

Pricing bonds on Australia's 2035 NDC commitments

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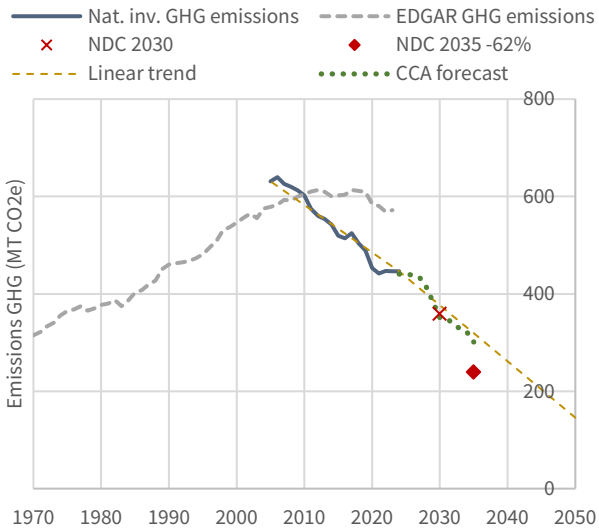
Recently, Australia's government announced commitments to 2035 GHG emissions targets as part of the UNFCCC Nationally Determined Contributions (NDC) process.[1] In order to put this into a bond market perspective, we propose a long 15yr transition linker structure using the outstanding ACGB AUD$2.75 05/2041 instrument as a twin and referencing the 2035 NDC:[2]

- Twin bond structure to ACGB AUD$2.75 05/2041, long 15yr maturity
- Performance test to 2035 NDC minimum target (-62% emissions reduction from 2005 baseline, 240MT)
- Coupon steps from 2037 to 2041 maturity (five annual coupon payments):
  - Strong/Outperformance: -0.5%/-0.25% coupon decrease if emissions below 158MT/228MT.
  - Off track/Adverse: +0.25%/+0.5% coupon increase if emissions above 252MT/276MT.
- Initial coupon: 2.75%, final coupon range: 2.25-3.25%.
- Fair value estimate vs ACGB: -5.5bps running (lower yield), +0.63% upfront (higher price).

Effectively, this structure would provide lower cost-of-capital for the Australian government if NDC targets are achieved, thus providing a clear incentive to deliver. For investors, higher payouts in a transition failure scenario would be important under the reasonable assumption of lower risky asset returns in this case.

Core to the proposed pricing is the assessed probability that coupon steps will materialise. As shown in Figure 1, and explained in more detail below, Australia's 2035 NDC target is significantly more ambitious than both the current emissions reduction trajectory and the government's own projections assuming no policy changes. This suggests a high ambition and a low initial probability of the target being met.

Figure 1. Australia historical emissions, trend projections and NDCs. Source: EDGAR, Government of Australia, AFII.



[1] For full details, see "Australia's 2035 Nationally Determined Contribution", Australian Government, accessed 19 Sep 2025. A discussion around the necessity to engage with sovereigns is available in "Investors need to target sovereigns in 2025", Environmental Finance, Jan 2025.

[2] See "Transition linkers" (Japan case studies), AFII, Oct 2024 for more detail. Other AFII papers analysing NDC linked bond structures for Mexico, Chile, Colombia, France (tbd), Slovenia, Uruguay, South Korea available through the links. See AFII's "Sustainability-Linked Bond Handbook", May 2024, for background and ongoing AFII research for an continuous analyses of the performance-linked debt space.

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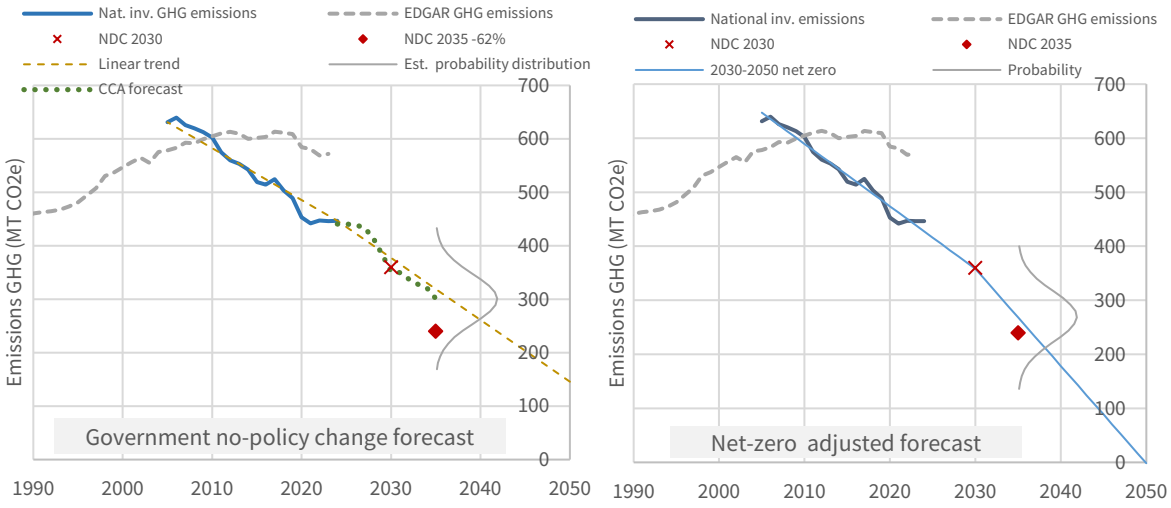
Modelling probabilities of Australia achieving the NDC

In order to price a step-up / step-down bond structure on the back of the new NDC, it is first essential to establish a probability that the NDC targets will or will not be achieved. This probability in turn informs whether coupon steps will happen or not. With this in place, pricing becomes a straightforward exercise, with the market value equal to the discounted stream of coupon payments on an expectations-weighted basis.

Australia's 2030 NDC target is 360MT of emissions, marked with an **x** in Figure 2. This is almost exactly an interpolation of the trend in carbon reduction in Australia between 2005 (the base year) and 2024, based on the national inventory data. This NDC is marginally lower than a simple extrapolation of Australia's emissions reduction over 2005-2024 (dashed lined in Figure 2).[3]

The 2035 NDC (marked as ◆) at 240MT implies an *increase in the pace of reduction* compared to the historical trend.[4] Taking this trend and its historical volatility (2.4%), we can create a probability distribution of emissions in 2035. This is shown by the vertical bell-shape in the left-hand panel of Figure 2. The bell-shape is centred around the spot forecast of 300MT. Only a small tail of the distribution has emissions below the 240MT NDC. In other words, the probability of achieving the 2035 NDC is fairly small — just 10% — based on this approach. If we take the government's own forecast per the Climate Change Authority (dotted green line, left panel), the spot forecast is 301MT and we get a similarly small (9%) probability of hitting the NDC.

Figure 2. Estimated forward probability distribution of Australia 2035 NDC achievement based on linear trend from emissions reduction 2005-2024. Source: EDGAR, Australian government, AFII.



These probabilities may be perceived as too slight to be credible. To achieve an alternative and somewhat more favourable probability distribution, we first assume that Australia will meet the 2030 target of 360MT, and then proceed on a linear trend to net-zero by 2050 (blue line in Figure 2). Curiously, this would imply an exact 5% reduction per annum between 2030 and 2050, based on

[3] Observant readers will note the differential between the EDGAR estimates of Australia's emissions versus the national inventory numbers. This is an interesting differential, but beyond the scope of this paper, which is focused on national inventory numbers as those are what the NDCs are based on. See "A comparative analysis of EDGAR and UNFCCC GHG emissions inventories: insights on trends, methodology and data discrepancies", Banja et al. (2025), for a more detailed read.

[4] The NDC is stated as "reduce emissions to 62-70% below 2005". For purposes of this note, we conservatively assume the 62% reduction as the point estimate.

2030 emissions (i.e. a 17MT reduction every year). On this trend, we get a spot forecast for 2035 of 270MT (the vertical peak of the bell shape in right hand panel of Figure 2), still well above the NDC commitment of 240MT but at least in the realm of possibility as projected by the forward probability distribution. Based on this naïve forecast model, the probability to achieve 240MT or less in 2035 is approximately 26%.

To be clear, these forecasts are based on statistical analysis only that should of course be complemented by fundamental analysis. After all, emissions could come in lower based on planned, but not currently disclosed, policies as well as technical innovations and a faster-than assumed adoption of electrification technologies, such as EVs. On the flipside, there could be policies that push in the opposite direction and increase emissions, such as those recently announced in Queensland.[5]

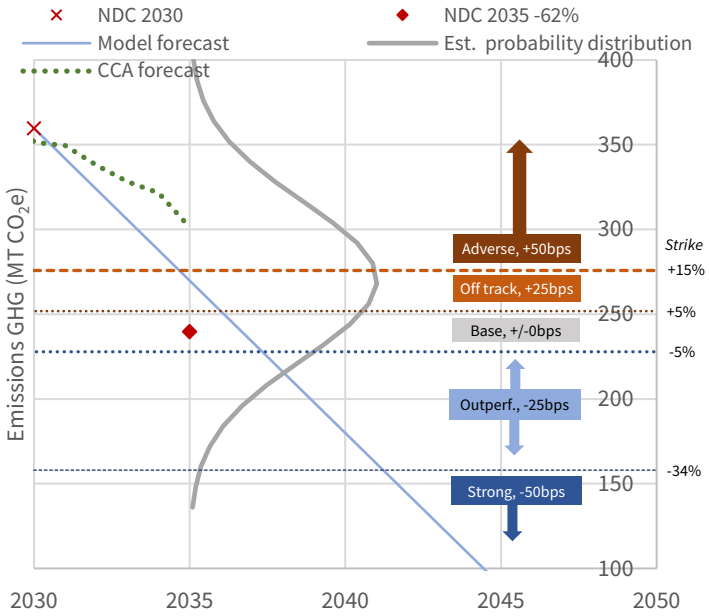
Pricing the transition/NDC linked bond

Our pricing model relies on a Black-Scholes framework[6], which requires estimates of a drift parameter (δ) and volatility (σ). We achieve this by converting the absolute value reductions shown in Figure 2 into their log-normal equivalents. This results in δ = -4.5% and σ = 5.2%.[7] We also assume the more optimistic projection for achieving the NDC, assuming a 26% current (spot) probability of meeting the targets.

Armed with this and the model, we price a transition linker premium structure as per Table 1. We define the 'Strong' scenario as emissions below 158MT, or equivalent to -76% below the baseline year, which is the lower point of Australia's NDC range (62-75% reduction). We set 'Outperform' as reducing 5% (to 228MT) more than the assumed 240MT target. On the flipside, 'Off track' pricing applies if emissions exceed the target by 5% (252MT) and 'Adverse' pricing if emissions come in at 15% above (276MT).

Table 1 provides details on the likelihood of each scenario occurring based on the forecast referenced in the previous section, and the associated valuations of expected cash flows in terms of their 'option' value.

Figure 3. Australia transition linker strike structure. Source: AFII.



[5] See e.g. "Bowen lashes Queensland government plan to keep coal firing for longer", Australian Financial Review, 22 Oct 2025.
[6] See "An Option Pricing Approach to Sustainability-linked Bonds", AFII, Oct 2022.
[7] The volatility is based on the 2015-2024 historical volatility, in absolute terms rebased to the 2035 forecast.

Table 1. Proposed transition linker structure in terms of strike levels and pricing based on forecasting models.

Linker thresholds				
Strike level coupon step	-0.25%	-0.25%	+0.25%	+0.25%
Full coupon step	*-0.50%*	*-0.25%*	*+0.25%*	*+0.50%*
Strike (%) vs NDC target	-34%	-5%	+5%	+15%
Absolute strike MT	158	228	252	276
Implied probability	0.1%	16.8%	64.8%	44.1%
Upfront value	-0.001%	-0.114%	0.441%	0.300%
Running value (bps)	-0.01	-1.01	3.90	2.65

These option strikes are jointly valued at 0.63% upfront/5.5bps running, with the step-ups being valued at 0.74%/6.6bps and the step-downs at -0.12%/-1.0bps, respectively. These are priced off of the ACGB AUD2.75 05/41-bond structure copy. The asymmetry between the step-ups and step-downs stem from the low assessed probability that the target will actually be met. There is a 17% estimated probability of one or two step-downs, compared to a 65% chance of any step-up. This leaves an 18% probability (100% – 65% – 17%) that the coupon will remain unchanged. These probabilities are shown in the ranges in Figure 3 above.

This means that, compared to the baseline 2.75% bond, the transition linker would price with a yield 5.5bps tighter/0.63% higher price than a traditional instrument, based on our assumptions. To go back to basics: this would mean that the government would be able to issue at a substantially lower cost-of-capital that is retained if they achieve the NDC. On the flipside, investors could rationally buy the lower coupon bond as their mathematical expectation would be to recover the initially lower coupon with a later higher coupon stream. Any non-pecuniary benefits in terms of driving incentives for lower emissions would be additional to this. It is important to note that this is not a wholly hypothetical structure. The dual step-up / step-down structure based on a singular performance indicator was recently introduced by Slovenia.[8]

Conclusion

This note suggests a bond structure with multiple strikes and coupon variations based on Australia's 2035 NDCs. As a key energy exporter, and with one of the heaviest per capita carbon footprints of the world, Australia's progress on its decarbonisation plan may serve as a leading indicator on the global transition and climate warming mitigation efforts. From a strategic asset allocation perspective, it makes sense for investors to obtain government bond exposures that are more negatively correlated with poor outcomes in risky assets caused by transition failure. This approach also aligns with their fiduciary duty. For investors, reverse inquiring for such structures appears an appealing way to engage with the issuer.

[8] See "Slovenia launches sovereign decarbonisation SLB", AFII, Jun 2025.

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