April 2025
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Glencore's methane risks a concern for shareholders serious about reducing Scope 1 emissions

- *Methane emissions at open-cut coalmines in Australia may be significantly underreported, posing financial, regulatory and reputational risks for companies such as Glencore.*
- *IEEFA has not found any public statements from Glencore to suggest it has undertaken structural methane abatement action at its open-cut mines, despite other Australian coal producers beginning to trial available technologies.*
- *Rising reliance on carbon offsets could cost Glencore up to US$492 million annually by 2050 if additional emissions abatement action isn't implemented.*
- *Multiple studies indicate methane drainage at open-cut coalmines in Australia could present net economic benefits to coalmining companies, such as Glencore.*

Introduction

Like other large coal producers operating in Australia, Glencore faces significant risks stemming from methane emissions at its coalmine assets in Australia.

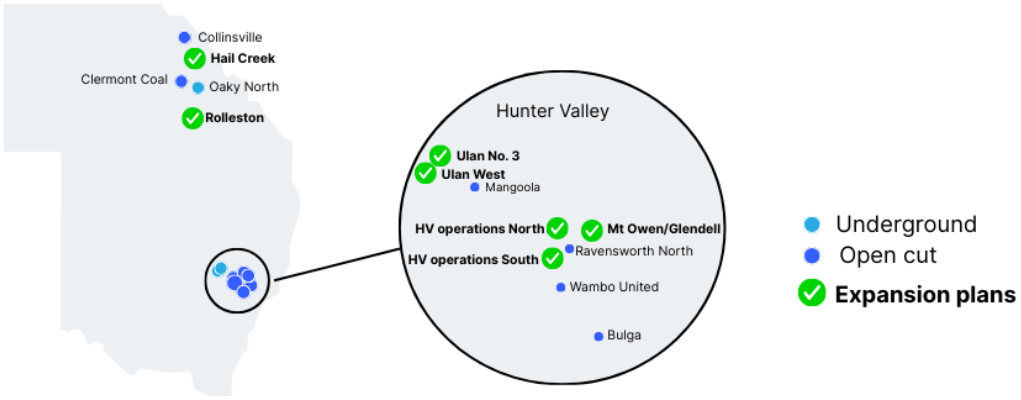
The risks concern the potential underreporting of Glencore's methane emissions, its proposed expansion plans, and the lack of structural abatement action at its open-cut coalmines, which account for the majority (86%-93%) of Glencore's Australian coal production. Methane poses risks to investors in oil & gas or coalmining because limitations with current reporting methods mean exposure to climate-related risks in those portfolios could be higher than currently anticipated. Most of Glencore's Australian coalmines are open-cut mines; previous IEEFA analysis has found open-cut mines may be emitting at least three times more methane than currently reported.

The company has stated that it believes the International Energy Agency's (IEA) Net Zero Emissions (NZE) scenario is "unrealistic", and that its targets do not align with this scenario.

Glencore asserts that achieving net zero in its operations by 2050 is an ambition rather than a target, as achieving this is beyond its control and subject to external factors. This contrasts with other coalminers in Australia, who are taking action on methane emissions by accessing available government funding to implement decarbonisation programs that target methane.

Coal accounted for around 50% of Glencore's industrial EBITDA in 2024, and Australian coal exports accounted for 55% of its total exports. Glencore's largest coalmine asset is the Hunter Valley Operations (HVO) project (under joint ownership between Yancoal (51%) and Glencore (49%)) in New South Wales. The HVO project recently received approval to continue mining to December 2026 but is still awaiting a decision regarding its longer-term expansion request to continue mining to 2045 and 2050 at its south and north mines respectively.

Figure 1 : Australian coalmines, operating and proposed expansions



Mine Name	Location	Mine type	Coal type	Glencore Ownership	Extension Proposed
HV Operations North	NSW, Hunter	Open-cut	Thermal | metallurgical	Glencore (49%)	Yes
HV Operations South	NSW, Hunter	Open-cut	Thermal | metallurgical	Glencore (49%)	Yes
Ravensworth North	NSW, Hunter	Open-cut	Metallurgical | Thermal	Glencore (100%)	
Rolleston	QLD, Bowen	Open-cut	Metallurgical | PCI	Glencore (100%)	Yes
Mt Owen/Glendell	NSW, Hunter	Open-cut	Metallurgical | Thermal	Glencore (100%)	Yes
Mangoola	NSW, Hunter	Open-cut	Thermal	Glencore (100%)	
Bulga	NSW, Hunter	Open-cut	Metallurgical | Thermal	Glencore (86%)	
Clermont Coal	QLD, Bowen	Open-cut	Thermal	Glencore (37%)	
Hail Creek	QLD, Bowen	Open-cut	PCI | Thermal	Glencore (85%)	Yes
Collinsville Opencut	QLD, Bowen	Open-cut	Metallurgical | Thermal	Glencore (100%)	
Oaky North	QLD, Bowen	Underground	Metallurgical	Glencore (55%)	
Ulan No.3	NSW, Western	Underground	Thermal	Glencore (100%)	Yes
Ulan West Expansion	NSW, Western	Underground	Thermal	Glencore (100%)	Yes
Wambo United	NSW, Hunter	Open-cut	Metallurgical | Thermal	Glencore (47.5%)	

Sources: Glencore; IEEFA. Note: PCI = pulverised coal injection coal.

Reporting risks

Australia is a signatory to the Global Methane Pledge, but according to multiple sources – the International Energy Agency (IEA), Climate TRACE, OpenMethane, Global Energy Monitor and Ember – methane emissions from Australia's fossil fuel sectors could be significantly underreported, particularly from open-cut coalmines. As most of Glencore's coal production is from open-cut coalmines in Australia, this means its methane emissions may be significantly underreported. The uncertainty surrounding fossil fuel methane emissions means regulators could apply greater attention and scrutiny in this space as state and federal governments strive to achieve their legislated greenhouse gas reduction targets.

A recent United Nations Environment Programme (UNEP) study highlights the potential methane underreporting risk at Hail Creek coalmine, 85% owned by Glencore, in the Bowen Basin. The study involved two planes taking aerial measurements over the Hail Creek mine. It found methane levels were likely somewhere between three and eight times above the annual emissions reported by the mine. This is the first study to successfully verify reported emissions from an open-cut coalmine in Australia using this method.

The UNEP study highlights that it is possible for scientific researchers or companies like Glencore to pay for plane flyovers to get better information about the scope of their methane emissions, particularly from open-cut coalmines. To date, IEEFA has found no public records of Glencore paying for these services to monitor or verify its self-estimated methane emissions.

While this is an emerging space, it is also rapidly evolving. An open-source database OpenMethane is continuously improving public access to satellite and remote sensing methane emission observations as they become available.

Glencore has switched from using Method 1 to Method 2 to estimate its methane emissions at Hail Creek. However, Method 2 is not the highest-order method currently available under the National Greenhouse and Energy Reporting (NGER) framework, and as IEEFA has recently discussed, problems persist with this method. Method 2 relies on calculating a production-based emissions factor to estimate methane emissions and does not constitute direct measurement of total methane emissions from a mine site.

Australia's Climate Change Authority (CCA) has noted that approaches based on emissions factors may be inherently less accurate than higher-order approaches centred on direct measurement of methane emissions. It also recommended developing guidelines for top-down measurements, such as satellite monitoring and remote sensing, to be used to verify production-based 'bottom-up' estimates. These recommendations reflect the significant risk of bottom-up methodologies (including Method 2 under the current NGER scheme) delivering inaccurate methane emissions estimates, and the critical importance of top-down verification such as satellite observations and aerial measurements.

Reporting of open-cut mine emissions is subject to high uncertainty and risk of material restatement. For example, in 2023-24, Hail Creek mine restated its methane emissions at 1,062,986 tonnes of carbon dioxide-equivalent (CO_2e) – an intensity rate of 0.111t CO_2e per run-of-mine (ROM) tonne, and more than 3.5 times the state-based default Method 1 estimation. However its Rolleston mine, also in the Bowen Basin, restated its methane emissions under Method 2 to just 242 tonnes CO_2e. On a baseline of 12.4 million ROM tonnes, the Rolleston reported intensity is effectively zero.

Emission target risks

Glencore's interim Scope 1, 2 and 3 greenhouse gas (GHG) emission reduction targets include:

- A 15% reduction by the end of 2026.
- A 25% reduction by the end of 2030.
- A 50% reduction by the end of 2035.

These reduction targets are all assessed against a restated 2019 baseline.

These targets could be more ambitious. The IEA, in its Net Zero Emissions scenario, finds that a 75% reduction in fossil fuel methane emissions by 2030 will be required to limit global warming to the Paris Agreement target of 1.5°C above pre-industrial levels; a 40% reduction by 2030 would be required under the 1.7°C scenario.

Glencore is the world's seventh highest emitting investor-owned company and is Australia's largest producer of thermal coal, yet it states on page 169 of its 2024 annual report that it has limited control over generating a policy environment that would support achieving net zero by 2050.

Contrary to Glencore's statement that most of these actions are not within its direct control, other coalminers in Australia are showing that action to abate methane emissions from their coalmines is possible. Coronado Resources has established a methane pre-drainage trial system at its Curragh open-cut mine, using captured methane to displace some diesel used in its truck fleet. Additionally, Stanmore Resources received government funding to capture methane for at least 15 years to power a new 20-megawatt gas-fired power station to be completed by 2027. The power station is expected to entirely offset Stanmore's South Walker Creek mine's electricity requirements. These examples suggest that methane abatement at open-cut coalmines is feasible, and under certain conditions can be financially viable.

Expansion plan risks

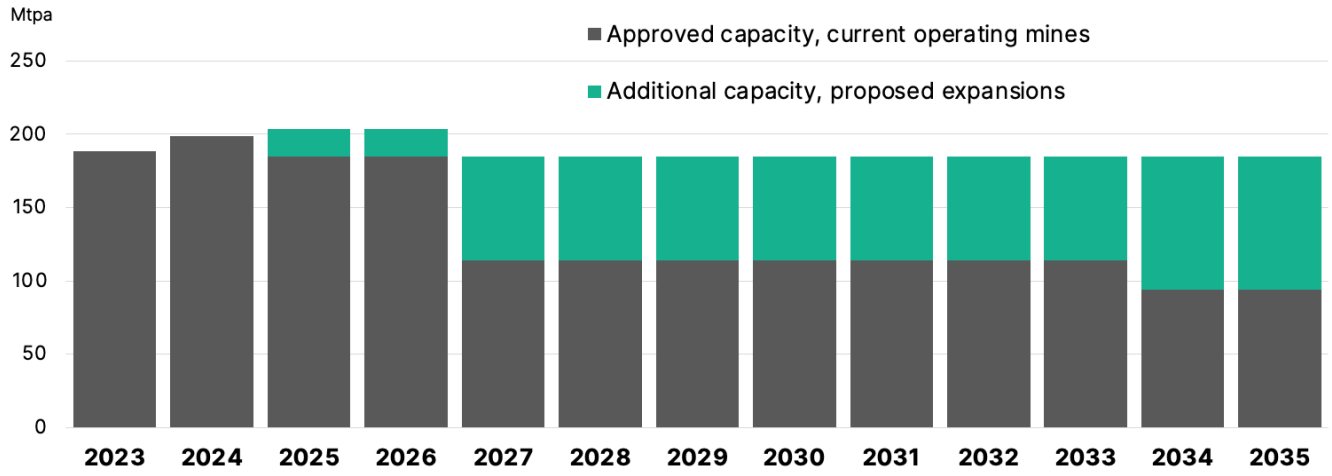
Whilst stating it has limited control in achieving its net zero ambitions, Glencore is seeking approval for seven expansion projects that would permit total coal production capacity to remain fairly stable through to 2050. Without decreasing production as a form of coalmine methane abatement, Glencore would likely be required to either invest in and implement structural methane abatement, or rely on purchasing carbon offsets via the Australian Carbon Credit Unit (ACCU) or Safeguard Mechanism credit schemes. Glencore could trial and implement structural methane abatement technologies such as methane pre-drainage at its open-cut mines or ventilation air methane (VAM) abatement at its underground mines.

> **Glencore is seeking approval for seven expansion projects that would permit total coal production capacity to remain fairly stable through to 2050**

Glencore's expansion plans include its largest coalmines, the jointly owned, predominantly thermal HVO South and North projects in New South Wales. The HVO Continuation Project seeks approval for up to 20 million tonnes per annum (Mtpa) of capacity at HVO South until 2045 and up to 22Mtpa at HVO North until 2052. The project is predicted to require US$2.75 billion of capital expenditure. Environmental groups have warned that in total, the HVO Continuation Project would enable a further extraction of 684 million tonnes (Mt) of coal, with an anticipated release of more than 1Mt of CO_2e in Scope 1 emissions per year for 25 years.

The other projects Glencore is seeking approval for include the Mt Owen/Glendell expansion (100% ownership), the Rolleston Spring Creek North Continuation Project (100% ownership), the Ulan West expansions Mod 8 and Mod 6 (both 100% ownership), and the Hail Creek mine (85% ownership).

Figure 2: Production capacity of approved and proposed coalmines where Glencore holds between 37% and 100% ultimate ownership, 2023-2035



Sources: IEEFA; Glencore; EPBC Act Public Portal (or EPBC documents).
Note: Production capacity includes production on a 100% basis for all mines where Glencore holds at least partial ownership.

Abatement action risks

Glencore has taken steps towards implementing structural methane abatement action at its underground mines, but IEEFA has found no evidence that the company has implemented structural methane abatement action at any of its open-cut coalmines, which account for 86%-93% of Glencore's coal production in Australia.

IEEFA's analysis has found that Glencore has implemented methane abatement at three of its underground mines, but not at its underground Ulan coal operations, where methane pre-drainage is not mandatory due to lower concentrations of methane. However, Glencore does have methane drainage and utilisation systems in place at its Oaky Creek, Integra and Bulga Underground mines, demonstrating how methane gas captured during pre- and post-drainage can be used for power generation and the creation of ACCUs. Even though mining has ceased at its underground Bulga mine, the gas infrastructure remains and extracted methane continues to power a 9-megawatt generator. Mining has now ceased at Integra, and to IEEFA's knowledge, there have been no public updates to indicate how long after mining the gas utilisation project will continue for at this site. As of 2024, Glencore stated that gas from five goaf gas drainage boreholes connected to the Glennies Creek Power Station was utilised to generate electricity for distribution in the NSW power grid

Glencore is participating in research trials with the University of Newcastle on VAM abatement, and is participating in VAM mitigation technology trials developed by the CSIRO for underground coalmine methane abatement. However, to date no VAM abatement has been implemented at any of its underground coalmines. While the methane gas utilisation projects conducted by Glencore are promising and highlight this use case for other coalminers, without implementing VAM abatement, the majority of underground coalmine methane emissions may remain unabated as VAM emissions account for approximately 70%-80% of underground coalmines' Scope 1 emissions.

Glencore previously stated that "pre-drainage is not currently economically viable for a multi-seam open-cut mining operation such as HVO", but last year it revised its position in response to submissions on the HVO Continuation Project environmental impact statement (EIS). Glencore has since committed to undertake a pre-drainage trial and to consider pre-drainage later in the mine's life.

Given that the combined HVO projects account for the largest share of Australian coal production from assets at least partially owned by Glencore, the commitment to potentially take action later in the mine's life seems weak, in comparison with other miners taking action and a number of studies supporting the use of gas pre-drainage as an available technology for open-cut mines.

As noted earlier, there are examples of other miners trialling methane-drainage at open-cut mines and multiple research studies have found that it can present a net economic benefit. Analysis by Rystad Energy showed a marginal net benefit of around AU$15/tonne CO_2e on average when drained methane is utilised or sold.

Additionally, an Australian Coal Association Research Program (ACARP) study found that the net present value was positive for open-cut pre-drainage when there was a CO_2 penalty on fugitive emissions of more than approximately $20/tonne CO_2e. The same ACARP study found that enhanced-pre drainage was more economic than normal drainage for open cut mines and concluded that "there is good evidence for technical and business case feasibility for enhanced drainage as a means of reducing the gas content in coal seams prior to mining".

If Glencore were to conduct pre-drainage at its open-cut coalmines, one option would be to target its highest methane-emitting mines first, which would include the Hail Creek mine, or to use existing infrastructure at its Bulga mine site to utilise methane drainage at its open-cut operation in addition to the underground mine.

However, even if more open-cut coalmines conduct pre-drainage, a range of studies show that only 50%-80% of methane can be captured and abated via this method under best-case scenarios. This means the remaining options for open-cut miners to achieve net zero CO_2e emissions by 2050 would be to purchase carbon credits or reduce coal production.

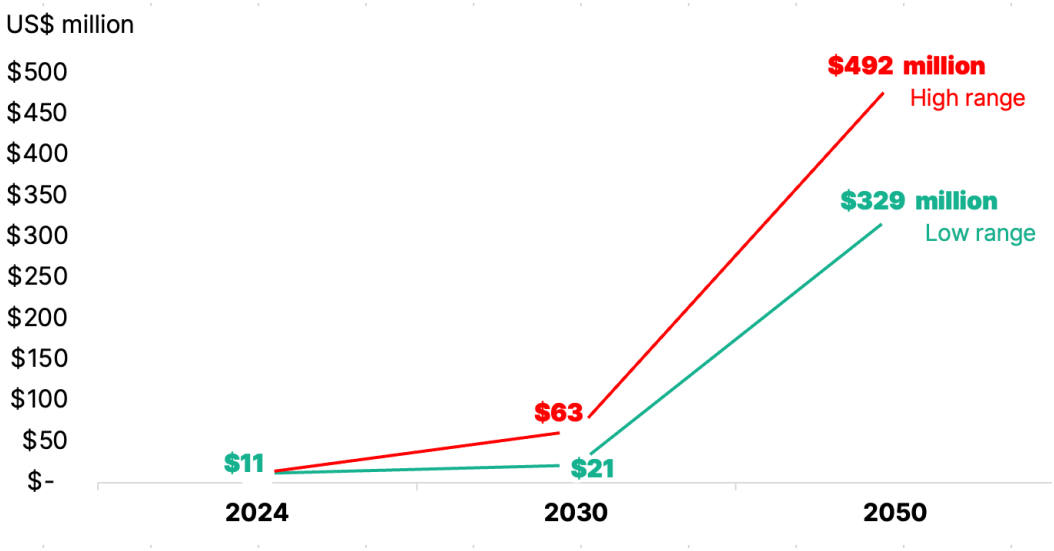
Methane cost risks

Companies not taking sufficient methane abatement action will be reliant on purchasing carbon offsets to meet their own company targets as well as to meet emissions baseline reduction requirements under the Safeguard Mechanism – the primary mechanism for Australia to achieve its legislated target of net zero by 2050 and its interim emission reduction target.

The absence of material methane abatement at Glencore's open-cut coalmines means the expected rising cost of carbon credits in Australia could increase its operating costs, subject to other variable factors.

BHP expects the average Australian carbon price to range between US$28-$83 in FY2030 and US$166-$248 in 2050, compared with an average of AU$30.25(~US$19.06) in 2023. Glencore reported surrendering 572,205 ACCUs in 2023-24, with the largest requirement of ACCUs being for its Hail Creek mine. Applying BHP's price projections, if emissions do not decline via structural abatement action or reduced production, this could equate to an annual carbon cost to Glencore of US$21-$63 million by 2030, and US$329-$492 million by 2050.

Figure 3: Projected annual carbon cost payable by Glencore 2030, 2050



Source: IEEFA; Clean Energy Regulator; BHP prices estimates
Notes. These projections are based on the number of Glencore's reported surrendered carbon credits via the ACCU scheme in 2023-24, with future projections assuming no additional structural methane abatement action or reduced production; they assume an annual increase of 4.9% as required under the Safeguard Mechanism and apply BHP's price estimates.

Glencore has recognised the risk of increased carbon pricing on page 148 of its 2024 annual report. However, it asserts that future increases in carbon costs will likely be passed on to the consumer.

This is a problematic assumption, because if other coalminers in Australia undertake greater methane abatement and do not rely as heavily on purchasing carbon offsets, than Glencore would face greater exposure to this increase in carbon offset costs. This could decrease Glencore's competitiveness against other Australian coal producers who have lower emissions and lower carbon credit requirements.

Conclusion

Glencore's approach to methane emissions in its Australian coal operations may present material and growing risks for investors, depending on other variables. The company's reliance on production-based estimation methods - and the lack of structural abatement at its predominantly open-cut coalmines – undermine confidence in its ability to manage climate-related transition risks effectively.

Despite being one of Australia's largest thermal coal producers and one of the world's highest-emitting companies, Glencore has yet to demonstrate a credible, transparent pathway to meaningfully reduce its methane emissions at its open-cut coalmines. While other Australian coal producers are trialling and implementing cost-effective methane reduction technologies, Glencore continues to pursue production expansion without corresponding abatement action. This increases its exposure to rising carbon offset costs under Australia's Safeguard Mechanism and threatens its long-term competitiveness in a decarbonising global market.

The company's reliance on less accurate emissions estimation methods, absence of direct measurement initiatives such as satellite or aerial verification, and insufficient engagement with emerging abatement practices could leave shareholders exposed to material financial, regulatory and reputational risks. Moreover, the company's projected dependence on carbon offsets to meet compliance obligations under the Safeguard Mechanism could lead to a significant rise in

annual operating costs.

If Glencore does not take stronger, more transparent action to curb its methane emissions, it risks falling behind competitors and undermining investor confidence in its ability to manage transition risks in a carbon-constrained economy.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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