with import prices increasing by more than one per cent in 2026 relative to the baseline.

The impact on Australian agriculture following this shock

Between 2026 and 2040, the cumulative impact of the CBAM on Australian agriculture is negligible, but slightly positive, at \$34 million in present value terms. Australia's agricultural production is lower than the baseline in the first few years of the policy in response to a number of channels.

An increase in the import price of fertilisers increases input costs in the EU and reduces agricultural production. As a result, there is a marginal increase in Australia's annual agricultural exports to the EU, by 0.1 per cent relative to the baseline, with the largest increase seen in the grains sector. Australia is not alone in this response – to meet EU demand for agricultural products, all agricultural exports to the EU increase in the years following the CBAM introduction, with these impacts being most pronounced when the CBAM is introduced. Once EU-produced fertiliser is able to meet domestic capacity, additional demand for Australian and global agriculture exports begins to decline.

Although exports to the EU slightly increase, agriculture production is lower overall as firms face lower demand in Australia. This is the flow-on effect of the reduction in exports of covered CBAM commodities. There are some flow-on impacts of an increase in global fertiliser prices that contribute to a marginal decline in industry output in the Australian grains sector between 2026 and 2030. However, this price effect dampens over time as countries decarbonise.

Over time, with EU agriculture producers facing higher input costs through the ongoing CBAM, Australian agriculture production grows, benefiting indirectly from this policy in the long run. Livestock-related exports to the EU, from Australia, China and the rest of the world, end up benefitting the most in the long run from the EU CBAM.

Employment in the Australian agriculture industry is resilient to these changes in production and exports over time, with little net change in employment outcomes over the period. The response of Australian agriculture in this manner is reflective of our relatively low exposure to, and reliance on, EU goods within domestic supply chains.

Impacts on the wider economy

Between 2026 and 2040, the cumulative impact of the CBAM on Australia's economy is negligible. In present value terms, Australia's GDP is larger by \$402 million over the next 17 years, relative to a baseline without a CBAM. Minor improvements in GDP are driven by increased domestic production in downstream industries using covered products.

The inverse is true for the EU. **Since the CBAM raises costs of imported inputs to the EU, their competitiveness in downstream industries declines while levelling the playing field for covered products.** On average, exports of covered products increase by 1.02 per cent on average, relative to the baseline. In comparison, output of downstream industries that rely on fertiliser inputs, such as agriculture, declines. While the impacts on the EU's agricultural sector are small, cumulatively, the EU's GDP declines by 0.013 per cent in present value terms after the introduction of the CBAM.

Exporting countries such as Australia respond by reducing exports of covered products to the EU, and instead trading with other countries or using inputs domestically into downstream industries.

The impact of the CBAM on Australia's GDP is also minor compared with the rest of the world, largely owing to the size of its trading relationship with the EU for covered products. In comparison to Australia, China is less impacted by the CBAM due to its competitive advantage in the heavy manufacturing sector.

Table 2. Impact of the modelled CBAM on GDP and employment, in present value terms.

Modelled regions	Present value deviation in GDP (\$m)	Present value of deviation in GDP as a share of present value of total GDP (%)	Average annual change in employment (FTE)	Cumulative change in employment (FTE)
Australia	402	0.0021	75	1,131
European Union	-26,125	-0.0128	-40,721	-610,818
China	1,530	0.0008	-14,273	-214,091
Rest of the world	-45,791	-0.0077	-174,115	-2,611,722

Note: New Zealand is included in the rest of the world results.

What if the scope of the EU CBAM was expanded to include agricultural products?

Agricultural products are not covered by the EU ETS or CBAM schemes. Unless an agricultural emissions pricing scheme is introduced in the EU, such products are unlikely to be included within an expanded CBAM in the future under the current design of the scheme. Nevertheless, a ‘what if’ scenario seeks to understand the scale and exposure of Australia’s agriculture industry to international climate-related trade policy measures, such as a carbon adjustment at the border.

In line with the previous scenario, a constant CBAM price is assumed based on the current EU ETS price and applied to agricultural commodities in addition to currently covered products. In this scenario, an additional 0.5 per cent of Australian exports face a CBAM, with Australia representing approximately one per cent of total EU imports of agricultural products (European Commission, 2023).

Since the agricultural sector is directly impacted by a CBAM levy in this scenario, there are more significant implications for industry output. In the context of the Australian agricultural sector’s annual contribution to GDP (\$93 billion in 2021-22), these impacts are nevertheless small (ABARES, 2023a).

Between 2026 and 2040, there is a cumulative loss of \$1 billion output for Australia’s agricultural industry in present value terms, with these losses concentrated in the early years when the CBAM is introduced (Figure 6). On average, this is equivalent to a \$71 million decline in industry output annually.

Notably, the impact of the CBAM on the agricultural sector declines over time. While this is partially associated with emissions reduction activities in agricultural production, the Australian agricultural sector also minimises impacts by redirecting exports away from the EU and increasing domestic food manufacturing capabilities.

These impacts also vary across agricultural subsectors.

The grains subsector is relatively less impacted by the CBAM, an area where Australia has been proactive in adopting emissions-reducing practices. While Australia’s grain exports to the EU decline by 3.2 per cent on average between 2026 and 2040, total exports only decline by 0.4 per cent on average over the same period.

A similar response is observed in the livestock sector. While Australia experiences a 58 per cent decline in livestock exports to the EU, relative to the baseline in 2026, this impact declines over time. By 2040, livestock exports to the EU are 37 per cent lower than the baseline. Livestock exports are re-directed away from the EU to China. As a result, total livestock exports from Australia are relatively less impacted over this period – by 2040, Australia’s total livestock exports are only 1.7 per cent lower than the baseline. The livestock industry also responds by selling inputs to the domestic meat processing industry.

Although an expanded scope of CBAM commodities covering agricultural products has ramifications on industry output and employment in Australia, this modelling approach likely overstates the impact of this change in reality. Firms in D.Climate seek to maximise their profits according to the prices they can observe in the current period. The impacts when the CBAM is introduced may be overstated if firms are able to plan ahead and take steps today either to accelerate emissions reduction or find alternative trade partners. The modelling also assumes Australia (and other trading partners) do not eventually adopt their own emissions pricing policies. Under the EU CBAM, this would reduce the additional emissions cost faced by exporters to the extent that these are paid for under a domestic emissions price.

The EU has been deliberate in its communication and deliberations on the scope of commodities. If products were to be included, it is expected industries would have sufficient time to prepare for this levy and manage its impacts.

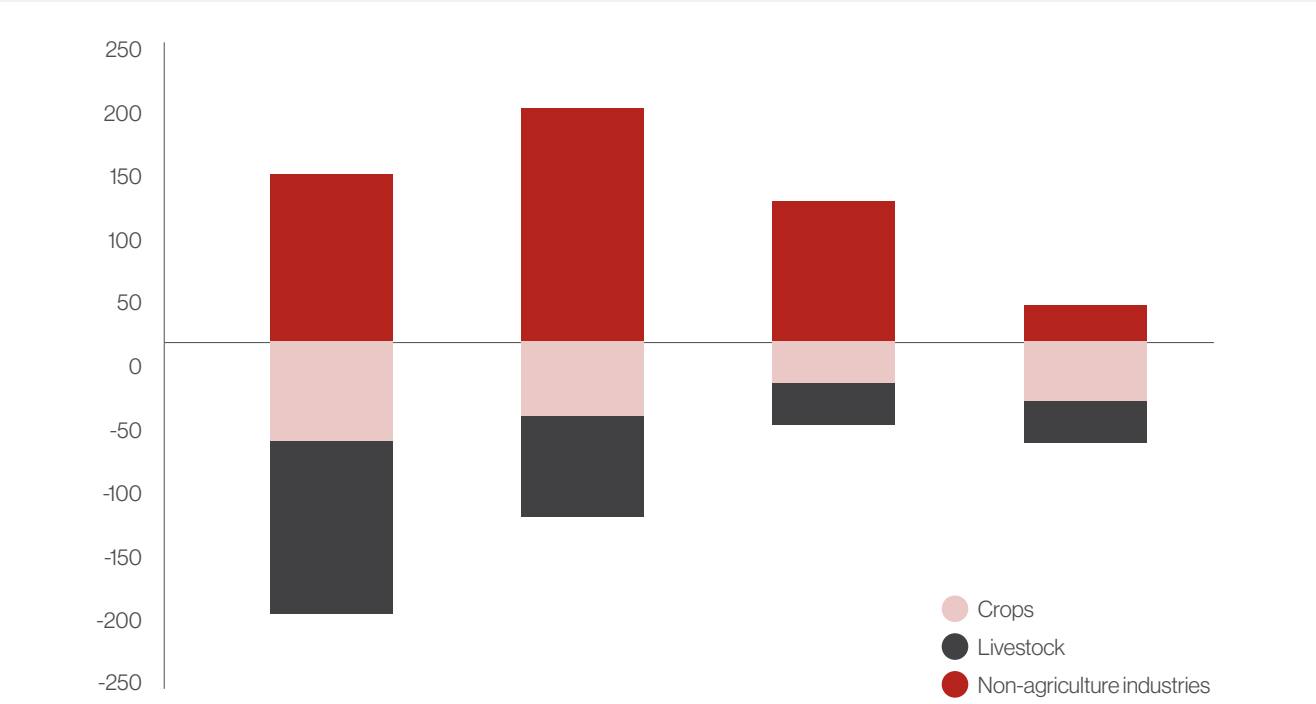


Figure 6. Australian industry gross value added, \$ million, relative to the baseline (Deloitte Access Economic, 2023).



Other jurisdictions

The other jurisdictions assessed all have significant climate policy commitments but are yet to propose CBAMs. Firstly, significant variation exists in the stage of adoption and development of their climate policies. As a result, each country also differs considerably in whether they have any requirement for, or have considered, a CBAM.

Countries have been grouped based on their shared characteristics to allow for collective analysis. In short, due to the absence or very early-stage nature of interest or policies concerning CBAMs among the countries considered, the potential for negative impacts to Australian agriculture is low.

New Zealand: Agriculture emissions pricing confirmed

NZ is the first country in the world to commit to pricing agricultural emissions, currently set to commence in 2025. A significant collaboration between iwi/Māori, government and the primary sector facilitated this policy development (He Waka Eke Noa, 2022). For this reason, it is considered separately, as this framework will likely form the foundation of similar policies around the world. Moreover, it is an important development for the Australian industry to be aware of. Despite this, there is little evidence to indicate this current suite of policies will result in any adverse impacts on the Australian agriculture industry.

Drivers of policy change

NZ legislated a net zero by 2050 target with its *Climate Change Response (Zero Carbon) Amendment Act 2019* and there is a growing number of policies in place to achieve this target. The most prominent of these is an ETS covering all sectors of the economy.

The competitiveness impacts of the NZ ETS on trade-exposed industries are currently managed through the provision of free allocation permits. Accordingly, the agriculture sector is not required to surrender obligations and instead is a focus industry in the Emissions Reduction Plan (ERP). This plan outlines the strategies, policies and actions to be taken to achieve the emissions reductions outlined in the *Climate Change Response Act 2002* (Ministry for the Environment, 2022a).

The ERP commits to pricing agricultural emissions at the farm level by 2025. Current efforts are focused on helping primary producers understand their emissions

footprint. This step aims to ease farmers’ transition into the agricultural emissions pricing mechanism by 2025.

As part of the ERP, the NZ Government has committed to reviewing alternative adjustment mechanisms to support trade-exposed industries other than free allocations and industry assistance. A CBAM has been considered but only the cement industry has been indicated as a possible covered sector (Ministry for the Environment, 2022b).

Modelling suggests significant agriculture emissions leakage potential could result from agriculture emissions pricing (NZ Treasury, 2022). This may place pressure on the NZ Government to introduce a trade policy response. However, no decision has yet been made on how to manage carbon leakage risks via a CBAM or other policy response.

Australian agriculture exposure

Australia and NZ compete in some agricultural industries, including dairy, meat and wine. NZ also imports a variety of Australian agricultural products. An emissions price on NZ agriculture may improve the competitiveness of Australian industries in other export markets. However, improved environmental efficiency in New Zealand’s agriculture sector could generate a ‘green premium’ for producers.

In theory, agriculture could be incorporated into a CBAM once emissions reporting methodologies have been sufficiently developed. However, given the lack of concrete policy development in combination with the complexity and time associated with integrating agriculture into that policy framework, this risk appears unlikely to materialise. In addition, as a relatively small market (about three per cent of exports), the overall potential for impact to Australian agriculture exports appears limited in the short to medium term.

UK, US and Canada: CBAM is considered possible in the medium term

The UK, US and Canada all share generally well-developed climate policies, a generally supportive political environment to further their development and, with the exception of the US, an established carbon price. None of the countries has proposed a CBAM to date, making implementation of any policy in the short term unlikely. Further, limited progress has been made in each country to achieve agriculture emissions reduction, and emissions monitoring and reporting systems are still in their early stages. This makes it highly unlikely that agricultural products would be included in any initial CBAM proposals.

Drivers of policy change

Climate policy commitments exist across all three countries to support economy-wide emissions reductions. All have a target to achieve net zero emissions by 2050. Both the UK and Canada have national-level emissions pricing policies (UK Government, 2023; Government of Canada, 2023). In contrast, the US has chosen not to implement carbon pricing and is instead pursuing emissions reduction through a range of policy measures. Most significantly, this includes the recently passed *Inflation Reduction Act*, which contain significant subsidies and incentives (White House, 2022).

The current suite of policies and progress towards climate targets for all three countries is considered insufficient to meet Paris Agreement targets, particularly for the US and Canada (CCPI, 2023). With sharper incentives to reduce emissions domestically, there will be greater pressure on policy measures to support trade-exposed industries.

Governments from all three countries have completed reviews on the prospect of a CBAM. The Canadian review made no recommendations to pursue policy development any further, and instead called for engagement with key trading partners (Government of Canada, 2021). The UK review recommended its government develop its own carbon border approach (Environmental Audit Committee, 2022). The UK Government has since commenced consultation on potential policy measures to mitigate carbon leakage, including CBAMs (HM Treasury, 2023). A ‘Polluter Import Fee’ was included in a budget package in the US but was not retained in the final Bill. In the absence of a national constraint on carbon or associated price, it may be difficult to implement a CBAM in a way that is consistent with trade obligations. In summary, given the early stages of this work, the possibility of a CBAM in the short term is unlikely.

Australian agriculture exposure

Trade in agricultural products is relatively small with this group of countries, consisting mostly of wine, beef and other meat products. The US is the largest market, representing about eight per cent of Australian exports, while the UK and Canada each account for about one per cent (DFAT, 2022a).

Further, plans for emissions reduction in the agriculture sector are generally immature and the sector is exempt from any carbon pricing instruments currently in place. Initial documents suggest a UK border policy would apply only to sectors covered under its ETS (HM Treasury, 2023).

Overall, this suggests the potential for material impacts on Australian agriculture from the adoption of CBAMs in the

UK, US and Canada in the medium term is low. While they have established climate policies, there has been limited interest and progress towards a CBAM to date, suggesting a low likelihood of any direct impact on agriculture exports.

China and Brazil: CBAM is unlikely in the medium to long term

China and Brazil both have net zero commitments but are still increasing their emissions as part of their development. Further, their emissions reduction efforts are currently focused on the energy, electricity and industrial sectors. Overall, the possibility of a CBAM being considered is unlikely, although their introduction elsewhere may indirectly benefit Australia.

Drivers of policy change

Both China and Brazil have net zero commitments. However, specific policies to achieve these are yet to be substantively developed. China currently administers an ETS for its power sector and its scope is expected to expand to other sectors, however no timeline is in place for this expansion (ICAP, 2023). Meanwhile, few policies are in place to address Brazil’s underlying emissions growth.

Neither China nor Brazil has officially considered a CBAM but have previously expressed strong opposition to the EU CBAM, as part of the emerging market BRICS group (Green Fiscal Policy Network, 2021). Combined with the fact emissions reduction will be more easily achieved in other sectors, it is particularly unlikely either country would consider introducing a policy of their own in the short to medium term.

Australian agriculture exposure

China is a significant agriculture export market for a wide range of goods. However, given the low likelihood of any CBAM policies being implemented, the risk to Australian exports is low.

Brazil is a significant competitor to Australia in international agricultural markets. While a Brazilian CBAM is unlikely, the implementation of these policies elsewhere may increase demand for Australian agricultural exports. Australian beef is less emissions intensive than Brazilian beef (ABARES, 2023b). Consequently, Australia would be relatively less affected in the scenario of increased global adoption of CBAMs, suggesting the possibility for competitiveness benefits.

Conclusions and recommendations

Policy makers, industry bodies and Rural Research and Development Corporations can play an important role in preparing for, and responding to, the potential development of CBAMs. While the EU CBAM in its current form is unlikely to have a significant impact on Australia’s agricultural sector, the design, implementation and scope of CBAMs is likely to change over time.

Given this evolving policy context, this research has identified five recommendations to support the preparedness and response of the Australian agricultural sector to trade-related climate policies such as CBAMs. These recommendations are summarised in Table 3.

Continue to invest in emissions reduction and broader sustainability in Australian agriculture

For many parts of the agriculture sector, achieving lower emissions intensity than competitor products will become a significant comparative advantage under these schemes. Continuing to invest in Australian agriculture’s sustainability credentials while adding value through production will ensure the sector is well-prepared for the potential future adoption of carbon border adjustments.

The agriculture industry has already reduced emissions by 55 per cent since 2005 (DISER, 2021). Through sustainable land management and adoption of new technologies and processes, agriculture in Australia can continue to drive rapid rates of emissions reductions.

In seeking to level the playing field, the cost of CBAMs reduces in cases where exporting producers face emissions pricing in their domestic market. As such, CBAMs will systematically reward less-emissions-intensive exports. This will favour emerging agricultural production processes and commodities, which is an area of increasing strength for Australia.

Recommendation for industry: The agriculture industry should continue to pursue decarbonisation opportunities. Proactive accounting and management of emissions within Australian agriculture can be an opportunity to stay ahead of this policy landscape and potentially take advantage of new market trends.

The relative emissions intensity within the agriculture sector will differ by product. Our modelling shows the impacts of CBAMs and other policies will vary. Firms and subsectors not able to reduce emissions faster than their competitors could face higher carbon costs.

Recommendation for policy makers: Policy makers should endeavour to support industry-led research, development and knowledge-sharing initiatives to reduce emissions intensity in agriculture. Where there is rationale for public intervention, policy makers should be prepared to address these issues to limit the potential fallout.

Although the Australian Government has ruled out pricing emissions as part of its current climate policy strategy, it is worth noting that eventually doing so would reduce the potential burden of CBAMs for exporters. It would also mean emissions tax revenue could remain onshore and be available to incentivise emissions reduction in sectors facing a carbon price. Regardless of whether Australia revisits the question of emissions pricing, it should nevertheless continue to make the case internationally for recognition of its non-price measures in carbon border adjustment policies.

Monitor implementation of the EU CBAM

The EU CBAM is currently legislated to commence in 2026, after a phase-in period. It remains the only scheme of its kind in the world and will commence with a limited set of covered products, which do not include agriculture. Paying close attention to the development of the EU CBAM, particularly processes to expand the product coverage, will be of interest not only to climate policy makers around the world, but also to industries not initially covered, such as agriculture.

Recommendation for policy makers: A focused assessment of the implications of the EU CBAM mechanism for the Australian agriculture industry would only be required after 2026, once the full scheme comes into effect.

Watch the NZ emission price on agriculture and learn

NZ is the first country in the world to commit to pricing agricultural emissions. Currently, NZ manages competitiveness of trade-exposed industries affected by climate policies through industry assistance. There are expectations that the pricing of emissions may cause carbon leakage. This may spur a trade policy response by NZ, similar to the EU, to balance these, although there is no current suggestion of a CBAM.

Recommendation for industry: Engaging with NZ industry organisations, particularly through the He Waka Eke Noa (Primary Sector Climate Action Partnership), can facilitate learning on preparing the agriculture industry for emissions pricing.

Recommendation for policy makers: Monitor the development of a potential CBAM on high emissions sectors that compete globally, such as the NZ cement sector.

Periodically review the risks of CBAM introduction in other jurisdictions

As jurisdictions accelerate their emissions reductions in line with current commitments to achieve net zero emissions, the policy pressure on industries around the world will increase. In the absence of significant multilateral cooperation to harmonise climate policies across borders, there will be pressure to limit carbon leakage through carbon border adjustments or other responses. In Australia, as in most jurisdictions, agricultural emissions will similarly come under growing pressure for inclusion in pricing arrangements, as these emissions are projected to become a growing share of national emissions.

As more jurisdictions more formally consider trade policy responses to their domestic climate policy, timelines for action will become clearer. This report considered seven jurisdictions for detailed analysis, based on their current climate policies and relevance to Australia’s agricultural trade. A similar framework could be applied in extending this analysis to other jurisdictions, as climate and trade policies develop further. For example, Japan is a significant export destination for Australian agricultural products and was considered for review in this study. It was not included in the final list given it did not have detailed commitments to reduce agricultural emissions or announcements on CBAMs to warrant detailed review at this time.

Table 3. Summary of policy recommendations.

Recommendation	Led by industry with some policy support	Led by policy makers, with support from industry
Continue to invest in emissions reduction and broader sustainability in Australian agriculture	✓	
Monitor implementation of the EU CBAM		✓
Watch the New Zealand emissions price on agriculture and learn	✓	✓
Periodically review the risks of CBAM introduction in other jurisdictions		✓
Invest in data standards and emissions accounting frameworks	✓	

Recommendation for policy makers: Continue monitoring the evolving landscape of CBAMs in jurisdictions other than the EU. Given the implementation timeline of the EU CBAM, a similar review is unlikely to be required in the near term. Another major economy adopting similar policies should, however, trigger a more detailed review. The jurisdictions considered in this report should be included. Additional jurisdictions should be included for review with consideration to changes to their climate policies, particularly where emissions pricing arrangements are adopted, and their relevance to Australia's agricultural trade.

Invest in data standards and emissions accounting frameworks

A robust emissions accounting framework is a necessary pre-requisite for any kind of carbon pricing or CBAM-like policy. Measuring emissions of land-based commodities is more complex in carbon accounting compared with manufactured products. Pricing carbon and then implementing a CBAM requires the ability to measure emissions, and mutual recognition and interoperability of the approach utilised.

The experience of NZ is an example of how these reporting and accounting systems can be mobilised collaboratively across industry and government. Work by Agricultural Innovation Australia on the *Know and Show Your Carbon Footprint* initiative is a step in the right direction domestically.

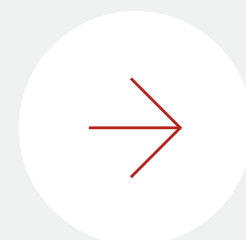
Recommendation for policy makers: As has been advocated for the current EU CBAM proposal, negotiating carbon border adjustment data recognition agreements would benefit Australian agricultural products if they were to be incorporated into similar schemes.

Recommendation for policy makers and industry: Consider investing in emissions accounting initiatives in the agriculture sector, as this will lower the regulatory cost of CBAM-like arrangements in the future. Initiatives are required at both the farm level to understand carbon footprints and the national level to ensure consistency through frameworks and standards. These should be designed in partnership with industry to lower the costs of uptake and measurement should future policies change.

For many parts of the agriculture sector, achieving lower emissions intensity than competitor products will become a significant comparative advantage under these schemes. Continuing to invest in Australian agriculture's sustainability credentials while adding value through production will ensure the sector is well-prepared for the potential future adoption of carbon border adjustments.



Appendix A: Assessment framework



Purpose of the framework

The assessment framework was the basis for comparing the selected jurisdictions. It established an approach for considering the prospects of a jurisdiction adopting a CBAM, as well as any potential implications for Australian agriculture. The factors that might influence a country's decision to adopt a CBAM are associated with broader trends in climate policy adoption, shown in Figure 7.

The speed of climate policy adoption varies widely between countries and is influenced by both global and local factors. For this reason, the assessment framework is divided into two sections. The first section assesses the landscape of international negotiations and law, while the second assesses and compares each jurisdiction across key criteria.

Global factors influencing the development of CBAMs

Legal and trade requirements, as well as negotiations around international and multilateral climate agreements and policies, provide a contextual foundation for how different jurisdictions are likely to consider and approach climate policy and CBAMs. Further, the legal requirements the policy design of a CBAM must satisfy are unlikely to change between countries. This is because regulation of world trade, including CBAMs, occurs at the international level under the WTO. Accordingly, the first component of the framework is most suitably conducted at a global level.

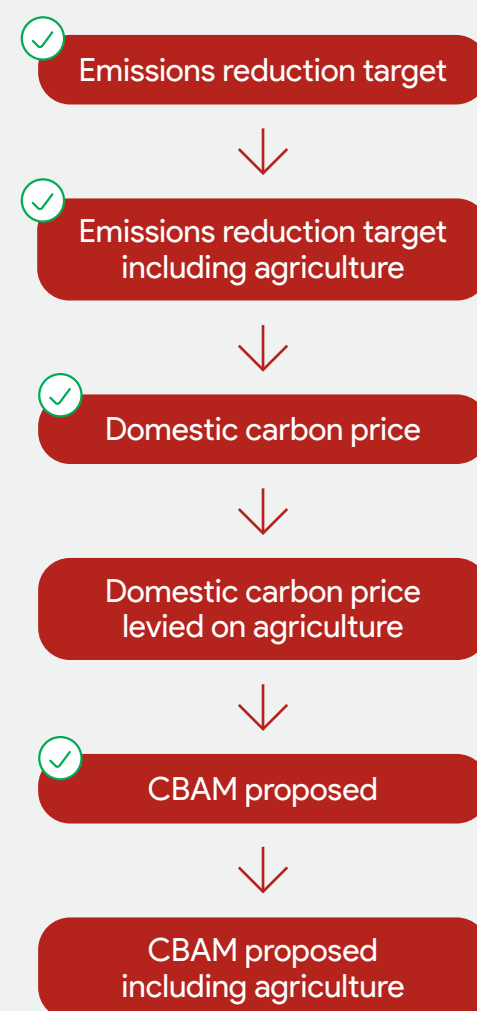


Figure 7. Decision pathway to adopting a CBAM.

International climate agreements

As a policy instrument focused on world trade and global industry competitiveness, CBAMs are a regular feature of international diplomatic discussions. How this debate between countries evolves will be a key indicator of intent and will provide important context on the possibility of border policies being adopted.

Policy design

As the purpose of implementing a CBAM will be largely similar across jurisdictions, individual CBAMs are thus likely to have similar design features. This category seeks to identify those key design features that must be considered by all countries when considering a CBAM.

International trade law

CBAM designs must be compliant with WTO rules, meaning there will be several criteria consistent across countries. This category seeks to establish those features a CBAM must have to be compliant with these rules.

By jurisdiction

While the global context is expected to remain largely consistent, domestic factors relevant to the decision to adopt a CBAM will vary widely. Accordingly, the second component of the framework assesses each jurisdiction to allow for a comparison across several key criteria.

The first criteria assess the policy and political environment of each country, and how advanced it is in relevant aspects of its climate policy. To determine the potential implications for Australian primary producers, the framework assesses each country's domestic agriculture industry and its trading relationship with Australia in agricultural goods.

Drivers of policy change

A CBAM will most likely be used to complement existing carbon pricing policies. Therefore, how developed climate policy is in a country will be a critical driver in the decision whether to pursue further policies.

The first pillar within this criterion seeks to understand what policies currently exist that address domestic emissions pricing. The second category assesses a jurisdiction's current political environment, as this will provide important context on how decisions on carbon border policies may be influenced, both by domestic public attitudes as well as political support within its institutions.

Australian agriculture exposure to policies

The final criterion seeks to understand the possible implications these policy proposals and developments may have for the Australian agriculture sector.

The first pillar assesses each jurisdiction to determine the state and composition of its domestic agriculture industry. This is motivated by the fact a CBAM would only be implemented if imports posed a direct threat to the same product produced domestically; for example, domestically produced wheat and imported wheat. Therefore, if a jurisdiction's agriculture industry produced vastly different products to Australia, there would be little need for policies to address these imports.

The second pillar analyses the trading relationship of agricultural goods between each jurisdiction and Australia, both in value and composition. This allows for the impacts a CBAM would have on Australian agriculture to be analysed. If a country is a small agriculture trading partner, the impacts of a CBAM are likely to be small.

The third pillar seeks to understand whether the implementation of a CBAM in a jurisdiction could have any indirect policy impacts on the Australian agriculture industry. This is primarily expected to be reflected in changes to agricultural input prices; for example, global fertiliser prices may change with their inclusion under EU CBAM rules.

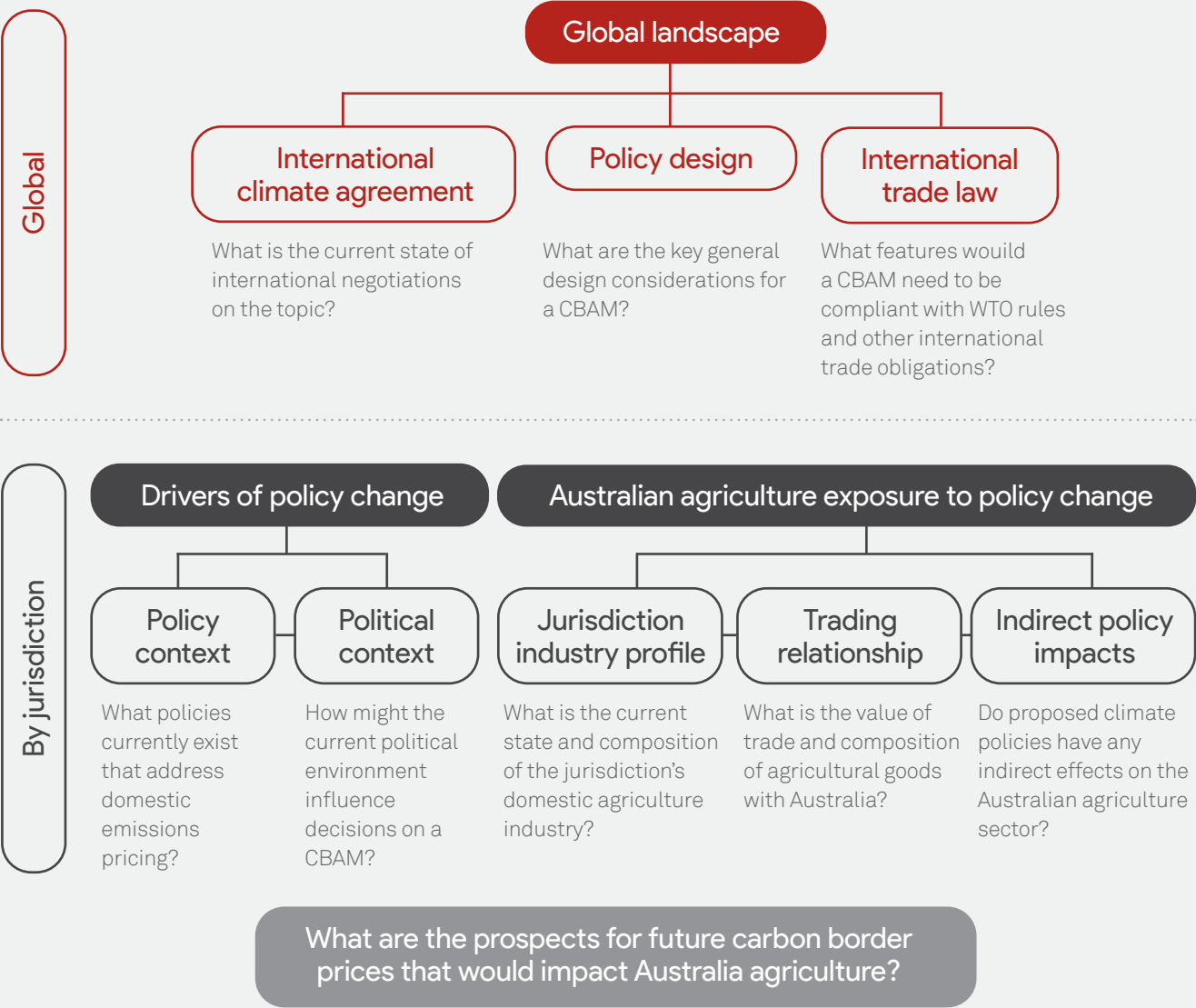


Figure 8. CBAM assessment framework.

Appendix B: Stakeholder consultations



To provide further insight and complement the research conducted for this report, stakeholders were consulted from a range of organisations, including Deloitte, the public and private sector, and academic institutions.

Table 4. List of stakeholders contacted.

Recommendation	Role	Organisation
Public sector		
Nick Blong	First Assistant Secretary	Department of Agriculture, Fisheries and Forestry
Heather McGilvray	Policy Director	Department of Agriculture, Fisheries and Forestry
Kurt Hockey	Assistant Secretary	Australian Bureau of Agricultural and Resource Economics and Sciences
Tim Denne	Principal Economist	New Zealand Ministry of Environment
Private sector		
Tennant Reed	Director – Climate Change and Energy	Australian Industry Group
Maikel van der Knaap	Senior Manager – Tax and Legal	Deloitte Netherlands
Freedom-Kai Phillips	Director – Deloitte Center for Sustainable Progress	Deloitte Canada
Henry Zhenyu Wang	Senior Manager – Tax and Business Advisory	Deloitte China
David Ware	Partner – Tax and Legal	Deloitte Australia
Academic institutions		
Dr Emma Aisbett	Associate Director (Research) – Zero-Carbon Energy for the Asia-Pacific Grand Challenge	College of Law, Australian National University

Appendix C: Economic impact modelling

Overview of D.Climate

Deloitte Access Economics' in-house climate-economy model, D.Climate, was used to model the impacts of the proposed EU CBAM on the Australian agriculture sector and wider economy. Using the GTAP database and a complete set of emissions accounts covering CO₂ and non-CO₂ gases, D.Climate provided a multi-sector, multi-region model fully integrated with the global economy. The structure of D.Climate is graphically illustrated in Figure 9. Note that damages were not analysed as part of this modelling.

Structure

The assessment framework was the basis for comparing the selected jurisdictions. It established an approach for considering the prospects of a jurisdiction adopting a CBAM, as well as any potential implications for Australian agriculture. The factors that might influence a country's decision to adopt a CBAM are associated with broader trends in climate policy adoption, shown in Figure 7.

The speed of climate policy adoption varies widely between countries and is influenced by both global and local factors. For this reason, the assessment framework is divided into two sections. The first section assesses the landscape of international negotiations and law, while the second assesses and compares each jurisdiction across key criteria.

Macroeconomic variables

In the baseline, macroeconomic variables, including GDP forecast growth and population growth, are specified exogenously for each year over the modelling period.

Growth rates for GDP are based on actual and forecast GDP data from the OECD's Economic Outlook online database, which provides historical and forecast GDP over the period 1960 to 2060 (OECD, 2023a). The OECD produces forecasts based on an assessment of the economic climate in individual countries and the world economy, using a combination of model-based analyses and expert judgement.




Population growth rate data is derived from the OECD.Stat database under the 'Demography and Population' theme. The data contains population projections by age bracket, as well as total population growth, for OECD and selected non-OECD economies from 2021 to 2060 (OECD, 2023b). The data was also used to calculate labour supply based on the working age population for each jurisdiction of interest.

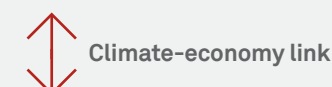
Global emissions pathway

In the baseline, we assume countries pursue decarbonisation in line with a global commitment to limit warming to well below 1.5 °C (Figure 10). This assumption does not change across the baseline or any of the three scenarios.

Climate module

Submodules

- Abatement**  Reflects climate policies of Victoria and the rest of the world, particularly through a shadow price on GHG emissions mechanism, but also through other policy levers.
- Emissions**  Includes a full emissions accounting framework. This module is typically used to assess how climate change policy might impact various sectors of the economy.
- Damages**  Incorporates the physical risks of climate change. This module is typically used to assess how climate change might impact various sectors of the economy.



Economy module (DAE-RGEM)

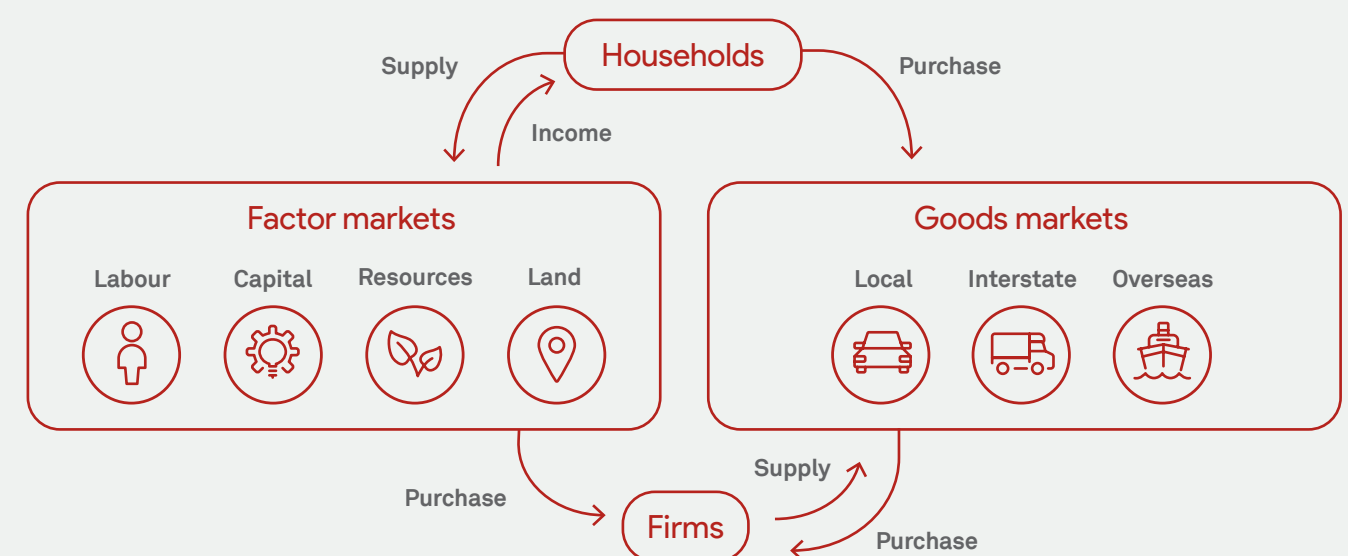


Figure 9. D.Climate climate-economy model structure.

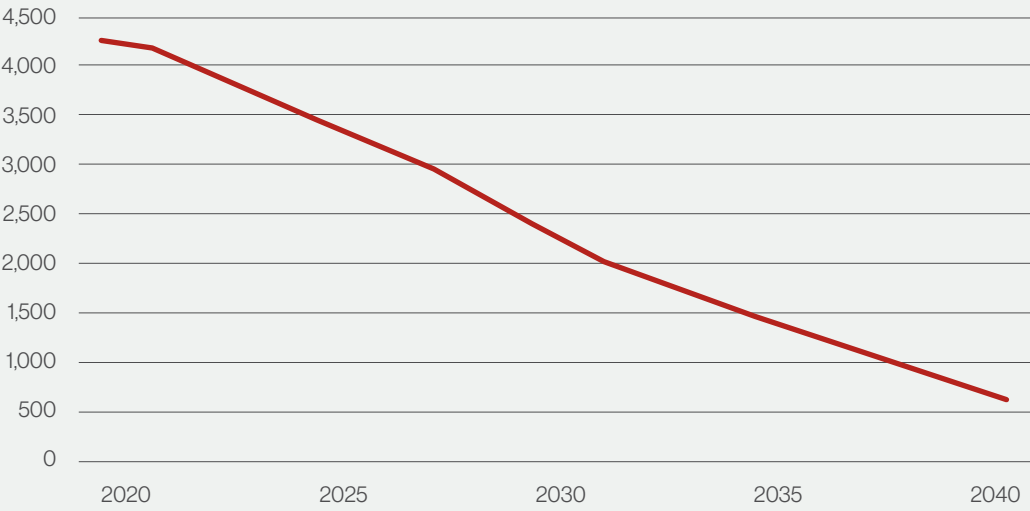


Figure 10. Global CO₂-e emissions projections, SSP 1.9.

Regions

Five regions were modelled for this engagement, as shown in Table 5.

Table 5. Modelled regions.

Modelled regions	Description
Australia	Australian states and territories, including Christmas Island, Cocos (Keeling) Islands, Heard Island and McDonald Islands, and Norfolk Island.
European Union	Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.
China	China and Hong Kong
New Zealand	New Zealand
Rest of the world	All other economies

Sectors

The D.Climate model can be tailored to a specific sectoral concordance in line with the GTAP database. The sectoral concordance for this study is specified in Table 6.

Table 6. D.Climate model sectors and concordance with GTAP sectors.

D.Climate	Abbreviation	GTAP sectors
Crops	PLANTS	Paddy rice, wheat, other grains (maize, sorghum, barley, rye, oats. millets, other cereals), oil seeds
Livestock	OTHERANIMALS	Cattle, cattle meat, other meat, other animal products
Other agriculture	DAIRYCATTLE	Raw milk, milk (dairy products)
Forestry	FORESTRY	Forestry
Seafood	FISHING	Fishing
Coal mining	COAL	Coal (hard coal, lignite and peat)
Oil	OIL	Oil (extraction of crude petroleum)
Gas production	GAS	Gas (extraction of natural gas)
Other mining	OMIN	Other mining extraction
Meat manufacturing	MEATMAN	Bovine meat products, meat products
Other food manufacturing	OTHERFOODMAN	Vegetable oils, fats, processed rice, sugar, food products, beverages, tobacco products
Dairy manufacturing	DAIRY	Dairy products
Light manufacturing	LIGHTMAN	Textiles, wearing apparel, leather products, wood products, paper products, publishing
Petroleum, coal products	P_C	Petroleum, coal products
Chemical products	CHM	Manufacture of chemicals and chemical products
Mineral products not elsewhere classified	NMM	Manufacture of other non-metallic mineral products
Iron and steel	I_S	Iron and steel: basic production and casting
Non-ferrous metals	NFM	Non-ferrous metals: production and casting of copper, aluminium, zinc, lead, gold and silver
Heavy manufacturing	HEAVYMAN	Basic pharmaceutical products, rubber and plastic products, mineral products, ferrous metals, metals, metal products, computer, electronic, and optical products, electrical equipment, machinery, equipment, motor vehicles and parts, transport equipment, other manufactured goods
Electricity transmission and distribution	ELYTND	Electricity transmissions and distribution
Electricity from clean energy sources (hydro, bio)	ELYCLEAN	Nuclear base load, wind base load, hydro base and peak load, solar peak load
Electricity from traditional sources	ELYDIRTY	Coal base load, gas base load, oil base load, other base load, gas peak load, oil peak load
Gas transmission and distribution	GDT	Gas, manufacture and distribution
Water and waste	WATER	Water
Construction	CONS	Construction
Wholesale and retail trade	TRADE	Trade, accommodation, food and service activities
All type of transport	TRANS	Transport, water transport, air transport, warehousing and support activities
Business services	OSERV	Communication, financial services, insurance, real estate activities, business services, recreational and other services, dwellings
Government services	GOVSERV	Public administration and defence, education, human health and social work activities

Approach to scenario design

Scenario definition and overview

The economic impact of an EU CBAM on Australian agricultural exports, domestic output and employment were modelled using a baseline and two core scenarios. The baseline scenario was modelled on current emissions reduction policies, which are assumed to extend unchanged into the future. In Scenario 1, the EU introduces a CBAM on selected carbon-intensive goods, whereby importers are required to declare the GHGs embedded in their imports and surrender the corresponding amount of CBAM certificates. In Scenario 2, the EU CBAM scope is extended to agricultural goods. Further detail on these scenarios can be found in the ‘Scenario design’ section below.

Scenario design

The baseline scenario and two modelled scenarios are outlined as follows:

1. The **baseline scenario** is the reference case against which the impact of CBAMs is considered. In this scenario, global action on climate change is consistent with commitments made in the Paris Agreement, and emissions decline to net zero by 2050 in line with SSP 1.9 (Figure 10). In this stylised baseline scenario, it is assumed no countries adopt a CBAM. Although stylistic in nature, it provides a useful comparison to isolate the impacts of a CBAM on output, employment and likely changes in trade dynamics, in a world where other climate policies are being enacted to reduce emissions globally.
2. In **Scenario 1**, the EU introduces a CBAM on carbon-intensive goods, including electricity, cement, iron and steel, aluminium, fertilisers, and electricity, in January 2026. This is imposed as an increase in tariff rates on the imports of these products into the EU, as identified in Table 7.
3. In **Scenario 2**, the EU introduces a CBAM on the carbon-intensive goods outlined in Scenario 1 (cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen), as well as agricultural products (crops, seafood, livestock and dairy), in January 2026. The CBAM price is calculated via the EU ETS as in Scenario 1, and free allocations will be phased out according to the same timeframe.

Emissions in exports of CBAM products

Sectoral coverage

The sectors each modelling scenario includes are listed in Table 7.

Emissions coverage

All emissions associated with the production of exports that fall under the CBAM are taxed, which informs the size of the shock. The GHG emissions regulated by the CBAM correspond to those covered by Annex I to the EU ETS, namely carbon dioxide (CO₂), as well as nitrous oxide (N₂O) and perfluorocarbons (PFCs) where relevant. The size of the carbon tariffs imposed on imported products reflects (to the extent possible) their actual carbon content.

The EU CBAM initially covers scope 1 (direct) emissions of the selected sectors. Indirect emissions (scope 2) are not covered in the initial phase but may be added after the transitional period. Accordingly, this modelling only covers scope 1 emissions associated with the production of agricultural goods.

GTAP data on emissions and exports was used to estimate the total emissions associated with the trade of CBAM commodities for each region and destination pair.

Carbon price levied in the CBAM

The CBAM levy is informed by the EU ETS in our modelling exercise, since guidance from the European Union notes “the carbon price levied in the CBAM should align, to the extent possible, with the price paid under the EU ETS”. The CBAM levy was based on the EU ETS carbon price in April 2022, US\$87 per tonne of CO₂-e.

Calculating the size of the CBAM

The ‘shock’ applied to the model is the CBAM levy imposed on imports of agricultural goods into the EU. The equation used to quantify the CBAM levy imposed on imports from non-EU partners (the ‘shock’) is detailed as follows:

$$CBAM_{j,k,i} = P_c CO_{2e\,j,k,i}$$

Where:

P_c is the implicit price of CO₂-e emissions from the EU ETS.

CO_{2e j,k,i} is the volume of emissions in each industry, i.e. the emissions associated with commodity *i* exports from country *j* to country *k*.

Table 7. Modelling scenario coverage by sector.

CGE sector	Description	Scenario 1	Scenario 2
PLANTS	Crops	No	Yes
OTHERANIMALS	Livestock	No	Yes
DAIRYCATTLE	Other agriculture	No	Yes
FORESTRY	Forestry	No	No
FISHING	Seafood	No	Yes
COAL	Coal mining	No	No
OIL	Oil	No	No
GAS	Gas production	No	No
OMIN	Other mining	No	No
MEATMAN	Meat manufacturing	No	No
OTHERFOODMAN	Other food manufacturing	No	No
DAIRY	Dairy manufacturing	No	No
LIGHTMAN	Light manufacturing	No	No
P_C	Petroleum, coal products	No	No
CHM	Chemical products	Yes	Yes
NMM	Mineral products n.e.c.	Yes	Yes
I_S	Ferrous metals	Yes	Yes
NFM	Metals n.e.c.	Yes	Yes
HEAVYMAN	Heavy manufacturing	No	No
ELYTND	Electricity transmission and distribution	No	No
ELYCLEAN	Electricity from clean energy sources (hydro, bio)	No	No
ELYDIRTY	Electricity from traditional sources	No	No
GDT	Gas transmission and distribution	No	No
WATER	Water and waste	No	No
CONS	Construction	No	No
TRADE	Wholesale and retail trade	No	No
TRANS	All type of transports	No	No
OSERV	Business services	No	No
GOVSERV	Government services	No	No

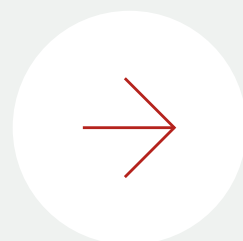
Limitations of the modelling approach

Given that the design and implementation of the EU CBAM is still under consideration, several assumptions have been made to model the impacts of this policy intervention on Australia's agriculture sector. Key assumptions and limitations are outlined below.

- **A constant EU ETS price is assumed:** In practice, the price of EU ETS certificates is likely to increase in the future, in particular due to the phasing out of free allowances. While some forecasts of EU ETS certificates were published by the European Parliament in 2020, recent fluctuations in the price of EU ETS certificates mean these projections no longer align with current ETS prices. Should the price of EU ETS certificates increase, the costs, and therefore the impacts, associated with the EU CBAM will also increase.
- **Sector coverage is broader than coverage of the EU CBAM:** Owing to limitations associated with disaggregating GTAP sector, covered commodities sit within nested sectors. As such, the CBAM shock has been applied to all sectors encompassing covered commodities. For example, fertilisers sit within a broader chemical products industry. This assumption is likely to slightly overstate the impacts of the CBAM.
- **Countries do not adopt a carbon price as a policy mechanism to incentivise emissions reduction:** Given significant policy uncertainty around government interventions to enable emissions reduction, this analysis assumes countries that do not already have a carbon price will not introduce this mechanism to enable emissions reduction in the future. If countries were to price emissions domestically, the cost, and therefore the impact, of the CBAM on covered sectors will reduce.



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