

Climate Implications of Policy Assessment: Disclosure Sheet

This disclosure sheet provides the responsible department's best estimate of the greenhouse gas emissions impacts for New Zealand that would arise from the implementation of the policy proposal or option described below. It has been prepared to help inform Cabinet decisions about this proposal. It is broken down by periods that align with New Zealand's future emissions budgets.

Section 1: General information

General information	
Name/title of policy proposal or policy option:	Engagement with very large emitters: investment package for significant decarbonisation proposal
Agency responsible for the Cabinet paper:	MBIE
Date CIPA finalised:	<i>Assessments may need to be updated as the policy process progresses and/or there is better or new information. If there are multiple assessments under the same initiative title, they will be differentiated by date.</i>
Short description of the policy proposal:	Co-funding from Government Investment in Decarbonising Industry Fund to NZ Steel for the purchase and installation of an Electric Arc Furnace at its Glenbrook Steel Mill

Section 2: Greenhouse gas emission impacts

Sector & source	Changes in greenhouse gas emissions in tonnes of carbon dioxide equivalent (CO ₂ -e)						Cumulative impact
	2022–25	2026–30	2031–35	2036–40	2041–45	2046–50	
EAF Minimum Obligation of 800,000 t/CO₂e expected emissions reductions to 2035 (Funding Agreement requirement)¹		-3,200,000	-4,000,000				-7,200,000
EAF Minimum Obligation of 800,000 t/CO ₂ e impact to 2050, pending no other changes to operating model		-3,200,000	-4,000,000	-4,000,000	-4,000,000	-4,000,000	-19,200,000
Impact of move to 100 per cent EAF in 2032		-3,200,000	-7,600,000	-8,500,000	-8,500,000	-8,500,000	-36,300,000

Section 3: Additional information

Additional information

An Electric Arc Furnace (EAF) produces steel by generating heat through an electric current to melt scrap steel, alongside an iron source, to produce molten steel. Being powered by electricity, it substantially reduces the amount of coal used in the steelmaking process. NZ Steel would initially operate the EAF under a hybrid model where a combination of recycled scrap steel and molten iron produced using the existing process is used as the input feed. This hybrid model is referred to as the '50/50 EAF' scenario.

Commercial Information

Therefore, on current timelines, production through the EAF under the hybrid 50/50 scenario would begin at the end of 2026, with full benefits arising at the beginning of 2027.

Between the Commissioning Date and the expiry of the Funding Agreement (Operating Phase), NZ Steel must deliver the minimum obligation of 800,000 tonnes of carbon emission reductions per annum on average (measured against a baseline of its average annual emissions) – i.e., 7,200,000 tonnes of carbon emission reductions in total for the life of the Funding Agreement.

The first two scenarios above represent the expected emissions abatement based on a) the funding agreement period – which NZ Steel will be contractually obligated to deliver, and b) modelled reductions to 2050 if NZ Steel maintained that level of annual emissions abatement beyond the funding agreement, provided here to indicate the potential abatement from

¹ Note that approximately 650k of this abatement is new, entirely additional abatement that could not be achieved with NZ Steel's current production set up. The remaining 150k may have occurred, but the investment in an EAF greatly increases the certainty of these reductions occurring. More discussion of the analysis behind these numbers is in the Cabinet paper paragraphs 82–83.

Additional information

50/50 EAF use to 2050. Electricity use/generation is not factored into the estimated emissions reductions, and NZ Steel's business case indicates that electricity use is expected to be broadly the same under the EAF scenario as under the status quo. Transport emissions are also not factored in. NZ Steel is exploring rail options for the transportation of scrap steel, which may make use of existing capacity (e.g. trains that currently return empty to Glenbrook from Pacific Steel, or 'back haul' north from other sites).

The draft funding agreement is tied to a minimum expected reductions of 800,000 t/CO₂e per annum. It is possible that NZ Steel could overachieve this number (likely pending the amount of scrap steel it can secure, and therefore to what extent it utilises the EAF beyond the 50 per cent it has committed to). As such, the 50/50 scenario modelled above may prove to be a conservative estimate.

A third scenario is the expected abatement from a move to 100 per cent EAF use. This is contingent on NZ Steel securing sufficient scrap steel supply and is consequently less certain than the 50/50 EAF scenario on which underpins the funding agreement. Under a 100 per cent EAF scenario, NZ Steel model a total reduction in emissions per annum of 1,700,000 t/CO₂e relative to its baseline. This represents an additional 900,000 tonnes per annum on top of the existing 800,000 tonnes delivered whilst the EAF is operating at 50 per cent capacity. In its business case, NZ Steel modelled for the move to 100 per cent EAF to take place in 2032.

Both 50/50 and 100 per cent EAF are provided in this CIPA to reflect that the potential emissions reductions from this project over the length of time to 2050 will likely fall in a range from 800,000 to 1,700,000 tonnes per annum, of depending on the ability NZ Steel to secure scrap and decisions it makes about the timing of any move to 100 per cent EAF.

The counterfactual is for NZ Steel to continue operations at its Glenbrook site using its existing process. The current annual emissions (from all sources) of NZ Steel are approximately 2.2 million tonnes of CO₂e. It is planning on implementing a series of incremental improvements that are targeted at reducing emissions by 1% per annum from 2018 – 2030, partially in response to the sinking lid on industrial allocations under current ETS settings.

Another longer-term counterfactual is for NZ Steel to move to an importation based model and close some domestic operations. Domestic emissions would significantly reduce under this option, however the timing of any such transition is unclear and NZ Steel maintaining its existing operations, with incremental improvements, is more likely in the near term. Another possible scenario is that NZ Steel closes entirely at some point, which would mean a sharp reduction in domestic emissions, but potential emissions leakage. This risk of this scenario coming to pass is mitigated by the fact NZ Steel will have a material amount of 'skin in the game' in terms of its investment in procuring and transitioning to the EAF and will be incentivised to see a return on that investment.

Section 4: Summary and Quality assurance

Summary of climate implications and quality assurance

This section should contain a summary of the emissions impacts (both qualitative and quantitative, as appropriate). This text can generally be copied into the CIPA section of the accompanying Cabinet paper.

Include in this section the quality assurance statement from the Ministry for the Environment's Climate Implications of Policy Assessment (CIPA) team.