Altered Carbon

Quantifying the cost of carbon credit offsets for ASX companies

Ben Atkinson | April 2022

"When he talked of prices worth paying, you could be sure of one thing. Someone else was paying."

– Richard K. Morgan, *Altered Carbon*

Overview

Historically, the true cost of carbon has not been captured in the prices of goods produced, but rather as an externality borne by society in the form of an emission-impacted environment. Today, companies face increasing pressure to bear such costs, in varied forms such as carbon taxes, carbon credits and the investment required to decarbonise operations.

While the primary focus for companies must be reducing emissions, there is also a role for carbon offsets. One reason is that absolute emission elimination is likely to be impossible for most or all businesses, so offsets are needed to achieve *net* zero. Another is that offsets can be used to lower or neutralise the company's carbon footprint on the way to net zero. This can be achieved via carbon credits, which may be used to offset a company's direct emissions.

In this note, we seek to answer the following: which companies are the most financially exposed to the cost of carbon, and which can economically reach net zero?

The Cost of Carbon

Carbon credit systems have been more widely adopted than simple carbon taxes, as the former creates a two-sided incentive system, rather than a one-sided punitive tax. There are two primary forms of carbon market systems in use around the world:

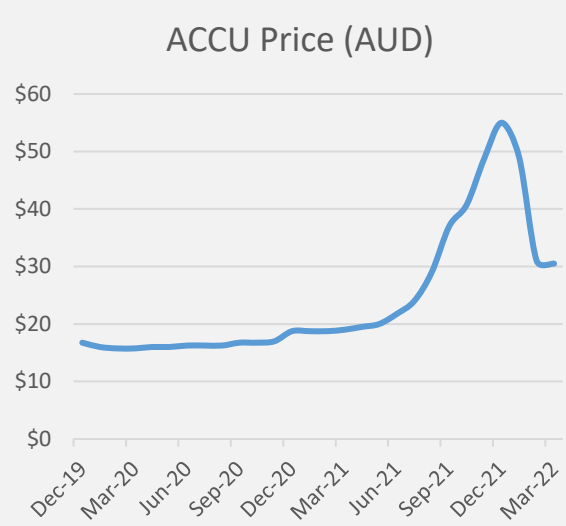
- ***Voluntary Carbon Credits***: Carbon-reducing activities (such as forestry management) create credits, which may be purchased by companies to offset their own emissions. The Australian ACCU market operates on this basis.
- ***Cap and Trade System***: Governments impose industry-based company caps on emissions, which get stricter over time. Companies that reduce emissions below the cap run-rate can sell their excess allowance, while companies that produce emissions in excess of the cap must purchase allowances. This system simultaneously aligns environmental and economic incentives.

Australian Carbon Credit Units

The Australian Carbon Credit Unit (ACCU) market operates as a voluntary system, with the Clean Energy Regulator supporting the creation of units and the operation of the ACCU market. ACCUs are created through several eligible emissions reductions activities, which can either be sold to the government through the Emissions Reduction Fund (ERF), or in the secondary market to corporations and other buyers.

As the ACCU market is still in an early stage of its evolution, with irregular participation on both sides of the supply & demand equilibrium, the ACCU price has been volatile in recent years. The price has ranged $15-$55 per ACCU (where 1 ACCU = 1 tonne CO_2 equivalent), with the spot price currently at ~$30.

Figure 1: ACCU price (AUD)



Sources: Clean Energy Regulator, Renewable Energy Hub

The Clean Energy Regulator is currently developing an Australian Carbon Exchange, due for completion in 2023, to increase pricing transparency, lower transaction costs, and facilitate increased volumes of supply & demand.

Other Carbon Markets and Carbon Credit Pricing

Determining stable and transparent pricing of carbon credits is a challenge in many regions, with each market uniquely reflecting the speed of development, market age, corporate participation, and economic conditions. The following highlights select international markets & pricing:

- ***EU Emissions Trading System***: The EU ETS works as a cap-and-trade market, covering power stations and industrial plants in 31 countries. Pricing over the last year has ranged €32-97 per tonne (A$47-143), with the spot price now €78 (A$115).

- ***UK Emissions Trading System***: The UK ETS works as a cap-and-trade market, replacing the EU system following Brexit, and applies to energy intensive industries, the power generation sector, and aviation. Pricing over the last year has ranged £43-88 per tonne (A$75-154), with the spot price now £75 (A$131).

- ***NZ Emissions Trading Scheme***: The NZ ETS works as a cap-and-trade market, for all sectors of the NZ economy. Pricing over the last two years has ranged NZ$25-85 per tonne (A$23-79), with the spot price now NZ$75 (A$69).

- ***Gold Standard***: Established in 2003 by WWF and other NGOs, Gold Standard certifies projects for the creation of carbon credits. Their calculated carbon pricing based on fairtrade minimum project costs range €9-14 (A$13-21) per tonne, though they emphasise that the value creation and incentive margin will necessarily be higher, and therefore the market trading price is expected to be higher.

- ***UN Clean Development Mechanism***: A United Nations run carbon offset program, prices of the Certified Emission Reductions (CERs) units reached US$20/t (A$27) prior to the GFC, but ultimately the prices collapsed during the Euro debt crisis and have yet to recover.

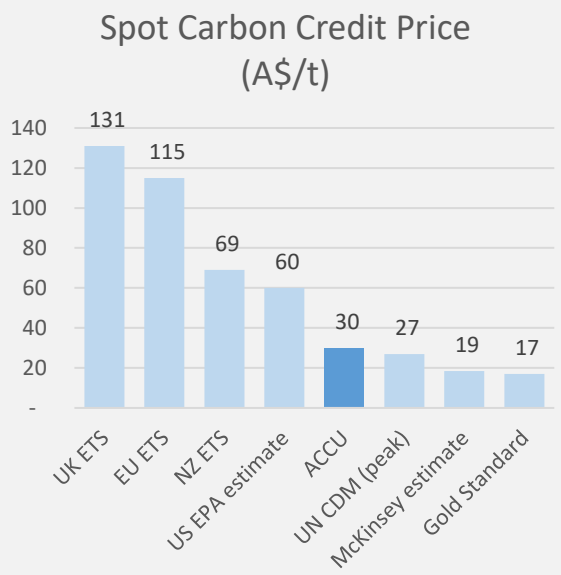
The prices in these markets are distorted by local conditions and market structures. Another perspective on the cost of carbon can be drawn from what it would take to incentivise a given transition pathway.

Depending on different scenarios, **McKinsey** estimates a voluntary carbon credit market size of $5-50b by 2030, with demand of 1.5-2.0Gt per year. This implies US$3-25/t (A$4-33).

The ***United States Environmental Protection Agency,*** in its *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis (2016)*, calculates the social cost per tonne of CO_2 at ~US$45 (A$60) in their central estimate for 2020-2025. In theory, the price of carbon should incorporate such costs of social and environmental externalities.

Notably, the USA does not yet have a national carbon credit market, despite being the second highest carbon emitting country. China, the highest emitting country, last year introduced a limited ETS system for the power generation sector.

Figure 2: Global carbon credit prices



Sources: Clean Energy Regulator, S&P, Gold Standard, US EPA, McKinsey, European Commission, UK Government, NZ Government, Ember, ING, Sandbag, OECD, Carbon News, Renewable Energy Hub

It is apparent from the above chart that the highest priced credits are those generated within cap-and-trade markets. This is owing to the limited supply of credits that may only be generated by companies in industries facing considerable emission reduction challenges, hence the premium on carbon allowance.

The ACCU is amongst the highest priced carbon credits in voluntary-style markets. In the view of the Australian Clean Energy Regulator, the Emissions Reduction Fund's best practice crediting framework entails a sound reputation for integrity and independence, reflected in the premium price paid for ACCUs relative to units from overseas offset schemes.

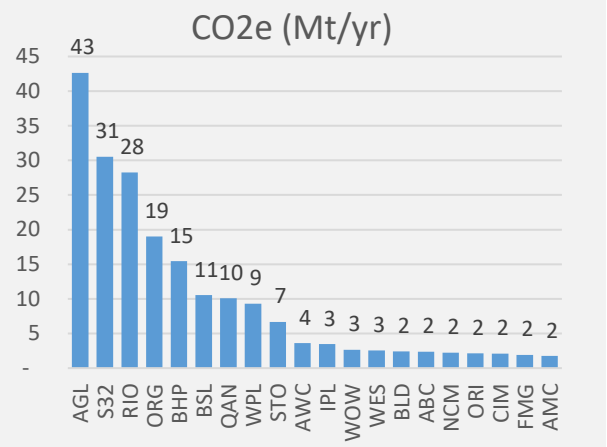
The spot ACCU price of $30 is the median carbon credit price of those observed above, the highest priced voluntary carbon credit, and it is approximately the average of the cost of carbon calculations by the US EPA and the Gold Standard fairtrade minimum cost. The current spot price is also roughly the mid-point of the last 3 years' high-low range.

For these reasons, we view the current ACCU spot price of $30 as a reasonable estimate of the cost to offset one tonne of CO_2 equivalent for Australian companies at present.

The Big Emitters

Among ASX200 companies, the largest Scope 1 & 2 carbon emitters are broadly those in the energy, resources and industrials sectors. Collectively, the top 20 emitters account for ~90% of total ASX200 emissions.

Figure 3: Top ASX200 emitters



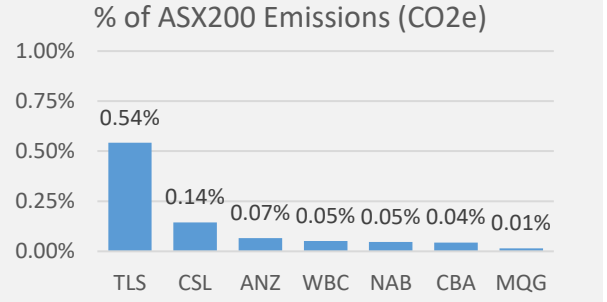
Source: Bloomberg | 5yr avg to account for COVID impacts

There is reasonable overlap of the top 20 emitters with the top 20 largest market capitalisations in the ASX200. 8 companies appear in both lists, accounting for ~45% of ASX200 emissions (BHP, WES, WOR, RIO, FMG, WPL, STO, S32). The next largest emitters account for another 35% of total ASX200 emissions, 3 of which are in the top 50 by market capitalisation (ORG, BSL, QAN in the ASX50 and AGL in the ASX100).

We note the 11 names above to highlight the concentration of ASX emissions in a small number of companies, providing a logical starting point to analyse the material risk and opportunities surrounding emissions exposure in an equities portfolio. Collectively, these companies produce ~80% of ASX200 carbon emissions.

Conversely, there is relatively limited carbon risk exposure in the remaining largest cap companies, namely the big financials (CBA, NAB, WBC, ANZ, MQG), CSL and TLS. Collectively, these companies produce <1% of ASX200 carbon emissions.

Figure 4: Top 10 market cap companies with low emissions



Source: Bloomberg | 5yr avg to account for COVID impacts

The Calculations

To estimate the cost of fully offsetting a company's carbon emissions, we multiply the company's annual emissions (t) by the ACCU price (A$30). We then express this cost as a % of the company's 5-year average EBIT, to gauge the materiality of potential carbon costs to financial earnings. We refer to this as the Carbon Risk %.

Figure 5: Carbon risk % formula

$$Carbon\ Risk\ \% = \frac{Emissions \times ACCU\ Price}{Normalised\ EBIT}$$

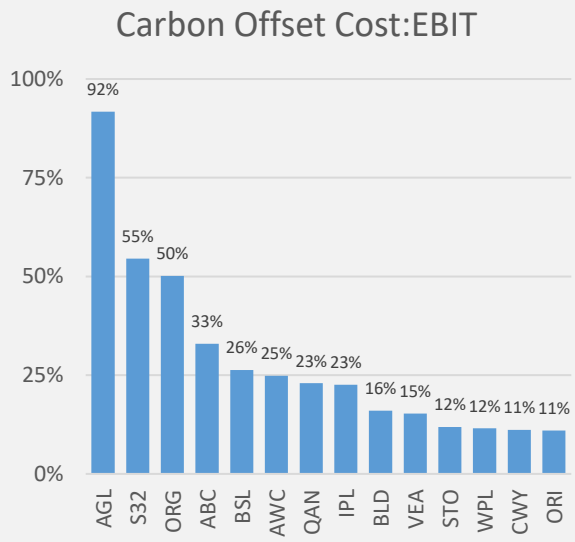
Normalised EBIT = 5yr avg positive EBIT to account for COVID

Though this calculation assumes voluntary payment to offset emissions, it might also serve an approximate proxy for quantifying the economic risk of a potential carbon tax.

High Carbon Risk %

Companies in this category have an estimated emissions offset cost of more than 10% of normalised EBIT. These companies face the greatest risk of potential carbon cost impositions, as the expense to offset emissions is highly material to earnings. In some cases, an involuntary obligation to pay for carbon costs would render the business uneconomic.

Figure 6: High carbon offset cost ratio



Source: Optar Capital calculations

Where are the big miners?

BHP, RIO and FMG are notably absent from the above list, which may come as a surprise given their large absolute level of emissions and the nature of the resources industry. While the process of steel making is highly carbon intensive, the mining of iron ore is a *relatively* less emitting part of the steel supply chain. These companies also produce an extraordinarily high dollar amount of earnings.

When most companies target "net-zero", they generally refer only to Scope 1 & 2 emissions. Running the calculations on BHP for example: BHP had Scope 1 & 2 emissions of 15Mt in FY21. At an ACCU price of $30, BHP could offset all its emissions for $450m, a mere 1% of the underlying EBIT of ~A$40b.

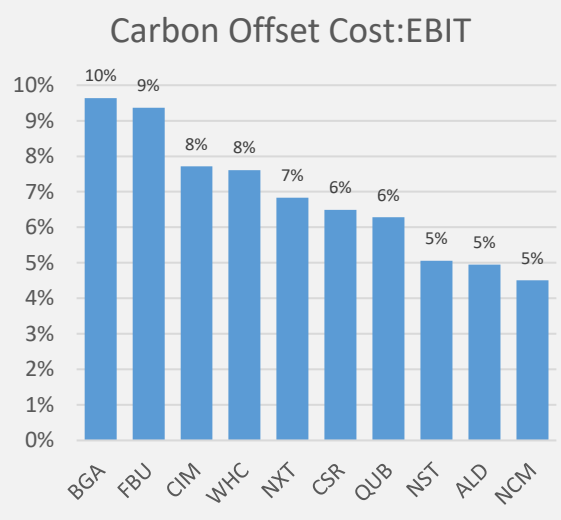
But focusing only on Scope 1 & 2 emissions understates the earnings risk to miners from carbon costs. The extracted iron ore, coal, copper and petroleum goes on to be processed externally in their respective supply chains, producing many times more emissions than the extraction stage. The imposition of carbon costs on industry processors would have material flow-on effects to the miners.

It is for this reason that mining company stakeholders give considerably more attention to Scope 3 emissions than other industries, with longer term emissions reduction goals requiring multi-company and multi-country collaboration. Such nuances are beyond the scope of this note but demonstrates the complexity of emissions risk analysis in a market of globally integrated supply chains.

Moderate Carbon Risk %

Companies in this category have an estimated emissions offset cost between 5% and 10% of normalised EBIT. These companies face moderate risk of potential carbon cost impositions, as the expense to offset emissions is material to earnings, but not to the extent of threatening uneconomic business conditions. Further, this assumes the entire cost is borne by the company, though in reality it depends on competitive dynamics and consumer impacts.

Figure 7: Moderate carbon offset cost ratio



Source: Optar Capital calculations

The ASX suggests a materiality threshold of 5% for determining whether actual earnings differ from guidance for continuous disclosure purposes. Using this basis, these companies are potentially exposed to a "material" earnings impact should a cost of carbon be imposed.

However, with varied emissions reductions initiatives being pursued, such as investment in efficiency, renewable energy or plant upgrades, many of these companies can likely reduce gross and net emissions to below the materiality threshold in the coming years.

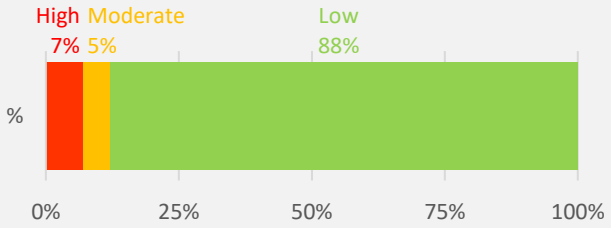
Low Carbon Risk %

All remaining ASX200 companies for which we could reliably collect data had a calculated cost of carbon offset ratio less than 5% of normalised EBIT. These companies can achieve net zero today by purchasing carbon credits where actual emissions cannot be reduced, without a material financial impact. Accordingly, the carbon risk for these companies is negligible, at least from the threat of any potential carbon tax or regulatory imposition perspective.

How Exposed are ASX Investors?

An encouraging point for investors in ASX listed companies is that the exposure to carbon risk is limited to a relatively small number of names. On our Carbon Risk % measure, 7% of ASX200 companies by count are high risk, with another 5% being moderate risk. This suggests 88% of companies have negligible carbon risk, providing a large investible universe even if emission-exposed names are excluded.

Figure 8: Carbon Risk % - ASX200 mix by name count



Source: Optar Capital calculations

We would however reiterate that there are nuances in analysing carbon risks within certain industries, as illustrated above with the mining sector.

With many listed companies facing a relatively low cost to achieve net zero today, it is apparent that efforts to pursue emissions reductions programs have ramped up meaningfully in recent years. Optar Capital recently had the opportunity to discuss such initiatives with Telstra (TLS), who have already achieved net zero emissions as the first step on their carbon reduction journey.

Case Study: Telstra

Telstra is Australia's largest telecommunications business, with a market capitalisation in the top 20 and a carbon emissions profile in the top 30 of ASX-listed companies. Despite its size, Telstra has achieved carbon neutrality, with the company's climate change efforts an instructive case study in substantially reducing carbon risk exposure.

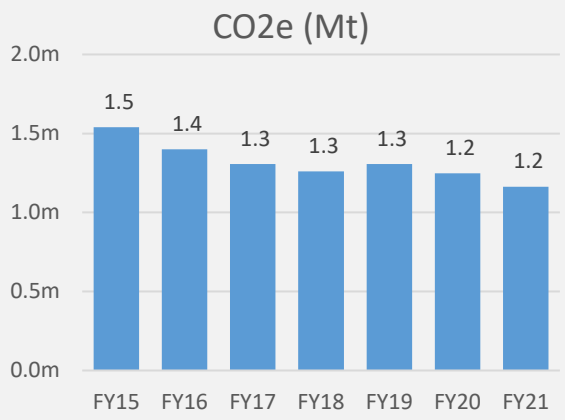
In 2020, Telstra announced 3 climate change ambitions:

1. Bring operations to net zero emissions (carbon neutral).
2. Reduce absolute carbon emissions by at least 50% by 2030.
3. Enable renewable energy generation equivalent to 100% of consumption by 2025.

The first ambition, achieving carbon neutrality, was achieved in large part due to the purchasing of carbon offset credits, with additional reductions achieved via energy efficiency initiatives and equipment decommissioning.

Telstra received carbon neutral certification from Climate Active, a partnership between the Australian Government and Australian businesses to drive voluntary climate action. In the 2020 and 2021 certifications, emission offsets total ~2Mt CO_2 equivalent per year. This covers Scope 1 & 2 emissions of ~1.2Mt, with the remaining offsets relating to certain categories of Scope 3 emissions. Company emissions have been steadily declining.

Figure 9: Telstra Scope 1 & 2 emissions



Source: Telstra Sustainability reports 2019-2021

If Telstra's offsets were entirely purchased at the spot ACCU price, the cost to offset its 2Mt of emissions would total ~$60m, or 1-2% of normalised EBIT. With ACCUs being tied to specific projects, Telstra noted they give extensive consideration to the nature of which projects and partners they engage with. Because of this, direct project involvement can result in effective pricing that may deviate from the spot price.

Though specific project costs are not disclosed, Telstra were able to initially achieve carbon neutrality in FY20, by engaging directly in projects that avoid, reduce or remove greenhouse gas emissions:

- *Southern Aurukun Savanna Burning Project, QLD*: Combined traditional knowledge with technology to reduce the GHG emissions from high intensity, unmanaged fires in the dry season.
- *Yarra Yarra Biodiversity project, WA*: Native reforestation project on degraded, semi-arid agricultural land, providing essential habitat for local wildlife.
- *Solar and Wind power projects, India:* Telstra has significant operations in India, where it has purchased offsets from two solar power projects and three wind farms.

Though offsets via carbon credits are a good start, Carbon Active accreditation requires that companies also have in place plans to achieve absolute emissions reduction. This is reflected in Telstra's further ambitions targeting a reduction in absolute emissions by 50% and to enable 100% renewable energy generation. Further, in 2021 Telstra announced a broadening of their greenhouse gas emission reduction targets to include a 50% reduction of Scope 3 emissions by 2030.

In our discussions with the company, Telstra viewed efforts to decarbonise as an important part of their social licence. While the costs to reduce and offset emissions are borne by the company, we view the pursuit of such ambitions as having meaningful benefits for shareholders. In addition to potentially higher retention of increasingly environmentally conscious customers, the proactive, voluntary actions to achieve carbon neutrality meaningfully reduces the threat of adverse regulatory actions or carbon taxes.

In essence, the simultaneous reduction of emissions and reduction of risks, without material earnings impact, is a welcome outcome for shareholders.

We conclude our analysis of the Australian carbon credit market encouraged by the opportunity for many ASX-listed companies to achieve net zero with limited financial burden. Though the infancy of the ACCU market presents a near-term challenge of sourcing high quality offset projects, the growing supply of and demand for carbon credits, and the alternative reduction initiatives available, offer the prospect of an economic pathway to carbon neutrality for most listed companies.