Economic Bulletin.

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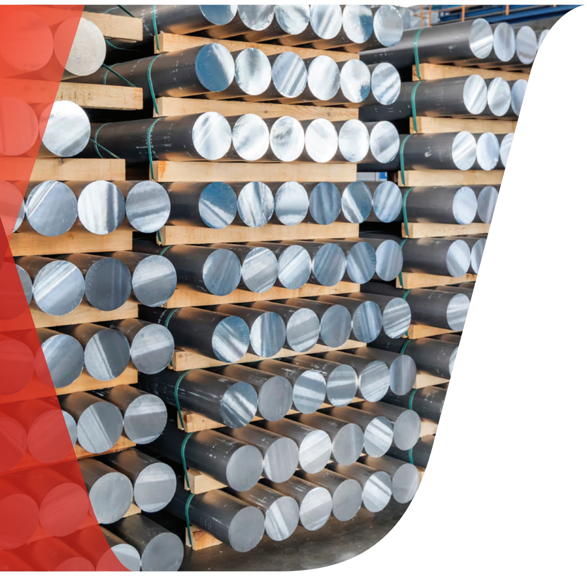

Out of the chaos comes opportunity – the economic impact of Tiwai Point's closure.

- The closure of Tiwai Point will be devastating for the Southland economy.
- The reconfiguration of New Zealand's electricity system will be accelerated.
- The loss of a big emitter is likely to have positive spinoffs for our climate change commitments.
- The closure of Tiwai Point could be part of a trend, and other big manufacturers could close.
- Government has a central role to play in ensuring a "just transition" for Southland.

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The closure of the aluminium smelter at Tiwai Point by the end of August 2021 is likely to inflict real short-term pain on the economy, mainly in Southland. Longer-term, the resulting additional supply of electricity should yield significant benefits for the broader economy. This paper seeks to explore these costs and benefits in more detail, with a view to assessing net impacts on the Southland region and the national economy.

Not in a class of its own.

Rio Tinto's announcement a couple of weeks ago that it would be shutting down its aluminium smelter at Tiwai Point in Southland came as a shock, even though the smelter's future had been the subject of much speculation for many years.

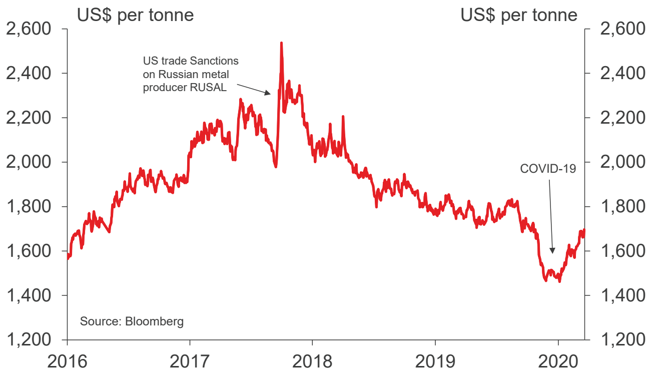
COVID-19 was the straw that eventually broke the camel's back for Tiwai Point, and that could well prove to be the case for some other heavy manufacturing concerns operating in New Zealand. Strategic reviews have already been announced for NZ Steel's Glenbrook steel mill south of Auckland and NZ refinery's operations at Marsden Point in Northland. Meanwhile doubts continue to swirl around the future of Methanex's methanol plants in Taranaki. These four large manufacturers together account for 0.7% of New Zealand's GDP, so this is a serious issue.

Rationale for closure.

The economics of operating an aluminium smelter such as Tiwai Point are challenging, with profitability largely being determined by the ability to minimise units costs of production in an environment where prices for its key output, primary aluminium, are set by global markets.

Tiwai Point sits at the higher end of the global cost curve, which means that it tends to be more sensitive than most to changing output prices. So, when aluminium prices fall, as they have done since 2018, the focus falls squarely on how to minimise unit costs of production to preserve margin. That is likely to have intensified in 2020, with prices dropping sharply as COVID-19 hit China, the world's largest consumer of aluminium product. With China now in recovery, prices have picked up. The outlook is for higher prices going forward, although Rio Tinto evidently still regards these too low to justify continued production at Tiwai Point.

Figure 1: Spot aluminium prices

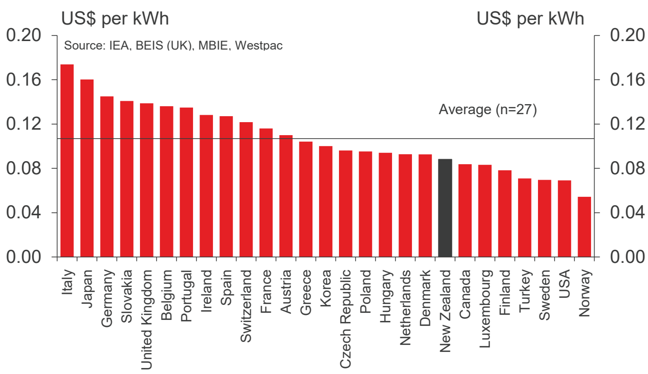


When minimising unit production costs, smelters typically focus on labour, the cost of raw materials and on reducing their power bill. Smelters are energy intensive operations and consume massive amounts of power. That is certainly true for Tiwai Point, which uses a whopping 572 megawatts per hour, or 13% of New Zealand's total electricity consumption.

Rio Tinto has stated that high electricity prices were a major factor contributing to the decision to close the smelter down.

A quick comparison of average electricity prices expressed in US dollar terms, suggests that on average, electricity prices paid by industrial users in New Zealand are relatively low when compared to those paid in other countries. Indeed, Tiwai Point only pays about $0.06 per kilowatt hour, which is less than half of the wholesale price paid by the average industrial user and about a fifth of the retail price paid by households.

Figure 2: Comparison of industrial electricity by country - 2018



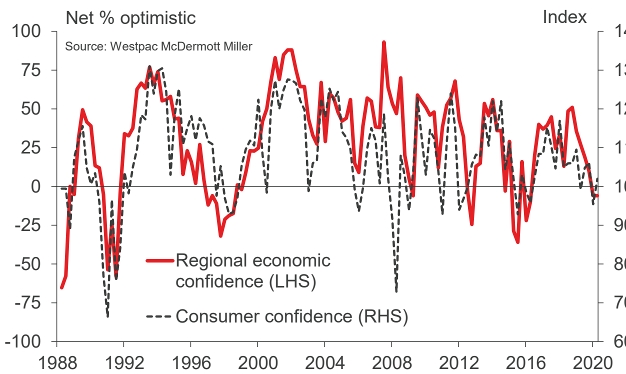
Rio Tinto's issue, though, relates to the transmission cost component of this total. Transmission costs account for a big chunk of the total cost of electricity for the average consumer and reflect the capital cost of ensuring the integrity of New Zealand's electricity infrastructure. Presently these costs are evenly distributed across the country and are based on how much power is consumed by each user. That means that despite only using 2% of the electricity grid, essentially the part that transmits power from Meridian's Manapouri hydro-electric power station to Tiwai Point, the smelter has to pay about 7% of the costs of the upkeep of the national network. According to one industry source Tiwai Point has effectively been paying the capital value of the transmission line from Manapouri every 14 months. A new transmission pricing methodology, set to be introduced by New Zealand's Energy Authority, would have trimmed about $11m of Tiwai Point's transmission costs annually from 2024 onwards.

Another possible reason for closing the smelter is its location. It imports most of its raw material input from far away Queensland and the Northern Territories, incurring transport costs along the way. It then exports to far flung markets in Asia. Again, transport costs are an issue.

Big upfront macroeconomic implications.

The closure of Tiwai Point in August next year will be a devastating blow for Southland's small economy, which will also be coming to terms with the effects of COVID-19. International tourism, a big money earner for the region, is still likely to be struggling when Tiwai Point finally shuts its doors. Thankfully, primary sector activity, the other major contributor to economic activity in the region, should be in good shape.

Figure 3: Regional and consumer confidence - Southland

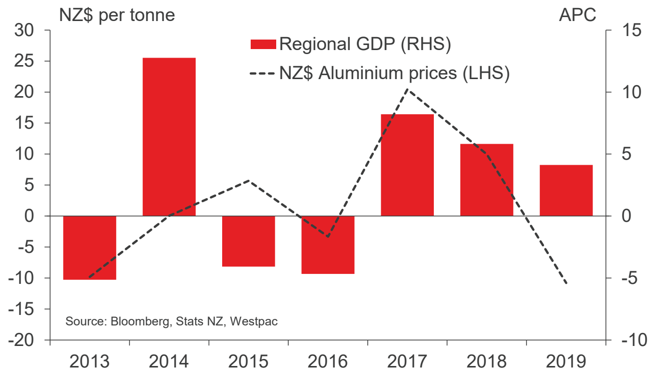


Economic confidence in the region is expected drop immediately. There might be plans to revive the Southland economy, but little can be achieved in the one year before Tiwai Point closes. Aquaculture has been identified as Southland's best near-term economic opportunity, although it's doubtful whether this can fully compensate for the loss of Tiwai Point.

The situation that Southland finds itself in is very different to that experienced in Taranaki back in 2018 when Government stopped issuing new permits for offshore oil exploration.

Indeed, exploration activities in that region are still expected to continue until 2030, so the lead times are long.

Figure 4: Aluminium prices and Southland's GDP

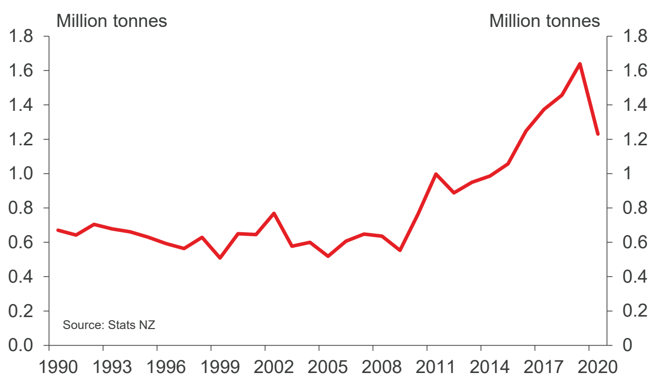


The impact of Tiwai's closure for Southland is likely to be more upfront and more severe. Assuming all else remains constant, the loss of aluminium production will leave a $500m hole in Southland's economy. That is equivalent to 10% of the region's GDP or 0.2% being shaved off New Zealand's GDP.

The actual loss is, however, likely to extend much further. An industry source suggests that the smelter has over 50 key suppliers in the region, which supply over $50m worth of materials and services directly to it. Many of these firms are involved in engineering activities, metal products manufacturing, repairs and maintenance, rental and leasing, and advisory services, employing up to 1200 people. That is in addition to the 1000 people employed directly by Tiwai Point.

Come August next year, up to 5% of the region's workforce, many of whom are highly paid and highly skilled, could be out of work. That will be significant for a region where average household incomes are among the lowest in the country, especially if there is a resulting exodus of skilled workers to other provinces. At risk is about 1.4% of Southland entire population with Invercargill likely to be the hardest hit. Consequently, we expect house prices in Southland, which have outperformed those in other regions for many years, to fall. This will have adverse implications for spending in the region, already under pressure because of a loss of international tourists.

Figure 5: Exports through Southport



The closure of the smelter will also mean an abrupt halt to basic aluminium exports, worth about $1.2bn a year to New Zealand. The closest port to the smelter, Southport, is already anticipating that it will be handling a third less volume when aluminium production stops. That covers the export of basic aluminium product and the import of alumina powder from Australia. Revenues generated by New Zealand's aluminium fabricators are also likely to be affected by the loss of supply from Tiwai Point, and over time some may be displaced by imports of finished aluminium products.

Delayed long term opportunities.

However, while the impact of Tiwai Point's closure will come at a cost to both Southland and the New Zealand economy, it will also create opportunities. The removal of Tiwai Point is, after all, equivalent to building a massive amount of clean electricity, with little adverse environmental impact.

However, unlike the costs, which are largely unavoidable and are likely to be felt near-term, taking advantage of these opportunities requires effort, and will only generate benefits over the long term.

One obvious benefit of closing the smelter is that it will make it easier and cheaper for New Zealand to meet its climate change obligations. Simply put, closing the smelter will mean the elimination of about 0.6m tonnes of CO2 from the atmosphere every year. That is equivalent to 0.8% of New Zealand total emissions. Despite having one of the lowest carbon footprints of any aluminium smelter in the world, Tiwai Point currently emits about 2 tonnes of CO2 equivalent per tonne of aluminium produced.

The closure of Tiwai Point will reduce the price of carbon in New Zealand, compared to the price that would have prevailed had the smelter remained open. As a participant in New Zealand Emissions Trading Scheme (ETS), the smelter is required to source carbon credits to cover its emissions. The majority of these come from the Government, with the remainder sourced from other ETS participants. When Tiwai Point closes, this requirement will fall away, meaning one less buyer in the market. Rio Tinto also has a stockpile of carbon credits, which at some point it will have to sell. This should increase the supply of credits into the market.

Classified as an energy intensive export-oriented business under the ETS, Tiwai Point is not required to pay for most of its emissions, Most of that is picked up by the Government, which annually gifts the smelter about $50m in carbon credits. The implication is that when Tiwai Point closes and this requirement on Government falls away, the country will need to make fewer other costly carbon reductions in order to meet our commitments on climate change.

The demise of Tiwai Point is also likely to accelerate the reconfiguration of electricity generation capacity in New Zealand. That is likely to mean bringing forward the retirement of uneconomic thermal plants from the system, such as the coal- and gas-fired generators at Huntly, and the Combined Cycle Power Station in Taranaki. Having more clean electricity available to the grid is also likely to result in several planned renewable energy projects being put on the back burner. That includes the $600m 'shovel ready' Tauhara geothermal power station.

However, taking full advantage of this reconfigured electricity system will require upgrades to the transmission network. That will ensure that the cheap power being generated at Manapouri can be transmitted to New Zealand's large population centres further north. Work is already underway on a $100m South Island upgrade to get more power out of Otago and Southland. Estimates vary, but another $500m to $600m will be needed to get it further north, with works expected to be completed by 2028. With Tiwai Point now almost certain to close, its highly likely that this investment will be accelerated.

After Tiwai Point closes, electricity prices are likely to reflect changes in the availability of supply from lower cost renewable generating capacity as well as higher transmission costs associated with the loss of the smelter. That is likely to mean lower electricity prices in the South Island. How prices react in the North Island is less clear and depends on whether the lower costs of additional electricity supply made available to the region can offset the impact of higher transmission costs. Longer term, the North Island, now with an abundance of additional supply from Manapouri because of upgrades made to the electricity grid, should also see lower electricity prices, although gains in this regard might be partially offset by the need to recoup investments made to the transmission network.

Cheaper power is likely to incentivise some firms to use electricity rather than fossil fuels. That includes Fonterra's Southland milk processing plant, which currently is a coal burning facility. Ditto for New Zealand's energy intensive pulp and paper mills. Big facilities that currently use coal for heating like hospitals, schools, or prisons might also think about switching to cheaper renewably generated electricity.

The extent to which the closure of Tiwai Point will lead to emissions leakage, which happens when carbon efficient production in one location is replaced by less efficient production elsewhere, depends on how supply reacts to changes in demand. If global demand picks up and aluminium prices rise, the fear is that we might see more production coming online from less efficient coal fired powered smelters, which will have the effect of raising global emissions overall.

"Just transitioning" to the future.

Like any big change, the negative impacts of Tiwai Point's closure are likely to be felt upfront whereas the opportunities and benefits that might come from it will take a while to come through. With that in mind, and with Southland looking straight down the barrel, the Government has an essential role to play in ensuring a smooth and 'just' transition, with jobs top of the agenda. Potential new industries include green hydrogen production, data centres and electric vehicle manufacturing – there are likely to be more. The challenge will be to do this while at the same time encouraging broader efforts to exploit the advantages of cheaper and more available electricity.

Whether this can be achieved is debatable, although Taranaki's 2050 Roadmap, which details a "just transition" to a low emissions economy, may shine a light on how this can be done. Last year we reviewed the 'just transition' concept, including some case studies of attempted transitions overseas.[1] While there is no clear recipe for success, it appears that political buy-in and are critical success factors. Having a vision and conducive culture are also important, as is having an inclusive process where all affected stakeholders have an equal say in defining and agreeing desired outcomes and how to get there.

1 https://www.westpac.co.nz/assets/Business/Economic-Updates/2019/Bulletins-2019/Taranaki-Economic-Insight-Oct-19-Westpac-NZ.pdf

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