Do Carbon Credit Prices Truly Reflect Carbon Abatement in Australia?

Carbon pricing is a policy instrument that places external costs for major carbon emitters to limit their greenhouse emissions(GHG). Carbon credit markets are designed to achieve financial incentives with carbon emissions reduction. In theory, their prices should reflect the real cost of reducing carbon and the amount of carbon abatement, assuming they are positively correlated. However, there is a rising concern that the Australia Carbon Credit Scheme (ACCUs), a tradable carbon credit that can be used to abate emissions, may not fully represent the wanted environmental outcomes. This article discusses the price mechanism of ACCU, theoretical expectations, and potential flaws in achieving accurate prices.

I. How Carbon Credit Prices are determined in Australia

In Australia, a similar program operates through Australian Carbon Credit Scheme (ACCU), administered by the Clean Energy Regulator(CER). To avoid confusion, there are two types of financial credits: Australian Carbon Credit Scheme(ACCU) and Safe Guard Mechanism Credit(SMC). In principle, 1 ACCU = 1 SMC = 1 tonne of carbon dioxide(tCO_2-e) abated. However, SMCs are only applied to facilities covered under the Safeguard Mechanism, while ACCUs open for broader markets, including voluntary markets where non-government entities seek to offset emissions beyond regulatory requirements. (Clean Energy Regulator, 2025a)

The Safeguard Mechanism is a baseline-and-credit-scheme that requires large emitters to keep their net emission at or below a baseline of 100,000 tones of carbon dioxide equivalent emission(tCO_2-e) per year, unless alternative baseline applies(Clean Energy Regulator, 2025b). When emissions exceed the baseline, facilities can either buy ACCUs or SMCs to offset the excess. Conversely, facilities or projects that achieve carbon abatement

below the baseline, can also sell the ACCU credit back to the government through carbon abatement contracts or to other emitters on the secondary market.

Australia does not impose a fixed quota on ACCU issuance. Instead, it depends on the number and type of eligible projects. As a result, the value of ACCUs is influenced by project-specific factors such as estimated abatement cost, methodology, implementation and maintenance costs. Drivers of supplies and demand also influence the current ACCU price. For the demand, buyers include safeguard facilities, voluntary corporations, government entities, and investors trading ACCU as commodities. A higher demand for ACCU issuance and offsetting causes higher prices. For supply, the number of eligible projects directly increases issuance but it has regulatory constraints such as restrictive monitoring and audit (Clean Energy Regulator, 2025d). Moreover, some projects have long development timelines, and a portion of ACCUs are locked into government contracts under the Emissions Reduction Fund (ERF), reducing liquidity in the secondary market (Clean Energy Regulator, 2024)

II. Theories and market inefficiencies

In theory, the Efficient Market Hypothesis (EMH) suggests that prices in an efficient market reflect all available information, implying that current prices are independent of past movements. In this context, carbon credit prices should fully incorporate all relevant information, including the level and quality of carbon abatement, and therefore act as an accurate signal of abatement outcomes. However, EMH has been criticised for its strong assumptions, particularly the notion of fully rational investors and the absence of mispricing or market anomalies (Downey, 2024). Similarly, the Marginal Abatement Cost Curve (MACC) framework assumes that carbon prices reflect the cost of emissions reduction, as firms allocate resources efficiently to minimise abatement costs. McKinsey proposed their first MACC, assigning cost of abatement (pound per tone of CO2 equivalent) versus the

abatement volume (gigatons of CO2 per year) (Helmcke & Nauclér, 2025). In reality, this model doesn't fully account for technology development, geographical constraints, commodity prices, and so on. Electric vehicles were innovated faster than expected, causing a stronger reduction in carbon abatement, whilst other technologies such as nuclear power are not entirely easily replaced.

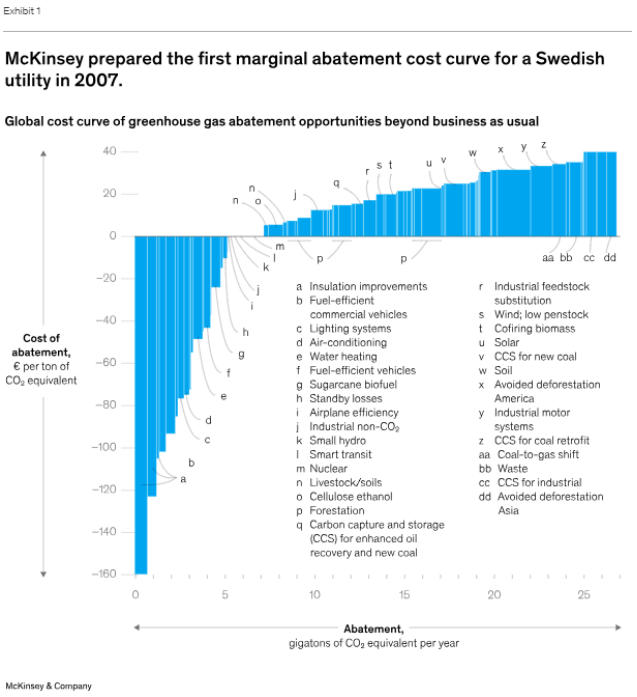

Figure 1: *Marginal Abatement Cost Curve*

In this context, market inefficiencies may arise due to information asymmetry, where publicly available information is incorporated into prices immediately. For instance, the EU carbon permit price stood at EUR 71.960 on April 2, declining gradually from its peak of EUR 92.425 on January 15, 2026, as a post-adjustment effect following the launch of the Carbon Border Adjustment Mechanism (Trading Economics, n.d). This decline reflects changes in market expectations, as importers adjusted to new compliance requirements, suggesting that carbon prices are also responsive to policy-related shocks besides carbon emission measures.(European Environment Agency, 2025). A similar pattern is observable in the ACCU market. Although spot prices stabilised after Q2 2023 due to stricter governance

and efforts to maintain price consistency, prices in the early stages exhibited clearer signs of market inefficiency. Between January 1 and April 1, 2022, ACCU spot prices peaked at around AUD 55, as shown in figure 2, before dropping sharply ahead of the transitional exit announcement. Notably, prices began to decline prior to the official announcement, suggesting that some market participants may have anticipated the policy change and adjusted their positions accordingly by selling ACCU in advance. The transitional exit allowed holders of fixed delivery obligations to pay an exit fee to be released from those obligations, which led to an overflow of ACCU supply into the secondary market (Clean Energy Regulator, 2024). This surge was contrasting with the earlier period when prices were elevated due to limited issuance and strong demand for carbon credits.

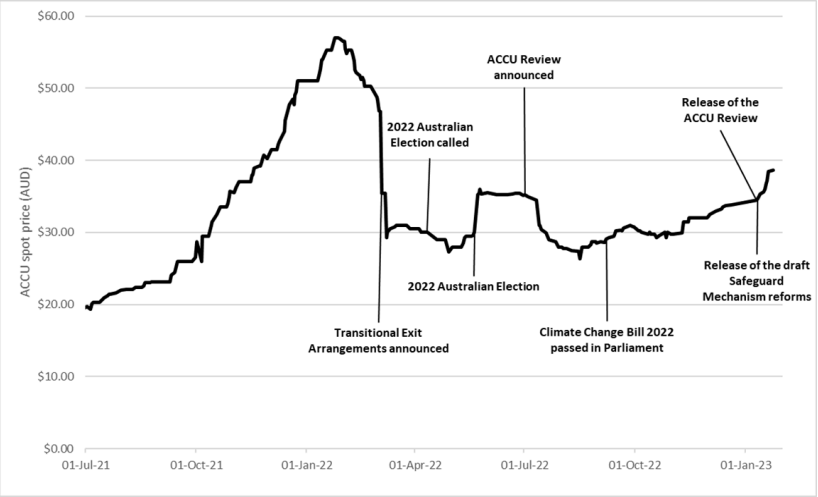

Figure 2: G*eneric ACCU spot price, July 2021 to January 2023* (Clean Energy Regulator, 2024)

II. <u>Voluntary versus compliance market/ Policy-driven pricing/ Safeguard loophole</u>

According to Quarterly Carbon Market Report, in Q4 2025, approximately 6.7million ACCUs issued (+8%), 0.4 million non-safeguard cancellations(+0.22%), 1.9mil compliance

surrenders and 60.7 million Australian National Registry of Emissions Units(ANREU) holdings (figure 3). In particular, a key driver for exceptionally high holdings is safeguard and safeguard-related accounts taking two-third of total proportion with annual increase of $10.8 million, indicating a huge proportion of unused ACCUs in the inventory. These trends provide insight into the underlying demand dynamics of the ACCU market. Despite ongoing demand for safeguard compliance, non-safeguard cancellations, representing voluntary offset activity, have been declining since 2023, with total cancellations falling to 1.2 million ACCUs in 2025 from 1.3 million in the previous year (figure 4). As voluntary demand typically reflects genuine willingness from private and non-government entities to offset emissions, this decline suggests weakening underlying demand beyond compliance requirements. An inventory accumulation may also suggest emerging oversupply conditions where market participants may be adopting a “wait-and-see” approach, holding ACCUs until future policy changes.

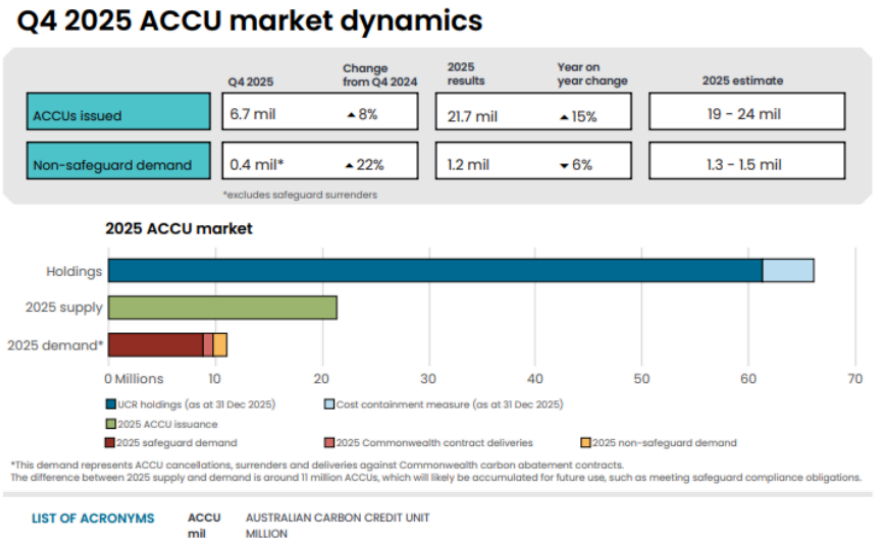

Figure 3: *2025 September quarter market outcomes and tracking against estimates* (Clean Energy Regulator, 2025f)

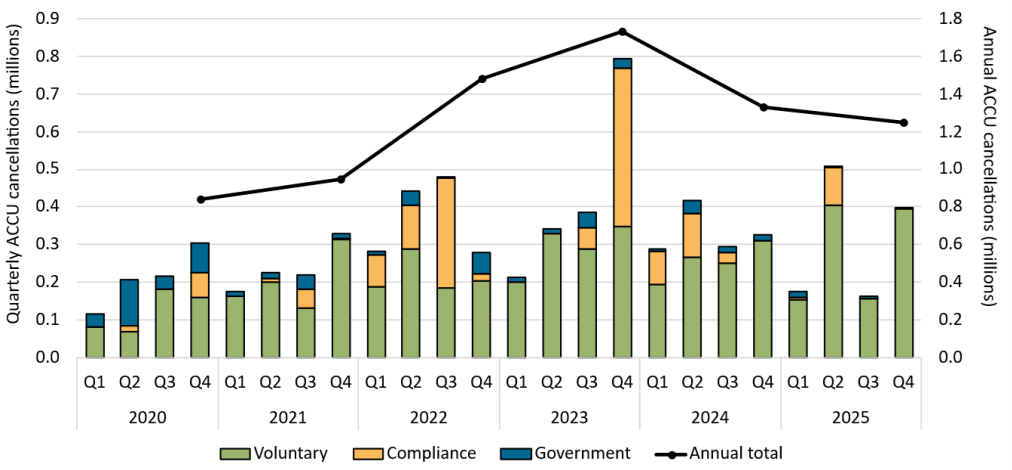

Figure 4: *Australian carbon credit unit (ACCU) non-safeguard cancellations* (Clean Energy Regulator, 2025f)

On the other hand, under the control of Safeguard Mechanism, facilities are required to keep their emissions below the base line or face a penalty of $275 per tonne of excess emissions per year, capped at 150,000 penalty units (Clean Energy Regulator, 2025b) However, since the baseline primarily targets scope 1 emissions (direct greenhouse gas from operation), it disproportionately applies to heavy-emitting facilities in the sector such as fossil fuel extraction and metal production (figure 5). These firms may be incentivized to rely on ACCUs, rather than undertake costly operation adjustments. In this context, purchasing offsets can be a more economically compliance strategy than limiting production or investing in emission-reducing technologies, given that mining industries contribute over 10% Australia GDP and oil & gas extraction around 3.7% (Woodside Energy, n.d; Mineral Councils of Australia, n.d). Moreover, the scheme also does not impose a hard cap on the use of ACCUs for compliance, and only requires disclosure when reliance exceeds 30% of baseline (Department of Climate Change, 2024a). Although this design encourages flexibility, it also reflects a lack of binding quantitative limit on offset usage, which may weaken certainty of emissions reduction and inflict environmental integrity debates. In addition, the mandated average baseline decline rate of 4.9% per year places increasing

pressure on facilities to reduce emissions over time. In practice, tightening constraints is likely to improve demand for ACCUs, creating upward pressure on ACCU prices as firms seek cost-effective strategies, rather than genuine abatement efforts.

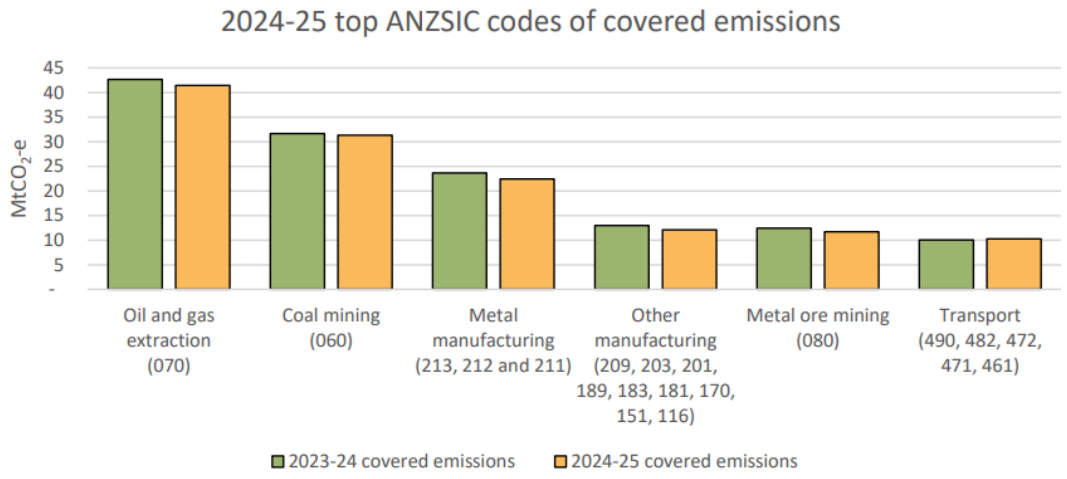

Figure 5: *Breakdown of covered emissions by sector* (Clean Energy Regulator, 2026)

IV. Over-crediting and Transparency Issues in HIR projects

A trend in this increasing issuance is the popularity of vegetation projects development, particularly human-induced regeneration projects, with a total of 7.67 million HIR ACCUs issued in 2024-2025 (Quantum Commodity Intelligence, 2026). In 2024, on average, HIR receives a premium of $3-4/ tone compared to generic ACCUs with peaks of between $6-8/t, indicating selective buyer preferences for more credible projects, thus illustrating a higher volume of ACCUs being traded on spot and derivative markets, referring to figure 6.

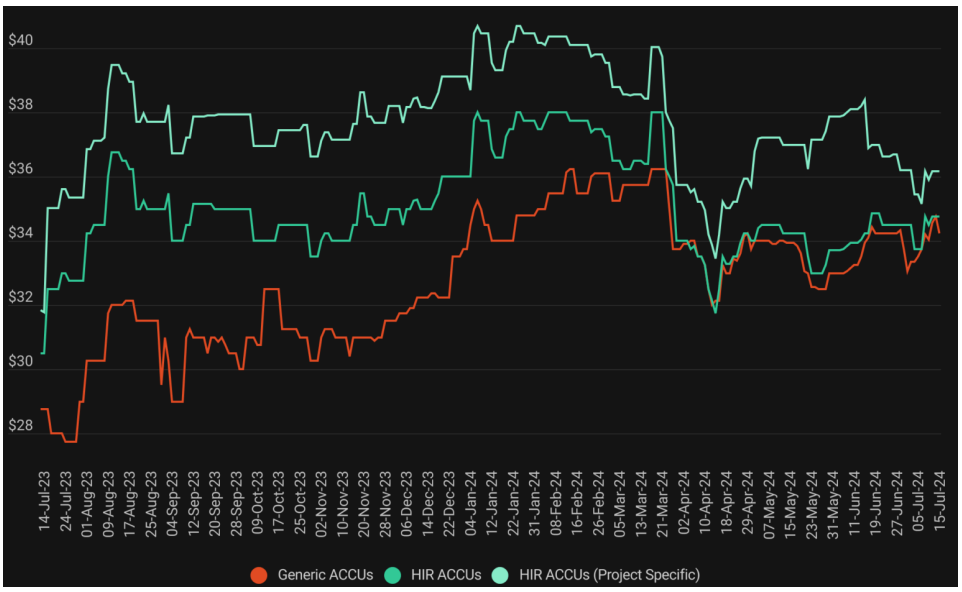

Figure 6: [*Spot price comparison of HIR ACCU, Generic ACCUs, HIR ACCU(Project-specific)] (*Reputex, 20204*)*

However, concerns have been raised regarding the performance and integrity of multiple HIR vegetation projects, highlighting weaknesses in governance and administrative oversight. A study examining 415 HIR projects aimed at regenerating native forests found that the average actual recovery area (13.3%) was significantly lower than the expected benchmark of 30.4%. While canopy cover regeneration across projects was recorded at approximately 23.4%, these results suggest a tendency for project outcomes to overstate their environmental impact, potentially leading to overstated carbon abatement and inflated credit issuance. (Macintosh et al., 2024). A similar case is also observed for California's forest carbon offsets programs, where offset credits are also provided for forest projects with carbon stocks exceeding regional baselines. This creates an adverse location selection for forests with naturally higher carbon density such as wetlands, leading to an estimated over-crediting of 30 million tonnes CO_2 , valued at around $USD410 million market price. These findings align with concerns raised in independent reviews regarding carbon leakage risks and systematic over-crediting within a subset of projects across the scheme (Chubb, 2022). Collectively, they highlight challenges in maintaining market integrity, as even with stringent

auditing and monitoring frameworks, distinguishing between high- and low-quality projects remains difficult. This issue is further challenging for market participants and general investors to make accurate investment decisions without a direct control over project implementation. Consequently, it can cause negative public reaction, where ACCU prices fall as people don't want to hold onto unreliable projects, threatening governance reputation and defeating the original outcome of carbon offsets.

In response, the Australian government has implemented stricter regulatory controls, including the closure of new registrations for HIR native forest regeneration projects from September 2023 to narrow price differences between HIR and generic ACCU in the subsequent market periods (Clean Energy Regulator, 2023)

Conclusion

In conclusion, even though the ACCU scheme aims to price carbon efficiently and incentive emission reduction, its pricing does not always reflect true abatement outcomes. This is shown through evidence of price volatility due to policy shocks, integrity issues in over-crediting HIR projects, compliance-driven demand dominates ACCUs holdings, where project developers and facilities may act for their own interests before sustainability goals. From an investment perspective, carbon credits may offer future profitable opportunities as it is still well-regulated and steadily increasing, but they still face various risks including policy risks, project-specific uncertainties, and so on. As such, it might be more favorable for cautious, informed investors, compared to a stable, long-term asset.

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