Responsible Investing

JANUARY 2024

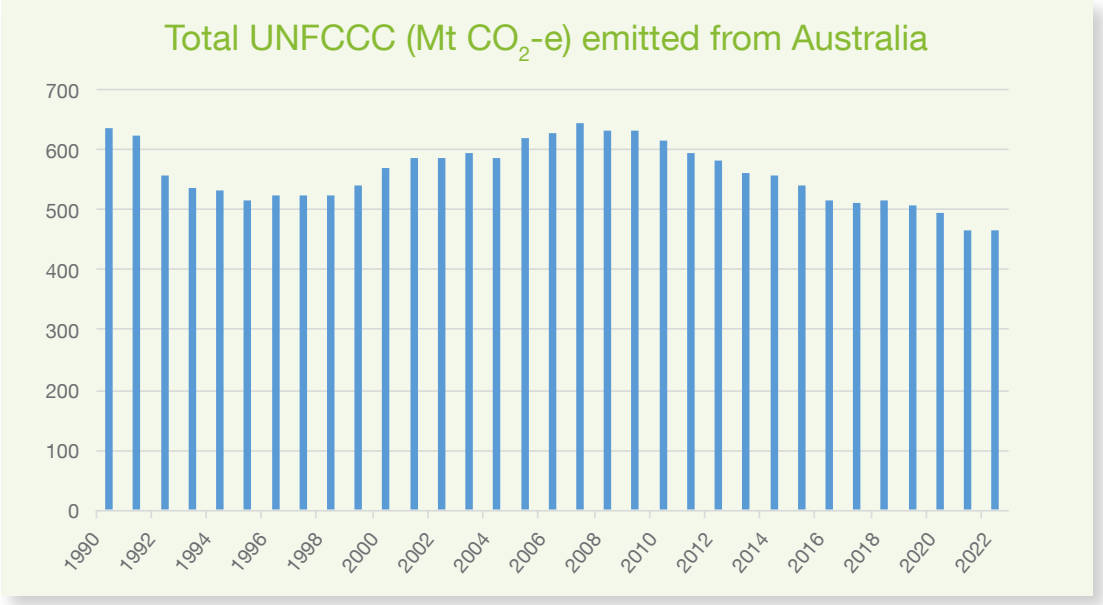
PLATYPUS ASSET MANAGEMENT

Australian carbon emissions and carbon markets

At the headline level, Australian carbon emissions are declining.

From 641 Mt CO_2-e in 2007 to 465 Mt CO_2-e to year end March 2023. The reduction has been driven by land use, land use change and forestry which is a net carbon sink, increased use of renewables for electricity generation, and improved control of fugitive emissions.

Australian GHG emissions CO_2-e



Source: *Department of Climate Change, Energy, the Environment and Water.*

Under the new Australian Accounting Standards Board (AASB) standards companies will have to report Scope 1, Scope 2 and Scope 3 emissions.

Presently, while most companies in the ASX 300 report Scope 1 and Scope 2 emissions, only ~60% of companies that will need to report Scope 3 are currently doing so. These new standards will align companies with Taskforce on Climate-Related Financial Disclosures (TCFD) reporting requirements.

From the 1st July 2023, the new obligations under the Safeguard Mechanism (SGM) will remove ~205 Mt CO_2-equivalent from the national accounts by 2030.

At the moment, facilities covered by the SGM account for 137 Mt of CO_2-e, with ~64 Mt the responsibility of listed companies. Both the starting point for measurement (called baseline levels) and reduction requirements from these levels will impact carbon reduction pathways.

In order to meet emissions obligations, Australian Carbon Credit Units (ACCUs) can be used to offset excess emissions.

Carbon credits, specifically Australian Carbon Credit Units (ACCUs) within the SGM, can be used to offset emissions. Demand for ACCUs will increase as the SGM matures. At present companies are holding onto their ACCUs to ensure they can meet their SGM obligations.

The earnings per share (eps) impact of the SGM on our portfolio holdings (at Jan 2024) is immaterial.

Using the legislated maximum ACCU price, inflation and production assumptions, and assuming no emissions are removed from facilities under the SGM, portfolio holdings BHP, RIO, and MIN can easily afford ACCUs if necessary for hard-to-abate emissions.

Footnote: Throughout this document, unless otherwise specified, the phrase carbon emissions refers to CO_2 equivalent emissions.

Contents

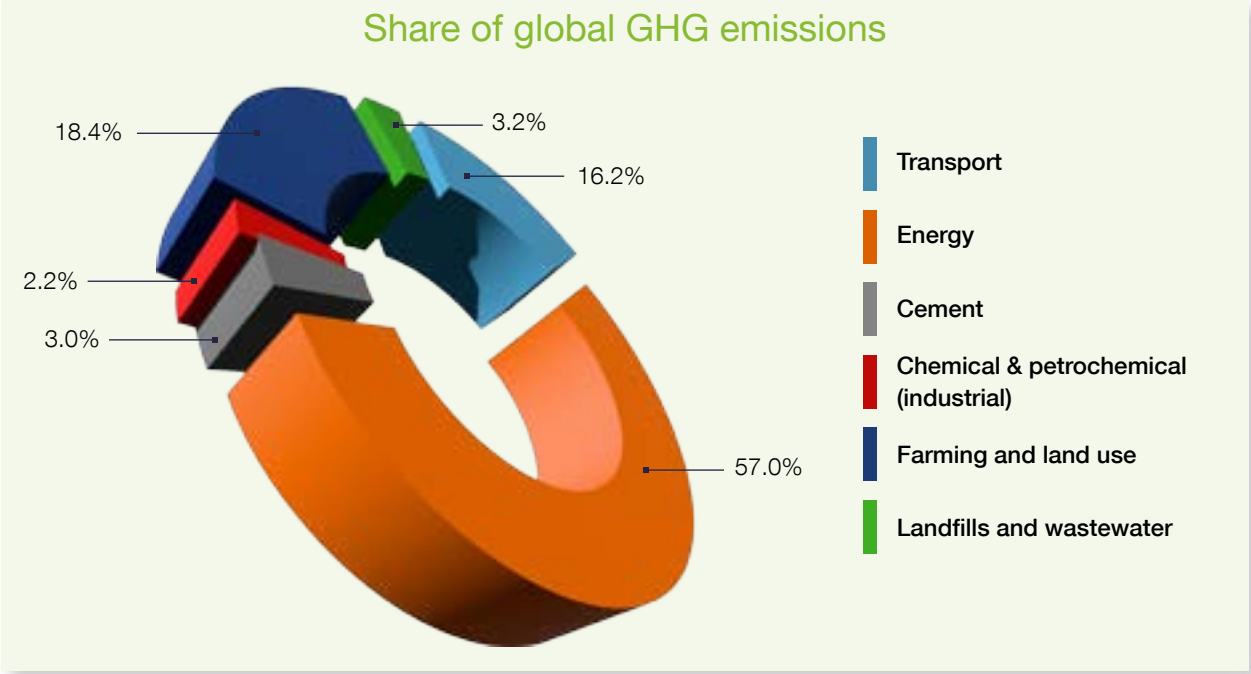
Carbon emissions globally

The world emits approximately 55 billion tons of greenhouse gas (GHG) emissions per year. GHG emissions are measured in carbon dioxide equivalents (CO_2-e) over a 100 year timescale, a measure designed to capture the natural attrition of greenhouse gases into ecosystem.

Carbon dioxide is defined as having a global warming potential (GWP) of 1, with other gases then referenced to this. Methane has a GWP of 28, because while it lasts less time in the atmosphere than CO_2, it absorbs more energy, and so has a larger effect on global warming.

Of the 55 billion tons CO_2-e, approximately 74.4% is carbon dioxide (CO_2), 17.3% is methane (CH_4), 6.2% is nitrous oxide (N_2O), and 2.1% is F-gases (HFCs, CFCs, SF_6). By sector, Energy (57%) is the largest contributor to GHG emissions, which consists of buildings (17.5%), industry (24.5%), agriculture and fishing (1.7%) and unallocated and fugitive emissions (13.6%).

Exhibit 1: Share of global GHG emissions by sector



Source: Our World in Data.

To limit the rise in global temperatures to 1.5°C compared to pre-industrial levels (with at least a 50% probability), global emissions will need to reach net zero[1] by 2050.

Paris Agreement

A number of global conferences have been organised in order to address this challenge. Most notably, in Paris at the UN Climate Change Conference (Conference of Parties 21, abbreviated to COP21) in 2015 an agreement was signed by 196 Parties. Called the Paris Agreement, this is a legally binding international treaty on climate change. The goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts to "limit the temperature increase to 1.5°C above pre-industrial levels". To limit global warming to 1.5°C, it is estimated that GHG emissions must peak before 2025 and decline by 43% by 2030, compared to 2019 levels.[2]

Implementation of the Paris Agreement works on a five year cycle of increasingly restrictive emissions targets. From 2020, countries submit their nationally determined contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC), which keeps a registry by country. Countries communicate to the UNFCCC how they intend to reduce their greenhouse gas emissions and meet their Paris-aligned emission targets. As an aside, under the Paris agreement individual countries are responsible for measuring their own activities. There is no compliance committee under the UNFCCC.

[1] Using the Science Based Target Initiative, net zero means at least 90% of emissions are abated, with the remainder offset. This is different from carbon neutral which can refer to emissions that are 100% offset.

[2] For Australia, 2005 emissions were ~616Mt CO_2-e and 2019 emissions were ~505Mt CO_2-e. So, reducing emissions by 43% from 2005 levels is both easier and not strictly Paris aligned in the literal sense.

Carbon emissions in Australia

Australia is a signatory to the Paris Agreement, and has implemented policy to achieve:

- Net Zero by 2050,
- Emission levels 43% below 2005 levels by 2030.

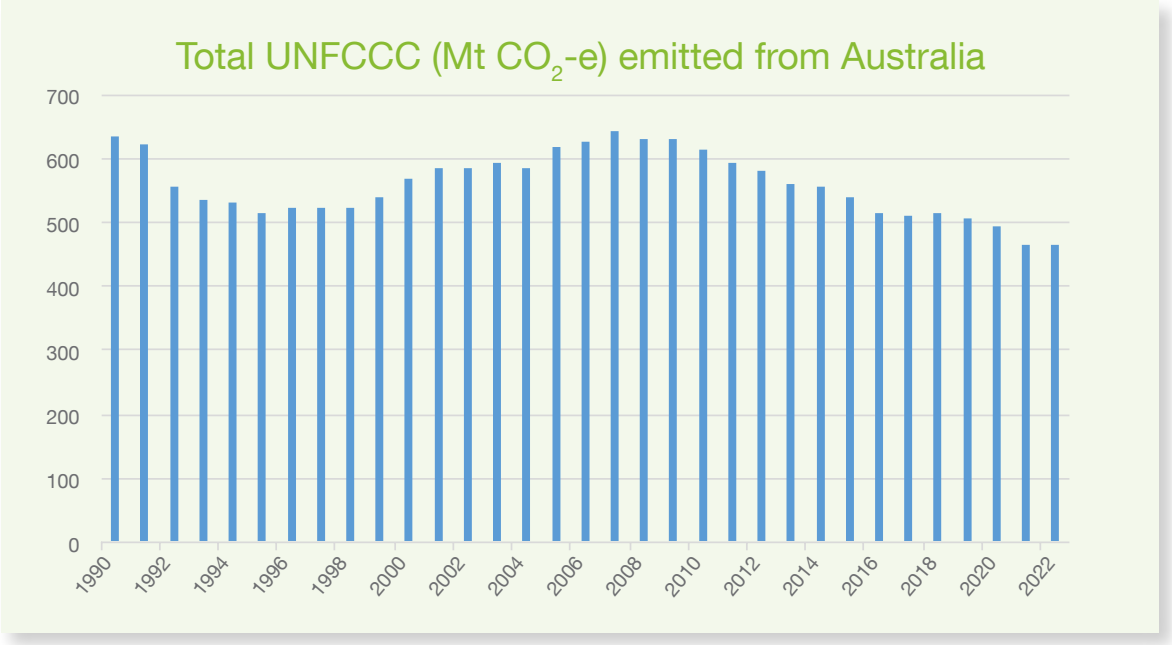
The Department of Climate Change, Energy, the Environment and Water (DCCEEW) calculate the National Greenhouse Inventory every quarter. The data is disaggregated by State and Territory, and also by economic sector. In addition to this, there is a Full Carbon Accounting Model for modelling GHG emissions from the land sector (LULUCF). Australia uses mostly country-specific methodologies and emissions factors for its National Inventory Reports.

In terms of accuracy, for energy and industrial processes GHG measurement is well defined. For LULUCF and waste, however, GHG estimates can have confidence bands as large as 20%.[3] This is important, especially when thinking about carbon targets.

While the science producing the emission measurements is carefully applied and uses conversion factors[4] that are well established, all GHG calculations go through ministerial sign off. There is a risk that an element of political judgement could enter the process at this stage.

All national GHG emissions are Scope 1, defined by geographical boundaries, which makes national emissions lower than the sum of Scope 1, Scope 2, and Scope 3 emissions. Scope 1 emissions are direct emissions from sources controlled by a company, Scope 2 are indirect emissions from purchased energy, and Scope 3 are indirect emissions from a company's value chain that are outside the company's control.

Exhibit 2: Australian GHG emissions CO_2-e



Source: *Department of Climate Change, Energy, the Environment and Water.*

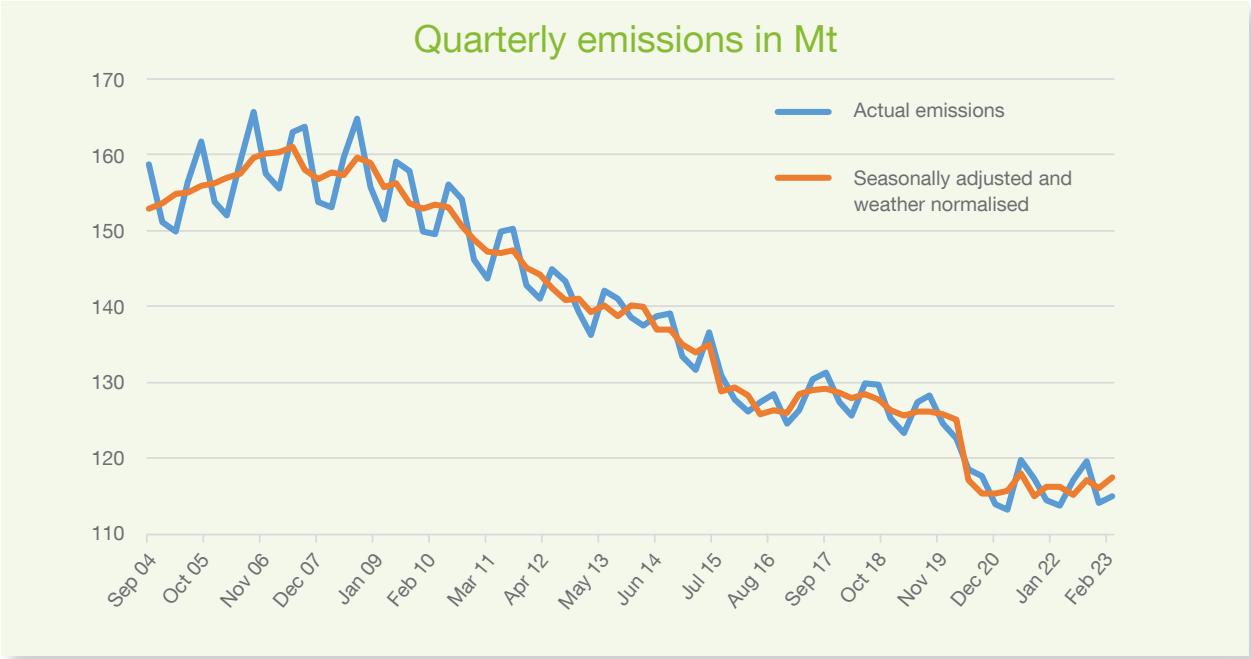
In 2005, Australia emitted 616 Mt of CO_2-e (about ~1.1% of global emissions). To meet the national targets of 43% reduction from 2005 levels by 2030, this implies Australia will emit ~265 Mt of CO_2-e in 2030. Data for the latest available year shows emissions of 465 Mt, which means that Australia has to reduce emissions by ~200 Mt from today.

Australia's National Greenhouse Gas inventories are published quarterly, which highlights the trend in emissions. Due to restrictions on movement and business, national emissions reduced during COVID.

[3] Discussions with experts. Please contact us for more information.

[4] Best practice for the Global Warming Potential (GWP) of different GHGs. For example, methane has a 100-year GWP of 28.

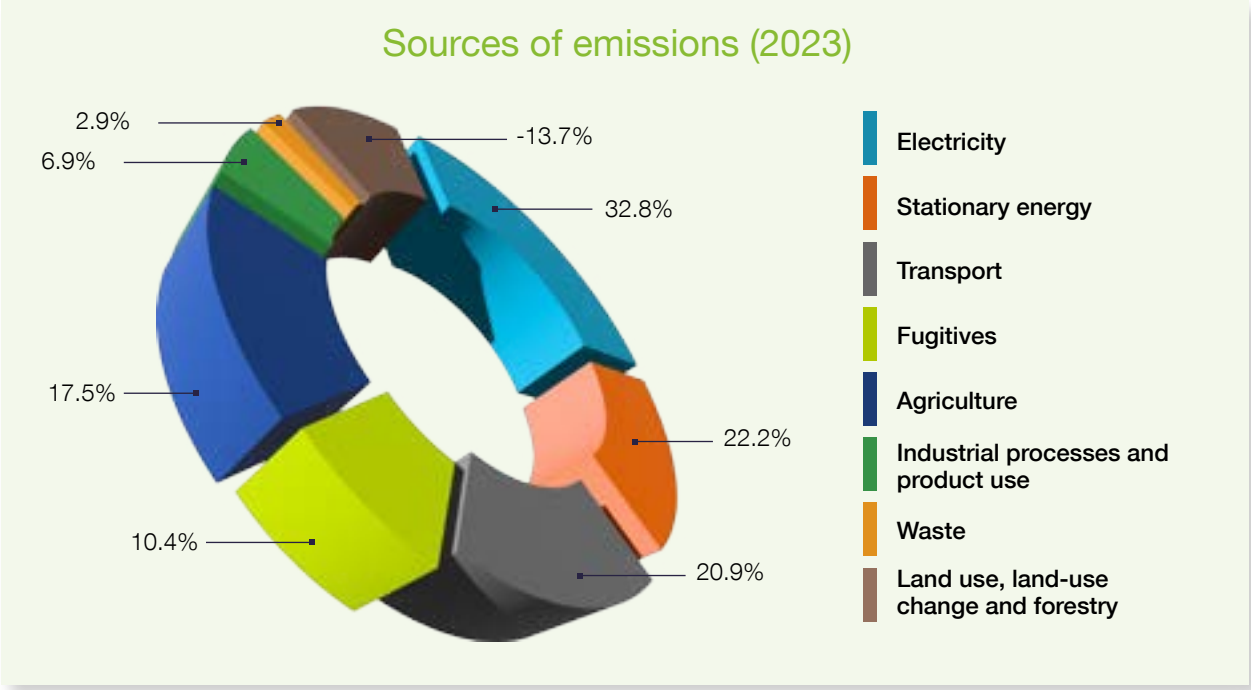
Exhibit 3: Quarterly Australian GHG emissions CO_2-e



Source: *Department of Climate Change, Energy, the Environment and Water.*

By sector, Electricity is the largest contributor, while LULUCF actually reduces national emissions by 14%.

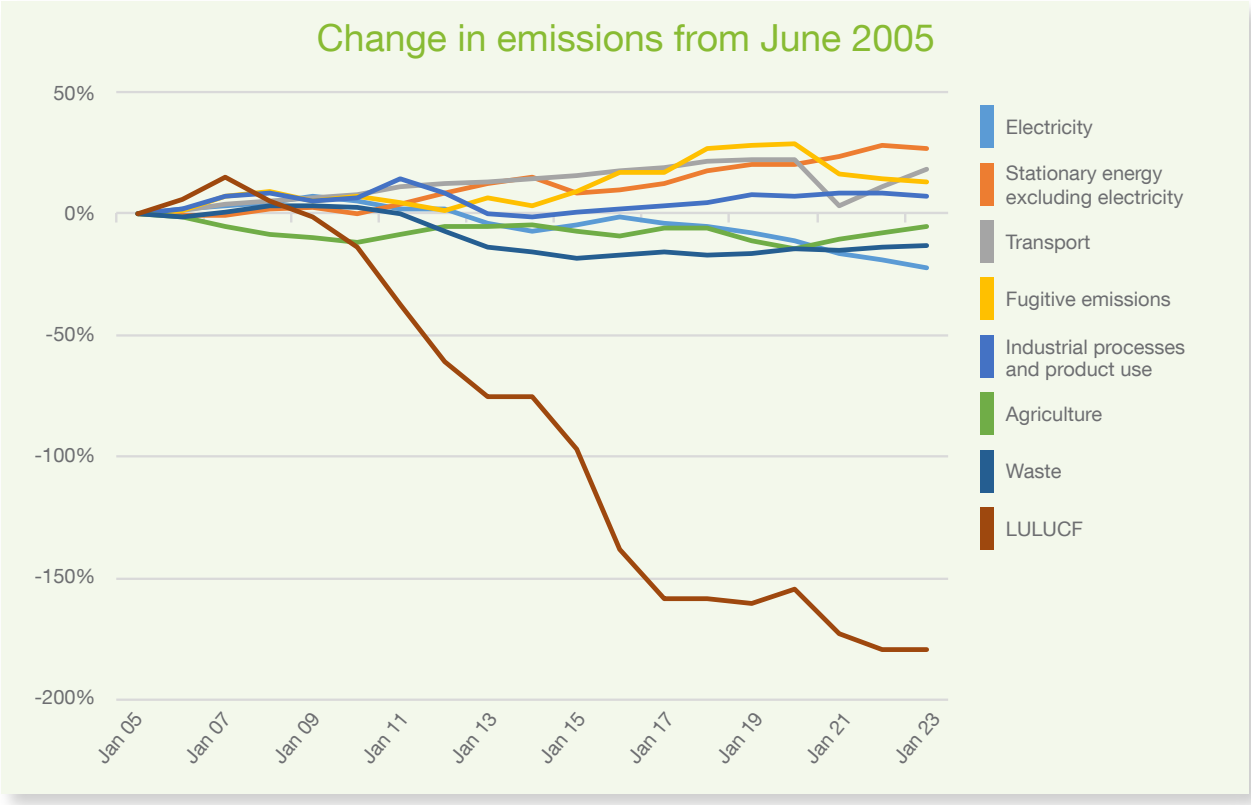
Exhibit 4: Australian GHG emissions by sector



Source: Our World in Data.

The decline for each sector since 2005 (the baseline year for the national targets) shows the positive impact of Land Use, Land Use Change and Forestry.

Exhibit 5: Change in Australian GHG emissions by sector since 2005



Source: *Department of Climate Change, Energy, the Environment and Water.*

National emissions declined during COVID, aided by a reduction in transport, although this has now rebounded to 2017 levels. Electricity continues to decline, with the Federal Government targeting 82% of power generation to be sourced from renewable energy by 2030. Fugitive emissions, defined as losses, leaks and other releases associated with the natural gas, oil, and coal industries is also declining, which speaks to improved processes in those industries.

Carbon emissions and reporting for ASX listed companies

Under the new Australian Accounting Standards Board (AASB) accounting standards, from July 2024 companies will have to report Scope 1, Scope 2 and Scope 3 emissions. The Australian Sustainability Reporting Standards (ASRS) has produced two standards that are Task Force on Climate-Related Financial Disclosures (TCFD) aligned. The reporting requirements are split into three groups, with larger companies required to report earlier.

Exhibit 6: Emissions reporting requirements under ASRS.

First reporting year	Eligibility criteria
2024-2025	Two of: 500+ employees, $1000m+ assets, $500m+ revenue
2026-2027	Two of: 250+ employees, $500m+ assets, $200m+ revenue
2027-2028	Two of: 100+ employees, $25m+ assets, $50m+ revenue

The ASRS is split into two parts: ASRS 1 covers General Requirements for Disclosure of Climate-related Financial Information and ASRS 2 covers Climate Related Financial Disclosures. Companies will have to perform climate resilience assessments against at least two scenarios, one of which must be aligned to the Paris target of 1.5°C increase in average global temperatures by 2050.

The ASRS was inspired by the International Sustainability Standards Board (ISSB), which is an independent standard setting body with the International Financial Reporting Standards (IFRS) Foundation.

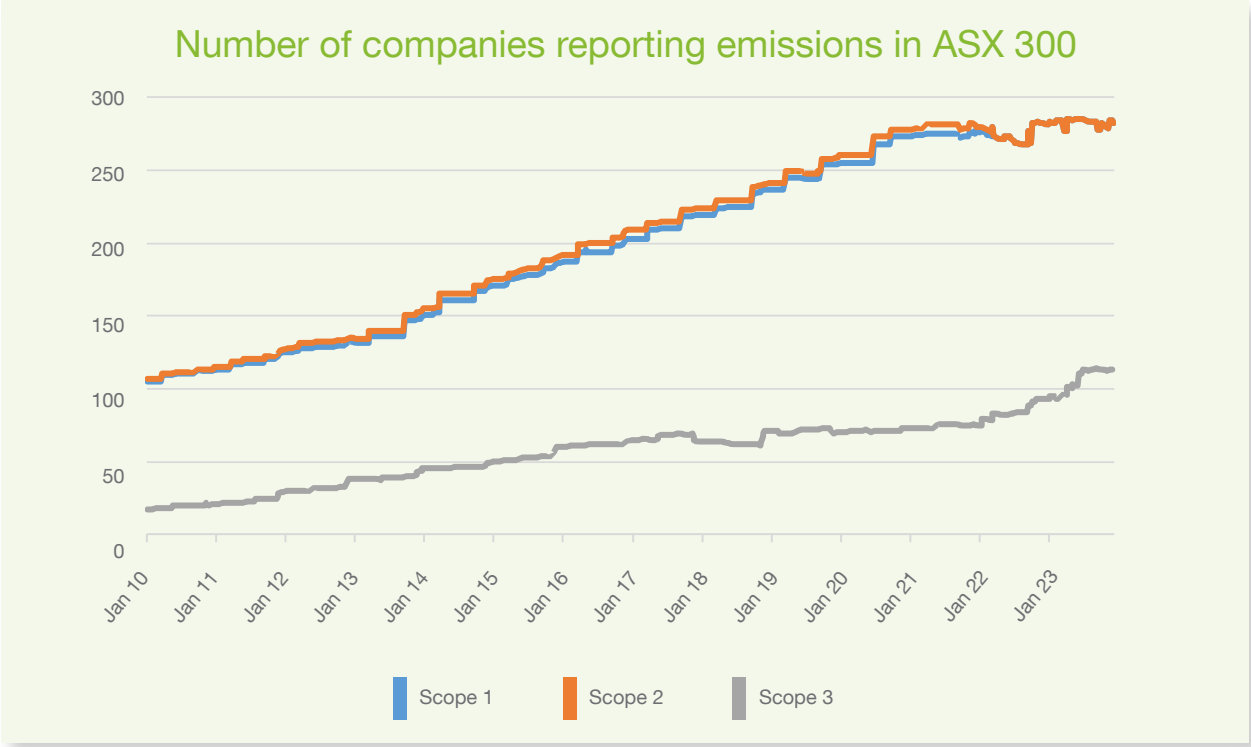
Here are some important characteristics of ASRS 1 and 2:

- In the present legislation, Scope 3 emissions do not have to be mapped to the fifteen Scope 3 categories as recommended by the GHG protocol.
- Scope 3 reporting can be for the immediately preceding reporting period if new data is not available.
- Financed emissions reporting is not mandatory (although some of the major banks are already reporting these numbers).
- With respect to capital expenditure (capex), decarbonisation capex needs to be disclosed, as does an internal carbon price, with justification for the company's choice.
- Any use of carbon offsets needs to reported, as does any progress towards decarbonisation targets.
- Executive remuneration linked to climate needs to disclosed.
- For companies that believe they have no material climate risks, they will need to justify this view.

A large number of listed companies report Scope 1 and Scope 2, and an increasing number report Scope 3. Scope 3 emissions are the indirect emissions that are not under the control of the company. Total Scope 3 emissions are 1,600 Mt CO_2-e, which is ~3.5x the national emissions of Australia.

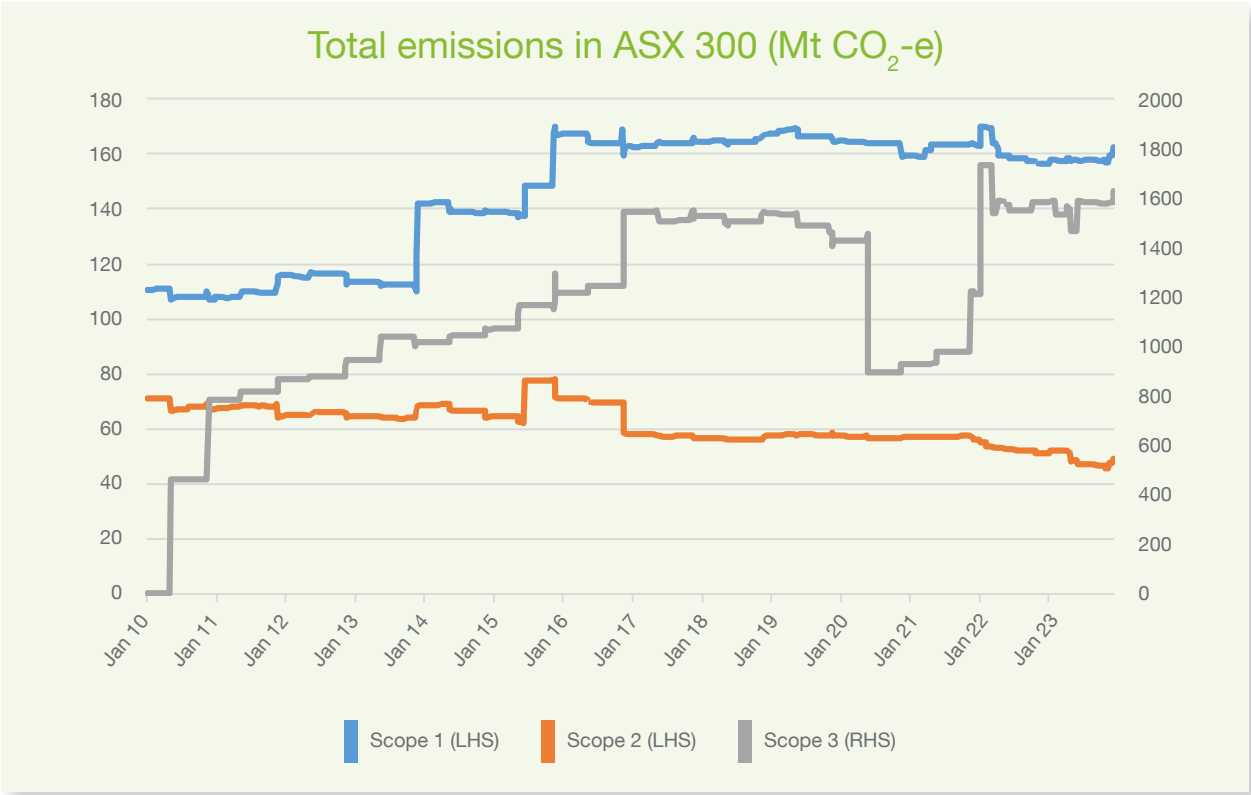
Using MSCI data, 112 companies report Scope 3. Under the legislation, we estimate that 184 companies will have to report estimates of Scope 3 in the 2024-2025 financial year.

Exhibit 7: Number of companies that report Scope 1, Scope 2 and Scope 3 emissions



Source: *MSCI, Platypus.*

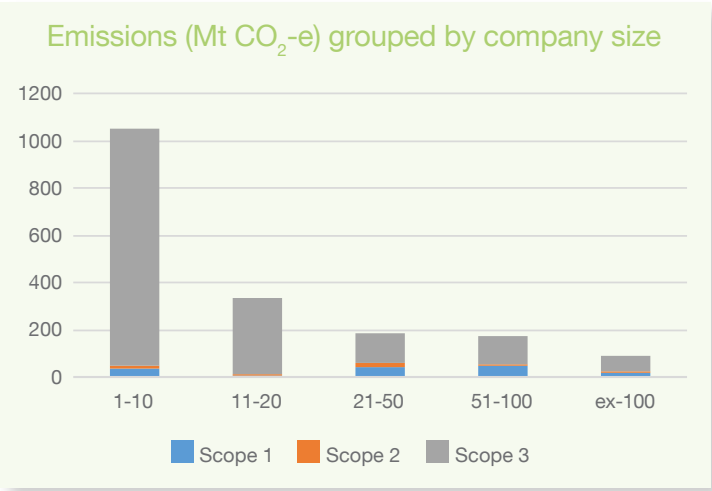
Exhibit 8: Total emissions in ASX 300 (Mt CO_2-e).

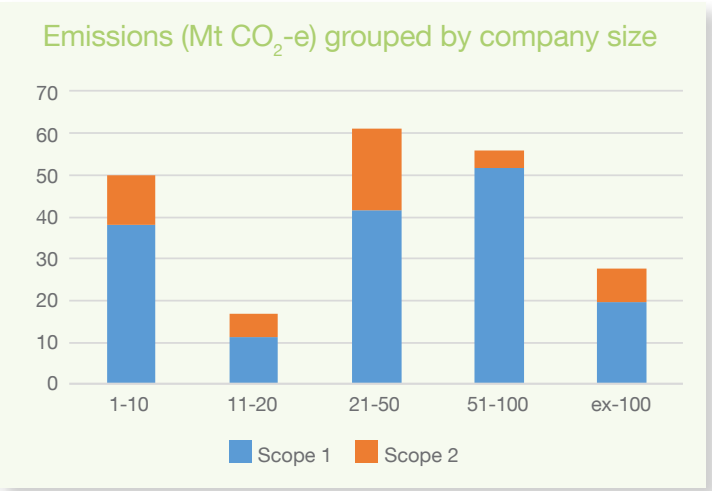


Source: *MSCI, Platypus.*

Scope 3 emissions are the largest source of emissions in the ASX 300, driven by resources and energy companies.

Exhibit 9: Scope 1, 2 and 3 emissions grouped by company size.

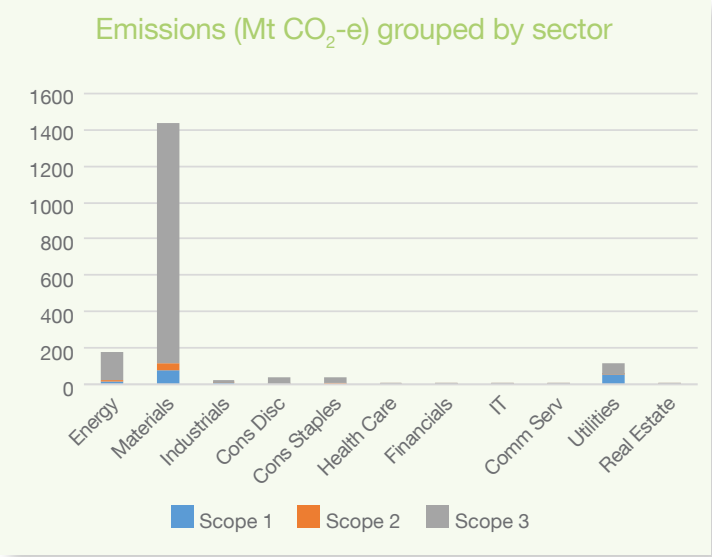


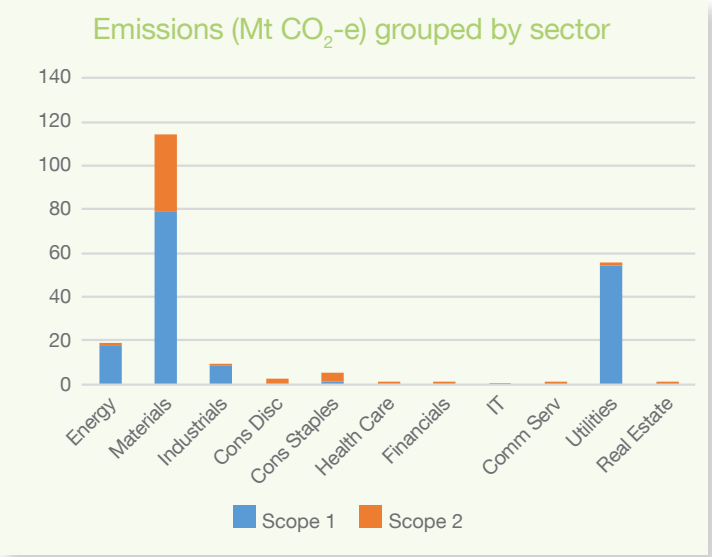


Source: *MSCI, Platypus, FactSet, IRESS*

From a sector perspective, Materials produce the most CO_2-e emissions, followed by Utilities and then Energy.

Exhibit 10: Scope 1, 2 and 3 emissions grouped by GICS sector





Source: *MSCI, Platypus, FactSet, IRESS*

Safeguard Mechanism (SGM)

In order to reduce emissions, the Federal Government has implemented the Safeguard Mechanism. Every industrial facility in Australia that emits 100,000 tonnes or more of CO_2-e is legislated to reduce emissions by a certain percentage per year from 2023 to 2030. At present, this covers 219 sites and 137.5 Mt of CO_2-e emissions.

The Safeguard Mechanism only covers direct emissions (Scope 1) and is associated with the facility itself. This means that if ownership changes, the SGM requirements remain with the facility. For listed companies, this means that they have to own the asset in order for their emission reductions to be legislated.

Exhibit 11: Stocks with industrial facilities that come under the Safeguard Mechanism (~35% of the ASX 300 at December 2023).

Stock	Market Capitalisation ($m)	ASX 300 (%)
BHP	242,501	10.9555
CSL	131,368	5.9349
WES	61,695	2.7872
WDS	57,000	2.5751
RIO	48,072	2.1718
FMG	45,232	2.0434
STO	23,709	1.0711
NEM	20,539	0.9279
NST	14,039	0.6343
S32	13,818	0.6243
ORG	13,524	0.611
APA	10,943	0.4944
MIN	10,647	0.481
BSL	10,000	0.4518
QAN	9,312	0.4207
ALD	8,295	0.3748
ORI	7,265	0.3282
AZJ	6,866	0.3102
EVN	6,533	0.2951
WHC	5,990	0.2706
CWY	5,833	0.2635
IPL	5,496	0.2483
ORA	3,601	0.1627
VEA	3,383	0.1528
ILU	2,863	0.1293
NHC	2,563	0.1158
BPT	2,355	0.1064
BLD	1,501	0.0678
RRL	1,435	0.0648
CRN	1,375	0.0621
SMR	1,056	0.0477
ABC	760	0.0343
AQZ	448	0.0182
EQN	23	0

Source: *Platypus, IRESS*

To be clear, simply because a company owns an asset that emits 100,000t or more of CO_2-e does not mean that it is obligated to reduce the emissions of that asset. Company obligations depend on the type, age, and baseline of the asset.

Each facility has a baseline against which all future emissions are assessed. There are three types of baselines: standard, landfill, and sectoral.

Standard – can vary year to year with changes in production. Determined by multiplying the facilities production by an emissions intensity value and a decline rate. Each product from the facility has a specific variable to calculate CO_2-es. Emissions intensity of existing production variables is set using a combination of facility-specific and industry average values with the following ratios:

Exhibit 12: Combination of industry average and facility specific ratios through time.

Financial year	2024	2025	2026	2027	2028	2029	2030
Industry-average: Facility-specific	10:90	20:80	30:70	40:60	60:40	80:20	100:0

Source: *Clean Energy Regulator*

Landfill – waste facilities do not have production variables. Only emissions from waste deposited after 1 July 2016 are covered, and a default methane capture efficiency rate of 37.2% is applied. Legacy emissions from landfill sites are not included in the SGM. To date, only one landfill has been covered by the scheme and most large landfills have a capture efficiency of greater than 37.2% so will not be impacted by baselines for several years.

Sectoral – single sector baseline of 198 Mt CO_2-e applies to grid-connected electricity generators, unless the sector collectively exceeds the baseline in a financial year. If the sector baseline is exceeded, individual standard baselines will apply to each generator.

Safeguard facilities can apply for an emissions intensity determination for years on or after July 2023, but also can choose not to. In case of the latter, best practice emissions intensity values will apply. The baseline is calculated by multiplying forecast production by the emissions intensity of that production.

Facilities can apply for a multi-year monitoring period (MYMP) with respect to measurement, which means that aggregated emissions over a 2 or 3 year period are used to determine whether the site has met the SGM requirements. MYMPs can be up to 5 years in length, with the facilities emissions reduction plan published on the Clean Energy Regulators website. CSL is an example of a company with a MYMP baseline for their industrial facility.

The default decline rate for SGM facilities is 4.9% per annum. If facility is a Trade Exposed Baseline Adjusted (TEBA) facility, the decline rate could be reduced to 1% per annum for manufacturing, or 2% per annum otherwise. TEBA facilities have a higher risk of carbon leakage, a term which refers to a company transferring production to less a strict emission compliance regime.

If a facility reduces emissions beyond their legislated requirements, Safeguard Mechanism Credits (SMC) will be issued to the operator. Similar to a carbon credit, an SMC represents one tonne of CO_2-e or equivalent. SMCs can be sold or held as credit against future emissions within the SGM. They are not carbon credits in the broader sense of the term, in which companies apply to the Clean Energy Regulator for certification (of which at present there are 37 approved methodologies), and then either sell or cancel the carbon credit depending on requirements. SMCs can only be transferred and used with the SGM.

If a facility is not able to meet their emission requirements, they can purchase an Australian Carbon Credit Unit (ACCU) to compensate for their missed target. Within the SGM, for 2023-2024, these are set at $75. This price will be indexed by CPI plus 2% per annum. If a facility uses ACCUs to account for more than 30% of their emissions, reasons why have to be submitted and then published by the Clean Energy Regulator.

Facilities can borrow emissions from the following year, but will be charged interest to do so. For 2024-25 and 2025-26, this is set at 2% and for 2026-27 onwards this will be 10%. In the unlikely event that SGM compliance is not met, civil penalties of up to $2.1m may apply, although the rhetoric from the Federal government is that these are unlikely to be enforced.

Carbon credits

One carbon credit represents one tonne of carbon equivalent emissions either removed from or prevented entering the atmosphere. Carbon credits are financial products and are a commodity.

There are two parts to the carbon market: voluntary and compliance:

- **Voluntary** – used by companies to meet net zero targets that are not compulsory. This is a global market, with large variation in prices and quality. These carbon credits are audited by three parties: Verified Carbon Standard, Gold Standard, and Clean Development Mechanism. Under the Science Based Target Initiative (SBTi), which companies use to verify their carbon reduction targets and roadmap, emissions cannot be offset using carbon credits.
- **Compliance** – used to offset emissions under the Safeguard Mechanism.[5] Carbon credits in this market are called Australian Carbon Credit Units (ACCUs). To meet emissions targets, companies surrender their credits to the Clean Energy Regulator (CER).

The domestic market is generally traded over the counter. Carbon credits with different underlying technologies trading at different prices (Exhibit 13).

Exhibit 13: Carbon credit information, including prices and risks (at 2021). While these were highlighted by the report, this list does not claim to be exhaustive.

	Cost ($)	**Actual Mt removed 2021-2022** (not accounting for soil carbon/ living biomass/ debris)	**Permanence (years of storage)**	**Measurement and verification**	**Type**	**Co-benefits**	**Risks**
Permanent Plantings	20-30	~0.5	25-100	Indirectly using remote sensing and observable from the ground	Negative	Improved biodiversity, soil health, reduced erosion, improved climate resilience. Additional income stream to land holders.	Fire and drought, disruption to existing land use, increased water use
Plantation and Farm Forestry	10-30	~0.1	25-100	Using remote sensing and observable from the ground	Negative	Improved biodiversity, soil health, reduced erosion, improved climate resilience.	Fire and drought, disruption to existing land use, increased water use. Increased fuel load. Forests are susceptible to pests and disease.
Human induced Regeneration of Native Forest	~5	6.4	25-100	Using remote sensing and observable from the ground	Negative	Improved soil health, conservation, other environmental amenity. Increased farm profitability	Fire and drought. Land use disruption and potential for increased exotic species.
Avoided Land Clearing	5-10	2.3	25-100	Remote sensing	Avoided	Improved biodiversity, soil health, improved climate resilience.	Fire risk. Could impact other land use.
Savanna Fire Management	5	1.46	~25	Well-established measurement and verification protocols	Avoided/ Negative	Indigenous socio-economic, appropriately managed biodiversity	Limited land management options.
Soil Carbon	7-13	0	~25	Currently costly ($30 per ha)	Avoided/ Negative	Improved soil health, farm productivity, biodiversity, farm resilience	Onus on future land managers. Reliant on maintaining primary productivity.
Blue and Teal Carbon	18-30	1.1	25-100	Using remote sensing	Avoided/ Negative	Fisheries, pollutant removal, coastal protection, ecosystem services, indigenous values	Land ownership, lack of indigenous engagement. Limited land management options due to need to maintain sequestration.

[5] Can be used outside the Safeguard Mechanism, if companies choose to.

Pyrolysis Biochar Systems	80-120	0	300-600	Soil measurement methodology provides some estimates	Negative	Input source for secondary industries, improved soil health	Social impact and community acceptance
Geological Storage	14-35	2.26	>1,000,000	Highly precise, and well established	Avoided/ Negative	Small surface footprint, provide input source for secondary industries	Social license, leakage, groundwater contamination
Bioenergy with Carbon Capture and Storage	100	No estimate	>1,000,000	Highly precise, and well established	Negative	Depends on source of biomass	Competition for land/water resources, social risks. Ecological risks associated with biomass and water supply.
Direct Air Capture	300-600	No estimate	Not relevant	Simple and precise	Negative	Input source for secondary industries	Localised impact on land and water use.
Mineral Carbonisation and Enhanced Weathering	28-300	0.1	>1000	Rates of carbon uptake well known, and mineral carbonisation routinely measured in laboratory	Negative	Makes use of mine tailings as a value stream	Risk of harmful by products, potential for localised increased seismicity and groundwater contamination.

Source: *CSIRO, Macquarie Research*

Carbon credits created by an entity can be sold on the voluntary market. This market is evolving, and like any frontier market regulatory standards are also evolving. Given the importance of the market to the Paris Agreement (Article 6 enables countries to collaborate to achieve carbon reductions), improvements are being made fast.

For the voluntary market, four companies report on the robustness and reliability of carbon credit producers: BeZero, Calyx, Renoster, and Sylvera. However, often these firms can provide different ratings for the same project, making it important for the buyer to perform their own due diligence. The compliance carbon market is ~100x larger than the voluntary market.

In order to create ACCUs, the project operator applies to the Clean Energy Regulator (CER) to become an eligible offset project. There are a number of requirements that must be met:

1. The project operator must be a fit and proper person,
2. There must be an approved methodology for the project,
3. The project must deliver additional abatement,
4. The project must be run in line with the approved methodology,
5. The project operator must report to the CER.

Projects that are eligible can be grouped as follows:

1. Carbon capture and storage,
2. Energy efficiency,
3. Landfill and alternative waste treatment,
4. Mining, oil and gas fugitives and waste,
5. Transport,
6. Agricultural,
7. Savanna fire management,
8. Vegetation.

Applying to add new methods is done through the Department of Climate Change, Energy, the Environment and Water (DCCEEW). This separation from the CER occurred after an independent review of the carbon credit market*, chaired by Professor Ian Chubb, from which all recommendations were adopted in principle by the Federal government.

* Known as the Chubb Review https://www.dcceew.gov.au/about/news/australian-governments-response-independent-review-accu

Australian Carbon Credit Units (ACCUs) are personal property, and there is a registry of ACCUs at the CER. It may be possible for an ACCU holder to mortgage the ACCU, or hold the ACCU on behalf of others under a trust or other beneficial ownership arrangement. ACCUs can be transferred to domestic entities only. An ACCU is a financial product, and as such comes under ASIC. For tax treatment, the following applies to ACCUs:

- The cost of acquiring an ACCU is tax deductible, with the deduction deferred through the rolling balance method until the ACCU is sold or surrendered.
- Proceeds from selling an ACCU are assessable income.
- Change in value of an ACCU is marked to market as income.

When an ACCU is surrendered under the Safeguard Mechanism, it is cancelled. The emissions from these ACCUs are then subtracted from the emissions from the SGM facility.

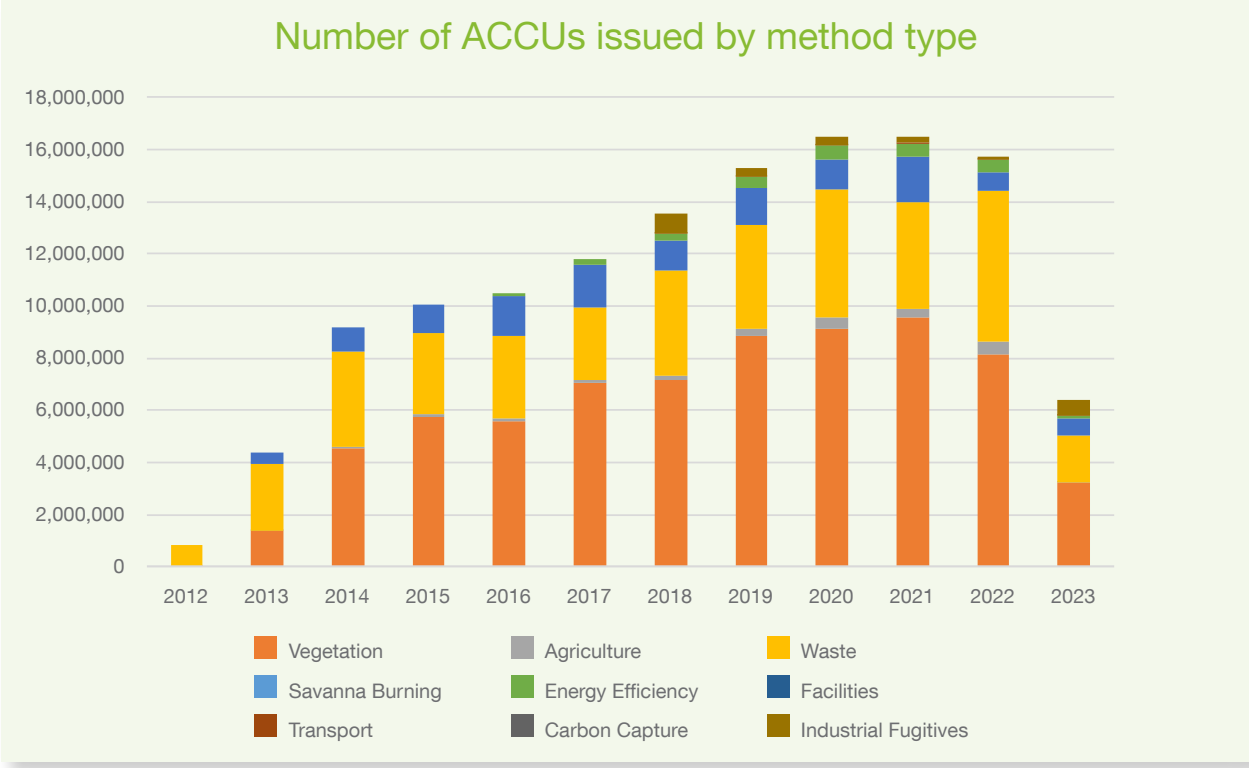
Human Induced Regeneration (HIR)

One area of uncertainty with ACCUs are those produced using Human Induced Regeneration (HIR). Professor Andrew Macintosh from the Australian National University and colleagues have investigated a number of HIR carbon credit sites, and found that the carbon abatement is less than expected given the number of ACCUs issued for the site. Professor Macintosh does not question the method itself, but how the CER is over issuing the ACCUs compared to the number expected from applying the underlying method rigorously.

Recommendation 8 (of which there were 16) from the Chubb Review highlighted the need for increased transparency around HIR projects, and clear evidence of a causal relationship between eligible HIR activities and suppression of carbon emissions.[6] The Chubb Review did not recommend ceasing HIR as a method to generate ACCUs, but the DCCEWW is not registering new projects that use the HIR method from 1st October 2023. Projects already registered are not affected and can continue.

Discussions with industry participants align with the Chubb Review outcomes. While there are some HIR projects that could have over issued credits, in general HIR is seen a valid part of the carbon offset market. This is important, because HIR credits continue to be popular amongst ACCU producers, with ~33% of all issued ACCUs coming from HIR projects.

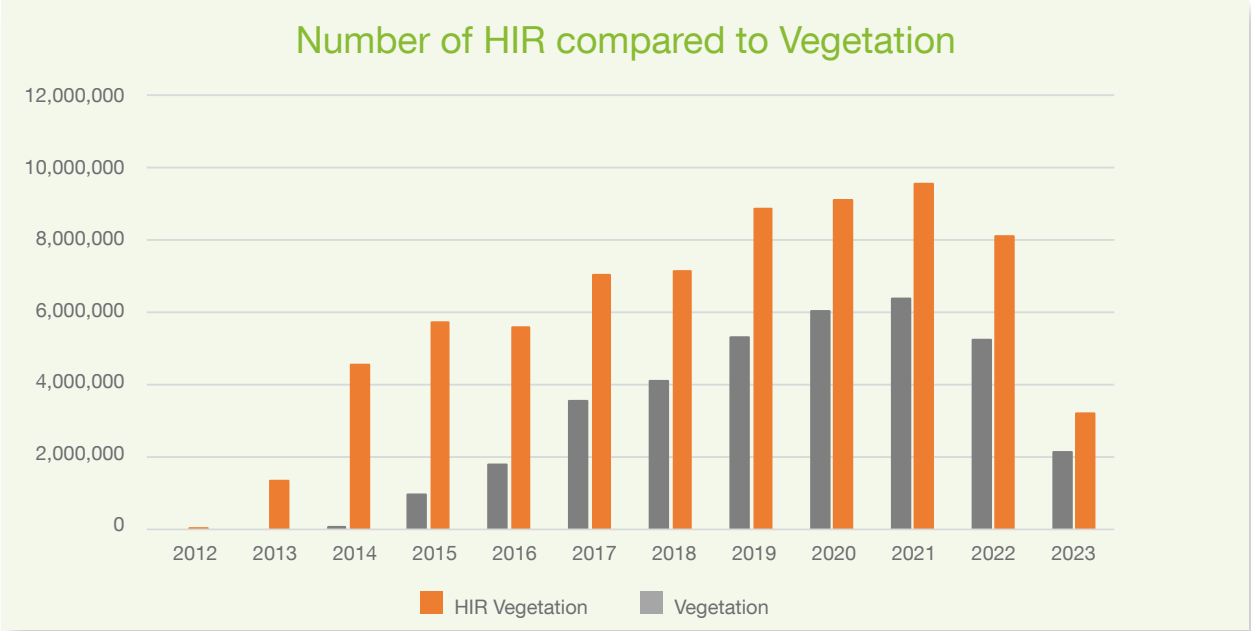
Exhibit 14: ACCUs issued by method type.



Source: *Clean Energy Regulator*

[6] There is software called FullCAM produced by the Federal Government that implements the HIR carbon abatement calculation for a property.

Exhibit 15: HIR ACCUs compared to Vegetation sector (HIR is a subset of Vegetation).



Source: *Clean Energy Regulator*

Trading ACCUs

The ACCU market is generally traded over the counter. Jarden, a New Zealand broker, publishes ACCU spot prices and ACCU HIR spot prices. HIR ACCUs trade at a premium: at Nov 2023, ACCUs were trading at $32 (with a spread of $4), and HIR ACCUs were trading at $35. HIR projects cost about $5 per carbon credit to produce (Exhibit 13), making them amongst the most profitable methods at present.

Most market volume is over the counter, and given the lack of data, building volatility surfaces for ACCUs is difficult. While the market is illiquid, it is possible to find volume if as a buyer you have good credit. Jarden settle T+3, so corporates can purchase through Jarden, and then Jarden can retire the credits on their behalf if required.

Anecdotally, corporates under the Safeguard Mechanism are generally holding ACCUs rather than trading them, acting cautiously as the regulatory requirements unfold.

Exhibit 16: HIR ACCUs compared to Vegetation sector (HIR is a subset of Vegetation).

Source: *: Jarden*

Within the Safeguard Mechanism, only ACCUs can be used to meet compliance requirements.

Climate Active

Climate Active is a partnership between the Federal Government, business, and the community to help accelerate climate action. Organisations apply for carbon neutral certification, and can use the certification to demonstrate the seriousness with which the organisation is approaching net zero.

The Climate Active Carbon Neutral Standard is underpinned by Australia and international standards, and the GHG Protocols.

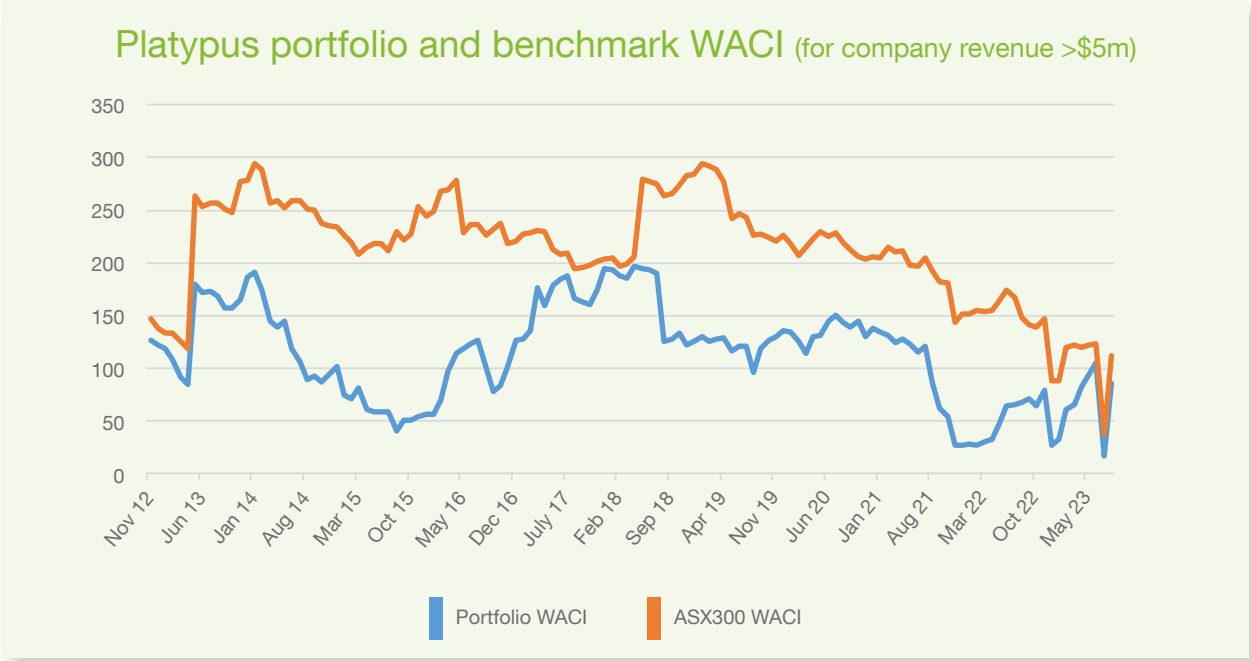
Eligible offsets are listed by Climate Active, and removed if they become controversial. ACCUs are not required for eligibility for Climate Active certification.

Platypus Portfolio

The most common way to measure the carbon exposure of an investment portfolio[7] is by using Weighted Average Carbon Intensity (WACI). Recommended by the TCFD, the measure can be used to compare portfolios to their benchmark and to other active managers. All else being equal, preference is for a portfolio with a lower WACI.[8]

WACI is defined as portfolio weight multiplied by company revenue, which is then divided by the total of Scope 1 and Scope 2 emissions. WACI does not account for assets under management, so for a full Scope 3 assessment for the Platypus business, a carbon footprint calculation would be necessary. Due to the ubiquity of the measure, we focus only on WACI here.

Exhibit 17: WACI calculation for Platypus portfolio and ASX 300 for all companies with more than $5m in revenue.



Source: *Platypus, ISS*

[7] Investments come under Category 15 of the fifteen categories that GHG propose for measuring Scope 3 emissions.

[8] Conversations with clients support this, where they have added to investments that offer readily available factor, risk and alpha outcomes but with the added focus on WACI limits.

Platypus is a high conviction manager, and often invests in smaller pre-revenue companies with strong growth prospects. For example, De Grey mining, a gold company, has small revenues compared to carbon emissions, which has a large impact on portfolio WACI.

This is not a demonstration of the risk of De Grey with respect to the company's carbon emissions. As a small cap, the regulatory risk is low, as are investor expectations on innovation with respect to technologies for emission reduction. When looking at the Platypus portfolio, we ensure that we understand the individual companies and the net zero pathways for each holding. For De Grey, the company has committed to net zero by 2050, and is working towards becoming TCFD[9] aligned. We will continue to engage with the company as their journey progresses.

Exhibit 18: Top 5 portfolio contributors to WACI as at November 2023. Total portfolio WACI is 850.

Stock	WACI
DEG	765.99
NXT	36.95
BHP	15.79
RIO	15.72
JHX	3.76

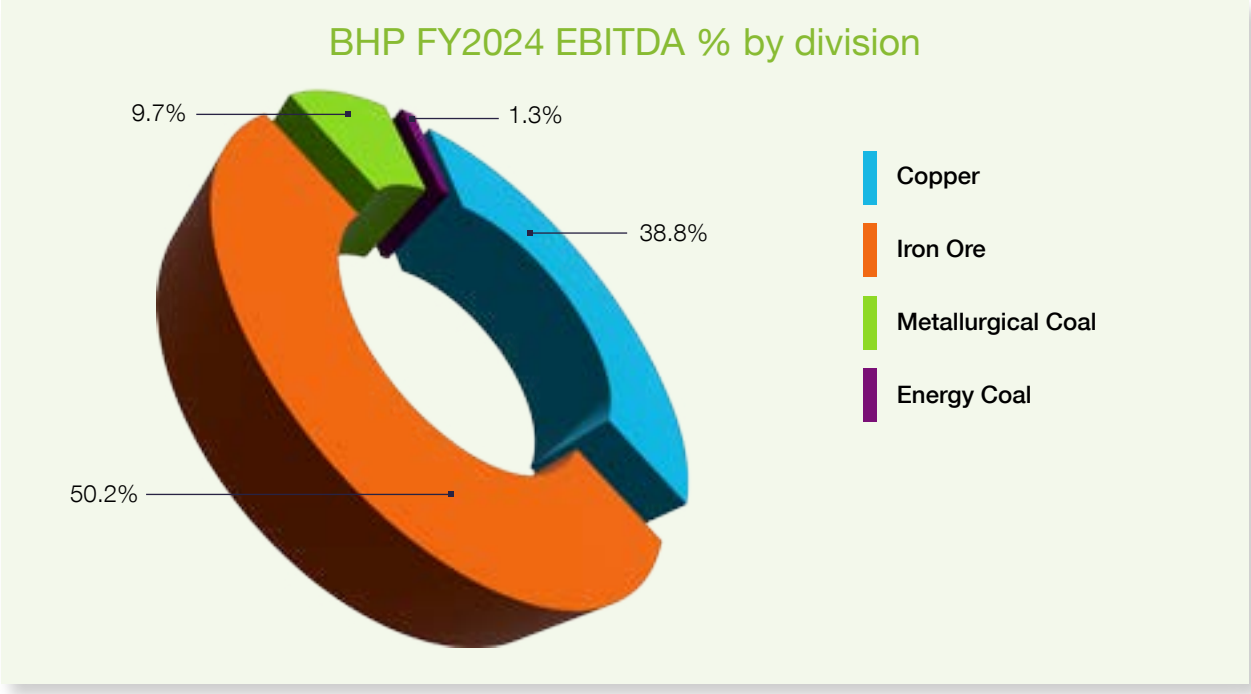
Source: Platypus, FactSet, ISS

Generally, the portfolio trades at a lower WACI than the index. This is an outcome of style, rather than an active decision.

BHP

BHP, a global mining and metals company, has exposure to iron ore, copper, metallurgical coal, potash, nickel, and thermal coal.

Exhibit 19: Estimated EBITDA by division for BHP for FY2024



Source: Platypus, Visible Alpha

[9] Taskforce for Climate-related Financial Disclosure

Commodity price assumptions underpinning the Platypus model are as follows: iron ore US$90/t, copper US$4/lb, metallurgical coal US$200/t, and potash US$275/t.

In terms of the Safeguard Mechanism, BHP has 14 facilities that have reported covered emissions of ~3.79Mt of CO_2-e.

Exhibit 20: Emissions per asset for BHPs assets under the Safeguard Mechanism. Emissions data current at March 2023, downloaded in December 2023.

Facility under the SGM	Description	BHP exposure to reported covered emissions under SGM (t CO_2-e)	Production growth assumptions to 2030
Mining Area C	Opened in 2003, one of five mining hubs in Pilbara with 8 open cut mines.	412,089	2% p.a. to 2028 0% from 2028 to 2030 (iron ore assets limited by port capacity)
Jimblebar Mine	Iron ore 85:15 JV with BHP and Mitsui and ITOCHU.	260,077	2% p.a. to 2028 0% from 2028 to 2030
Newman Operations	Iron ore 85:15 JV with BHP and Mitsui and ITOCHU.	259,315	2% p.a. to 2028 0% from 2028 to 2030
PRL03 Rail	Pilbara rail network connecting iron ore assets to Port Hedland.	560,092	2% p.a. to 2028 0% from 2028 to 2030
Yarnima Power Station	190 MW gas power station located in Newman, supplying power to Pilbara.	340,554	2% p.a. to 2028 0% from 2028 to 2030
Olympic Dam	Copper, gold, and uranium operations and processing facility.	182,302	4% p.a.
Yandi/Marillana Creek Mine	Iron ore facility near end of life (est. ~2026)	149,694	2% p.a. to 2028 0% from 2028 to 2030
Nickel West Mt Keith Facility	Part of integrated mine-to-market business, mines low-grade disseminated sulphide ore.	129,880	2% p.a. to 2028 0% from 2028 to 2030
Nickel West Kalgoorlie Facility	Flash-furnace smelter producing 99.8% nickel. Signed PPA that will supply 315GWh of renewable energy from 2024 to facility.	140,234	2% p.a. to 2028 0% from 2028 to 2030
Nickel West Kwinana Facility	Part of integrated mine-to-market business, mines low-grade disseminated sulphide ore.	161,918	2% p.a. to 2028 0% from 2028 to 2030
Goonyella Broadmeadow Mine	Metallurgical coal in Bowen Basin, part of 50:50 joint venture with Mitsubishi Alliance (called BMA).	657,070	1% p.a. to 2028 0% from 2028 to 2030
Caval Ridge Mine	Metallurgical coal in Bowen Basin, part of 50:50 joint venture with Mitsubishi Alliance (called BMA).	132,424	1% p.a. to 2028 0% from 2028 to 2030
Peak Downs Mine	Metallurgical coal in Bowen Basin, part of 50:50 joint venture with Mitsubishi Alliance (called BMA).	224,354	1% p.a. to 2028 0% from 2028 to 2030
Saraji Mine	Metallurgical coal in Bowen Basin, part of 50:50 joint venture with Mitsubishi Alliance (called BMA).	177,941	1% p.a. to 2028 0% from 2028 to 2030
Total		**3,787,943**	

Source: Platypus, Clean Energy Regulator

We have made a number of assumptions in allocating emissions and revenue growth to each asset. We assume that BHP will take 50% of the carbon emissions impact for the BHP Mitsubishi Alliance (BMA) coal assets, and 85% of the impact for the BHP and Mitsui and ITOCHU iron ore joint ventures.

Using Platypus production growth estimates, for a 4.9% decline in CO_2-e emissions, BHP will have to improve the carbon efficiency (defined here as revenue per 1 tonne of carbon) of their SGM assets by 6.3% p.a. If production growth is faster than estimated, carbon efficiency will have to be improved beyond this. BHP acknowledges this is hard to achieve, and predict that they will need to purchase ACCUs to compensate for hard to abate emissions.

We have assumed that the reported covered emissions as reported to the CER is the baseline. This is a restrictive assumption, and generally baselines are higher than reported emissions. Multi-year monitoring periods also have the effect of reducing compliance costs for particular years.

Exhibit 21: Estimated maximum BHP ACCU cost under the SGM..

	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Consumer Price Index (CPI)	5%	4%	3%	2%	2%	2%	2%
Legislated max ACCU price (indexed at CPI + 2%)	$75.0	$80.3	$85.1	$89.3	$92.9	$96.6	$100.5
Emissions not abated (t CO_2-e)	253,096	492,964	725,480	951,101	1,170,260	1,383,373	1,529,904
Total ACCU cost (AU$m)	$18.98	$253.17	$248.58	$240.86	$230.13	$218.75	$212.78

Source: *Platypus, Clean Energy Regulator.*

Presently, there is no minimum abatement requirement under the SGM, although facilities that use ACCUs to account for more than 30% of the SGM emission reduction requirements are required to submit an explanation to the Clean Energy Regulator.

Exhibit 21 estimates the maximum annual SGM compliance costs for BHP, accounting for production growth. In 2023, BHP made ~AU$19.2bn in NPAT, so the direct maximum cost of SGM compliance is negligible. Reducing production will be more expensive than purchasing ACCUs. We expect there will be enough ACCU supply, given that ~14-16m were created each year from 2020 to 2022. If demand increases, we also expect a supply response from ACCU generators. Note that regardless of supply, the ACCU price is capped through legislation.

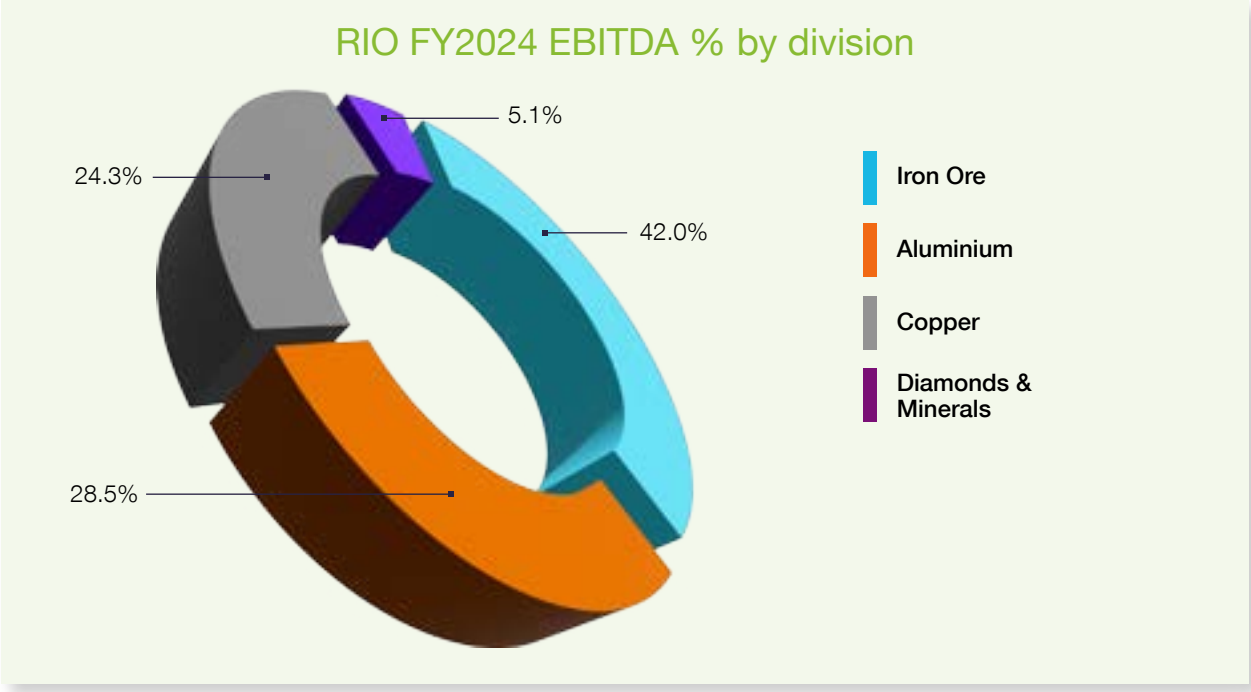
While the direct impact of the SGM legislation is small, we note that BHP has a target to reduce Scope 1 and Scope 2 emissions by at least 30% from FY2020 levels by FY2030. In conversations with the company, they have already achieved this, and are now focused on ensuring emissions from any production growth are net zero.

Rio Tinto

Rio Tinto (RIO) has exposure to iron ore, copper, and aluminium production through its refiners and smelters.[10] Other divisions include mineral sands, borates, and diamonds.

Commodity price assumptions underpinning the Platypus model are as follows: iron ore US$90/t, copper US$4/lb, and aluminium US$1.1/lb.

Exhibit 22: Estimated EBITDA by division for RIO for FY2024



Source: Platypus, Visible Alpha

Exhibit 23 details RIOs reported covered emissions under the SGM. We have assumed that these emissions are equal to the baseline from which compliance will be measured. Baselines are set each year based on a facility's production multiplied by an emissions-intensity benchmark value, so these will vary depending on both industry averages and facility specific ratios.

In terms of the Safeguard Mechanism, RIO has 11 facilities that have reported covered emissions of ~7.46 Mt of CO_2-e to RIO.

Using Platypus production growth estimates, for a 4.9% decline in CO_2-e emissions, RIO will have to improve the carbon efficiency (defined here as revenue per 1 tonne of carbon) of their SGM assets by 6.1% p.a., slightly less than that of BHP. However, given the exposure to higher emitting assets, RIO has a larger ACCU requirement than BHP.

[10] These are energy intensive operations. For example, the Tomago Aluminium Smelter uses ~12% of NSWs electricity (Scope 2 emissions, which are not under the Safeguard Mechanism).

Exhibit 23: Estimated maximum RIO ACCU cost under the SGM.

	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Consumer Price Index (CPI)	5%	4%	3%	2%	2%	2%	2%
Legislated max ACCU price (indexed at CPI + 2%)	$75.0	$80.3	$85.1	$89.3	$92.9	$96.6	$100.5
Emissions not abated (t CO_2-e)	448,379	879,876	1,295,382	1,695,746	2,081,777	2,454,243	2,792,236
Total ACCU cost (AU$m)	$33.63	$70.61	$110.19	$151.46	$193.38	$237.10	$280.54

Source: *Platypus, Clean Energy Regulator.*

Exhibit 24: Emissions per asset for RIOs assets under the Safeguard Mechanism. Emissions data current at March 2023, downloaded in December 2023.

Facility under the SGM	Description	RIO ownership (%)	RIO exposure to reported covered emissions under SGM (t CO_2-e)	Production growth assumptions to 2030
Mesa A Mine	Also called Warramboo mine, iron ore JV located in the Pilbara.	53%	46,642	2% p.a. to 2028 0% from 2028 to 2030
Queensland Alumina Limited (QAL) Refinery	Operating for 55 years, located in Gladstone.	80%	2,503,858	1% p.a. to 2030
Rio Tinto Yarwun	Alumina refinery located 10km from Gladstone, began operations in 2004.	100%	2,128,344	1% p.a. to 2030
Tomago Aluminium Smelter	Consumes 12% of electricity in NSW (Scope 2 emissions), began operations in 1983.	51.55%	596,265	1% p.a. to 2030
Boyne Smelters Limited	Began operations in 1982, located in Boyne. Adjacent to QAL.	59.4%	532,114	1% p.a. to 2030
Pilbara Rail Operations	1700km rail network	100%	650,881	2% p.a. to 2028 0% from 2028 to 2030
Bell Bay Smelter	Located in Tasmania, began operating in 1955	100%	357,496	1% p.a. to 2030
West Angelas Mine	Iron ore, located 600km from Mesa A Mine	53%	140,610	2% p.a. to 2028 0% from 2028 to 2030
Rio Tinto Weipa	Bauxite mine, processing, wharf, ports, power stations, rail network, and ferry terminals	100%	259,515	1% p.a. to 2030
Rio Tinto Marine - Qld	Own 17 ships, charter 230 ships, making 2,700 voyages p.a.	100%	122,674	2% p.a. to 2028 0% from 2028 to 2030
Gove Operations	Bauxite mine, closure expected by 2030	100%	118,473	0% to 2030
Total			**7,456,871**	

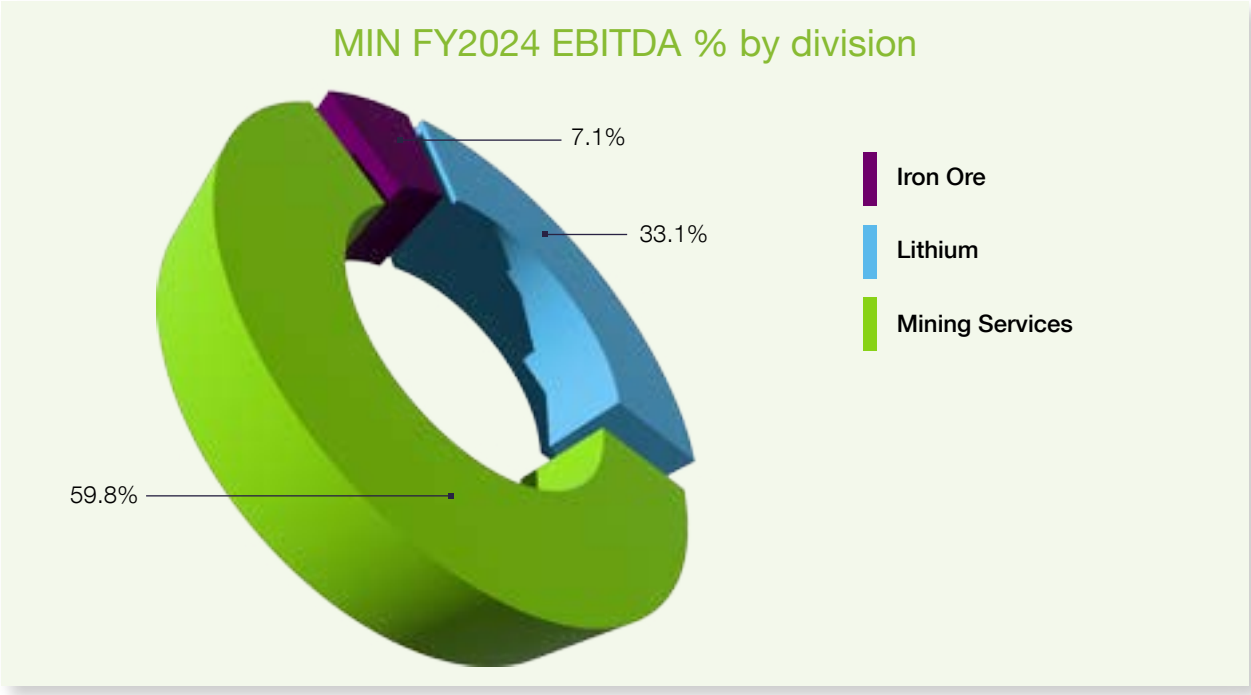
Source: *Platypus, Clean Energy Regulator.*

In 2023, RIO made ~AU$12.8bn in NPAT, so similar to BHP, the direct maximum cost of SGM compliance is negligible. Similar to BHP, RIO has a target to reduce Scope 1 and Scope 2 emissions by at least 50% from FY2018 levels by FY2030.

Mineral Resources

Mineral Resources Limited (MIN) is a diversified resources company, with operations in lithium, iron ore, energy, and mining services. MIN is founder led, first established in 1992 as a mining services business, primarily focused on crushing and pipeline installation and manufacture. Since listing in 2006, the company has moved upstream into asset ownership in lithium, iron ore and gas.

Exhibit 25: Estimated EBITDA by division for MIN for FY2024



Source: Platypus, Visible Alpha

Within the Safeguard Mechanism, MIN has 1 facility, called Koolyanobbing Iron Ore Operations, that have reported covered emissions of 0.13 Mt of CO_2-e.

Exhibit 26: Maximum MIN ACCU cost under the SGM.

	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Consumer Price Index (CPI)	5%	4%	3%	2%	2%	2%	2%
Legislated max ACCU price (indexed at CPI + 2%)	$75.0	$80.3	$85.1	$89.3	$92.9	$96.6	$100.5
Emissions not abated (t CO_2-e)	9,087	17,910	26,486	34,831	42,960	50,888	55,661
Total ACCU cost (AU$m)	$0.68	$1.44	$2.25	$3.11	$3.99	$4.92	$5.59

Source: *Platypus, Clean Energy Regulator.*

In FY2023, MIN made ~$243m in NPAT, making SGM compliance affordable. While the ACCU cost to MIN is small at present, MIN is developing an iron ore project which is much larger than its present facilities. This may change the SGM liability over time, although in discussions with the company they see their SGM liability as immaterial.

Final comments

Decarbonisation will continue to be a long term mega-trend, driven by regulatory requirements and societal and investor pressure. In Australia, listed companies are going beyond legal compliance, and implementing decarbonisation pathways that will position their companies to take advantage of capital flows and customer demand.

For our portfolio companies with facilities with exposure to the SGM, they can afford compliance through ACCUs. While the preferred course of action is abatement first, offset second, using this data, the risk to earnings through to 2030 is small. A key point here, however, is that it is important that the integrity of the ACCU market is maintained, and that any explanation for ACCU use above 30% of emissions is accepted by the CER.

We will continue to monitor SGM requirements for our portfolio companies as the regulatory environment continues to evolve.

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