

Assessment of proposed export tax on South African chrome ore

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Amended to reflect comments received from the ferrochrome sector*

**Subsequent to the initial sharing of the report on 7 July 2020, comments were received from the ferrochrome sector. This version of the report has been slightly amended to reflect and deal with certain of the comments made.*

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EXECUTIVE SUMMARY

The context and motivation behind the proposed export tax stems from a divergent experience of two sectors in South Africa: the upstream chrome ore mining sector and the downstream ferrochrome sector.

The chrome ore sector has grown significantly over the past decade, both in terms of production (almost doubling) and employment. The sector's growth has primarily been driven by export-led production increases from non-integrated South Africa chrome ore producers (both primary ore miners and UG2 producers). These exports are sold almost entirely into the Chinese ferrochrome sector and have positioned South Africa as the largest player internationally in terms of global chrome ore sales, by a significant margin.

In contrast, the ferrochrome sector has performed relatively poorly over recent years, with production largely stagnant over 2014 to 2019 and the industry losing much of its international competitiveness and export market share. The industry has shed significant smelter jobs in the last five years with more cuts potentially on the cards. There has also been significant consolidation among ferrochrome producers reducing from more than six competitors in 2014 down to (effectively) two large players: Glencore Merafe-PSV ("Glencore") and Samancor.¹ The declining competitiveness of the South African ferrochrome sector has mainly been the result of steep real electricity price increases, as well as aggressive expansion by Chinese ferrochrome producers. As a consequence of this diminished competitiveness, as well as generally weak international ferrochrome prices, the sustainability of the ferrochrome sector in South Africa is under threat.

As a result of these trends, the non-integrated primary chrome mining sector is estimated to currently employ 9,528 workers, significantly more than the downstream ferrochrome sector with 6,851 workers. 'Non-integrated' refers to those miners who are not integrated with downstream ferrochrome production and who export most of the chrome they produce.²

It is within this context that the Department of Trade, Industry and Competition ("DTIC") is currently considering the implementation of a tax on chrome ore exported from South Africa. Trade & Industrial Policy Strategies ("TIPS") has recommended a tax rate of 30%³ in a report produced for the DTIC (hereafter referred to as the "*TIPS report*").⁴

Usually, export taxes are introduced to secure preferential access to a scarce raw material for a domestic downstream industry. This is not the case here as South African ferrochrome producers already have preferential access. The ferrochrome producers have ample access to chrome inputs sourced from their own mines (hence these being referred to as 'integrated' producers). In addition these integrated ferrochrome producers also have access to material volumes of chrome ore supplied through long term offtake agreements with UG2 producers at what is understood, at least in some cases, to be preferential prices.⁵ As result, the integrated ferrochrome producers *themselves* export significant volumes of chrome ore. Further, the

¹ A third player, Afarak, is under business rescue and producing only small volumes of ferrochrome.

² The vast majority of output from the non-integrated chrome ore producers is exported. We noted that 'integrated' mines employ another 12,096 workers and non-integrated UG2 producers a further 1,280 workers.

³ Although TIPS ultimately recommended a tax rate of 30%, they did also consider in their analysis rates of 10% and 60%. We also note that the ferrochrome producers have requested a rate of 40%.

⁴ Trade and Industrial Policy Strategies, "Summary Report on a chrome export tax-redacted report prepared for the department of Trade and Industry", March 2019 (updated March 2020).

⁵ TIPS Report, p.17-18. These offtake arrangements are also mentioned publicly available financials of certain mining and ferrochrome companies. For e.g. Merafe's 2017 annual report (pages 17, 18 and 50) 2010 investor presentation.

effective cost of chrome to the local ferrochrome producers is already less than half of the cost of chrome to Chinese producers.⁶

Instead, the intent behind the tax is to further increase this difference so as to *increase the cost base of Chinese ferrochrome producers*. This would, the reasoning goes, shift preference of supply away from Chinese to South African produced ferrochrome (either in terms of a higher price or increased volumes), thereby improving the prospects of South African ferrochrome producers.⁷ It is immediately apparent that this logic depends on how other players in the global ferrochrome value chain will change their conduct in response to the tax.

For example, the TIPS findings are based on the assumption that the non-integrated South African chrome ore exporters *would not lose significant volumes*, despite a 30% increase in the effective price of their product. With this assumption in place, TIPS largely cease to be concerned about resultant employment losses in mining – the result that would ordinarily follow.

The criticality of this assumption for the TIPS conclusions is hard to overstate. If the export tax were to result in a fall in exports of South African chrome ore, the tax would result in a fall in mining employment in the part of the industry with a particularly large workforce, non-integrated mining.

Further, this report identifies a series of ‘leakages’ that would undermine the goal of an increase in global ferrochrome prices and a diversion of ferrochrome demand to South Africa – the mechanisms intended to improve the prospects of local ferrochrome producers. In particular, the Chinese dominance in the market can be used to engineer three leakages:

- exercise of countervailing power by Chinese purchasers against SA chrome exporters resulting in a reduction in the SA chrome price;
- absorption of the additional cost by the state-supported Chinese ferrochrome and/or stainless steel industries to retain market share; and
- retaliatory trade measures by the Chinese state against South African ferrochrome exports.

Furthermore, it is evident that the benefits from the proposed tax will mainly accrue to the South African ferrochrome producers in international markets where they compete against Chinese and, to a lesser extent, Indonesian ferrochrome producers – as these are the only major ferrochrome producer who extensively use South African chrome ore.

- This means that majority of South African ferrochrome exports will not be directly advantaged by the tax.

Non-Chinese integrated ferrochrome producers are also likely to change their strategies in response to any structural increase in global chrome prices.

- This will most likely take the form of increased production and export of ferrochrome buttressed by capacity additions, and possibly also increased foreign chrome exports.

As a result of these market responses, there is a material probability of significant job losses in South African non-integrated chrome mines, with no compensating increases in employment in integrated mines. Whilst employment in ferrochrome production may benefit, it will likely be

⁶ CRU ferrochrome cost information.

⁷ For example, see TIPS Report p5, 8, 18, 19 and 29.

more muted than anticipated, with a negative net effect on overall employment a material possibility.

Five key findings that suggest caution should be exercised

It is evident that the logic of this tax is built on a string of complex behavioural interactions by various international players. All these predictive behavioural assumptions need to hold true for the proposed export tax to work in the manner intended. There are five key findings from our assessment of international experience and the likely response of the international players to the tax that suggest extreme caution should be taken in applying the 30% tax on chrome ore exports.

These findings undermine certain of the assumptions relied on by TIPS and lead to significant “leakages” in the logic of the proposed tax. As a result, these findings strongly shape the assessment of the impact on the chrome ore and ferrochrome sectors that follows.

Finding #1: Economic theory and international experience indicate that an export tax can be beneficial – but only under limited circumstances

Export taxes are a legitimate form of industrial development intervention aimed at increasing downstream beneficiation of raw materials. However, economic theory recognises that while export taxes can yield net beneficial results for an economy, this is typically only under fairly limited circumstances. Economic theory also indicates that predicting whether an export tax will be of net benefit to a country is a complex task. This is particularly true in the instance where an export tax is implemented in the hope of increasing world prices (as opposed to merely diverting exports to domestic supply).

The complexity and risks of such a mechanism are also borne out in practice. International experience suggests that implementing an export tax on the current logic is relatively rare and that the proposed level of tax (i.e. 30%) is significantly higher than the average application.

- The most common application for the use of export taxes is for scrap metal. Only some 15 countries worldwide are known to use export taxes in the metal and ores sector (excluding scrap metal applications).⁸ In terms of tax level, the proposed export tax of 30% for chrome ore in South Africa would sit well above the average (12%) of export tax rates charged elsewhere across the world in the metal and ores segment.⁹
- Whilst export taxes on raw materials in the metals value chain have been used to improve downstream beneficiation, the aim of the mechanism has primarily been to secure domestic supply. To the best of our knowledge, there are no clear examples of where an export tax has been used in this value chain with the primary aim to directly disadvantage other international downstream competitors. In this regard the logic of the proposed tax on chrome ore in South Africa is somewhat novel.
- In all the case studies considered¹⁰ the primary raw material mining sector has been negatively impacted by the export tax, while the impact on the downstream sector has been mixed. It would therefore be highly unusual (and possibly naïve) to assume that imposing an export tax on chrome ore in South Africa will not result in some form of trade-off for the chrome ore producing sector. The uneven outcomes for the

⁸ This sector includes chrome ore and concentrates and hence most relevant to this matter. This is based on the OECD's inventory of export restrictions on industrial raw materials

⁹ Based on the OECD's inventory of export restrictions on industrial raw materials

¹⁰ In our full report we examine in detail the following case studies where export taxes have been imposed: (i) chrome ore in India; (ii) chrome ore in Zimbabwe; (iii) copper in Zambia; and (iv) iron ore in India.

downstream industry also highlight the risk that an export tax will not necessarily always achieve the intended benefit.

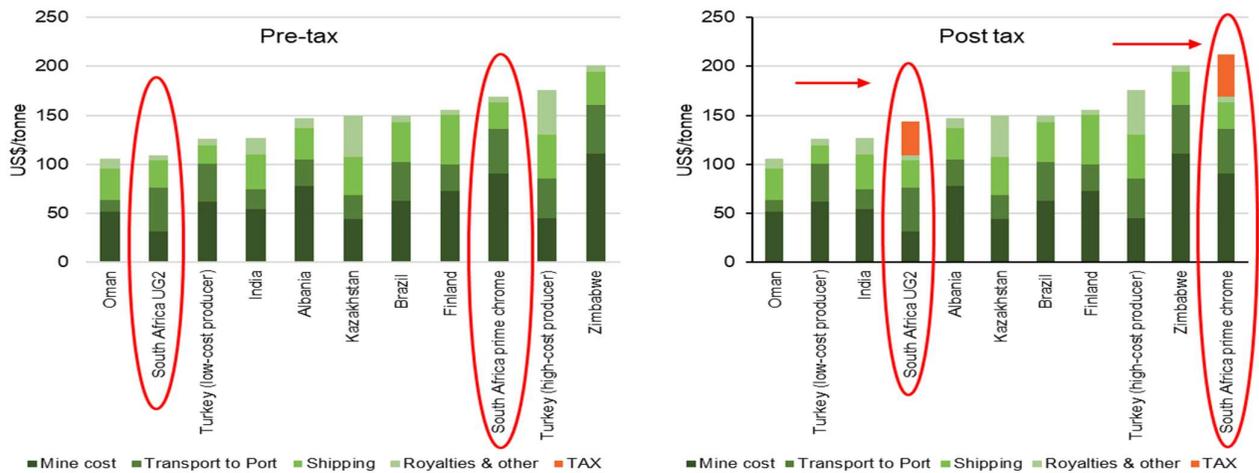
- It has been suggested that the example of India's tax on chrome ore exports provides positive evidence for implementing a similar tax in South Africa. However, a careful review of this example suggests this is not the case. In summary: (i) the export tax in India had a vastly different policy rationale and industrial context; (ii) the impact of the tax on the mining industry in India was decidedly negative, and (iii) the impact of the tax on the ferrochrome industry in India is more ambiguous than often assumed given the ferrochrome industry was actually growing at faster rate prior to the implementation of the tax.

Finding #2: A significant portion of South African export volumes are vulnerable to displacement by foreign chrome ore producers

Our analysis suggests that South Africa is not immune to competitive constraints in terms of its international chrome ore sales to China and that the introduction of a 30% export tax would materially impact the competitive structure of global supply.

As shown below, the export tax will result in South African primary (“prime”) chrome ore producers having the highest cost structure out of all significant international competitors. Notably, as a direct result of the tax, the cost structure of prime chrome ore producers in South Africa will increase above that of the marginal Turkish producers and Zimbabwe. The cost advantage currently experienced by UG2 producers will also be eroded to a large degree. If the export tax of 30% were to be passed on in export prices this results in an increase in South African grade adjusted prices to levels at least comparable (and in many cases higher) than international competitors.

Figure 1: Cash cost of production of chrome ore, CIF China (US\$/ton) – with and without a 30% tax on South African exports, 2019



Source: Roskill, Alloy Consult, International chrome ore producers, Genesis analysis

Furthermore, many of the other chrome producing countries have significant underutilized chrome ore production capacity. It is estimated that some **22% to 32%** of South Africa's current supply to China could be vulnerable to potential displacement from international producers if the tax were to be added to the export price. These estimates are based on widely used industry statistics and estimates of country production capacities as well as observations of maximum export volumes from individual countries over recent years.

It should be noted these estimates are conservative as they only rely on existing spare capacity (i.e. no expansions of capacity are considered, although these may also be incentivised and are discussed in this report). Furthermore, these estimates also exclude unused capacity from countries such as Kazakhstan, India and Finland who may hold strategic preferences not to increase supply of chrome ore into the international market. (e.g. due level of vertical integration or policy restrictions on exports).

Therefore, the extreme assumption in the TIPS report that South Africa has sufficient market power to increase export prices for chrome ore by 30% without losing significant volumes, would seem unsustainable. While South African producers will not be displaced entirely, a significant portion of their volumes are at risk if the tax is imposed and that they will likely be forced to lower export prices to avoid the loss of such volumes.

Finding #3: Chinese ferrochrome producers have strong countervailing power

It is evident that China occupies a powerful bargaining position, with very strong countervailing power. This flows from not only the ability to displace significant volumes of South African chrome ore with supply from other sources but also (i) South Africa's almost complete dependence on China as a buyer of export chrome ore; (ii) China's unified buying patterns (including close the relationships between ferrochrome and stainless steel producers, and the state); and (iii) significant Chinese stockpiles of chrome ore. The countervailing power of China is also reflected in pricing dynamics between South African chrome ore producers and Chinese ferrochrome buyers over recent years.

This finding is significant as the countervailing power is likely to be able to counteract any market power that South Africa may have - at least to some degree. This also contributes to South African exporters being unlikely to be able to pass through the full tax amount and therefore will bear some of the cost of the tax.

Finding #4: There is uncertainty as to how China may respond and/or whether any increased cost would be absorbed by the stainless steel value chain in China

In order to benefit South African ferrochrome producers, it is necessary for the tax to sufficiently incentivise stainless steel producers in China to shift away from Chinese ferrochrome supply to South African producers; and/or accept a higher price for the South African product.

It is not possible to predict with any certainty how policy makers in China, as well as the ferrochrome and stainless steel players themselves, will respond to the tax. However, it is evident that a number of plausible and rational responses exist that would dilute (or even prevent) any such shift in preference of supply away from Chinese ferrochrome producers in favour of South African ferrochrome producers. This is particularly plausible given the substantial sunk investment that has occurred over recent years in China, together with the long-term vision for the ferrochrome and stainless steel sector.

- The Chinese ferrochrome sector has been shaped by a deliberate industrialisation strategy on the part of China which is reported to include various forms of subsidies and support for the ferrochrome sector, including: energy discounts; aggressive industrial policy financing; tax and other incentives and support to improve energy efficiency of smelters. This has also been highlighted in the TIPS report. Since China would already seem to be providing support to the ferrochrome sector it would be relatively easy for such support to be increased in order to protect the competitiveness of the ferrochrome sector.

- One of the main retaliatory responses available to the Chinese government would be to implement tariffs on ferrochrome imports.¹¹ This too would be a relatively easy option for the Chinese government. Although the introduction of an import duty may raise the cost of stainless steel in China, it may still be a rational strategy for China given that ferrochrome makes up a relatively small cost component of stainless steel. Indeed, it is not uncommon for China to impose import tariffs on industrial inputs to protect its domestic industry.
- There is a close bond between the stainless steel and ferrochrome sectors in China. This too has been highlighted in the TIPS report. Since the proposed chrome ore tax is estimated to only have a minor impact on stainless steel costs (i.e. between 1% and 3%), it is possible the stainless steel sector may choose to ultimately absorb portions of the tax impact. Although detailed information on cross-ownership levels in the stainless steel value chain are not readily available, indications are that at least some 10% of Chinese ferrochrome production may be vertically integrated into stainless steel.¹² It is also understood that many of the stainless steel producers have long term purchasing arrangements with ferrochrome producers – however the coverage and length of these supply arrangements is not publicly available. To the extent that stainless steel suppliers are vertically integrated with ferrochrome producers in China (or have long term offtake agreements in place), then the proposed export tax would be unlikely to shift their purchasing behaviour away from local supply to South African ferrochrome producers.
- Even where stainless steel producers are not vertically integrated into the ferrochrome sector in a formal way, there may still be a favouring of domestic ferrochrome production – particularly given the relatively marginal impact of the tax on their cost structures. This continued preference for local supply may come from state or local government pressure and/or from other players who have interests in the integrated value chain. However, such a preference for local supply can also stem from strategic choices of stainless steel firms who see longer term benefit from maintaining strong supply relationships with local ferrochrome producers, as opposed to an increased reliance on foreign ferrochrome and the inherent risks that this may bring.

The willingness of the Chinese stainless steel industry to absorb higher ferrochrome costs in order to support domestic ferrochrome supply is borne out in their purchasing behaviour over time. For example, Chinese ferrochrome sales to the stainless steel sector began showing substantial growth even while the Chinese ferrochrome sector was still relatively uncompetitive. This behaviour has been recognised and accepted by TIPS as an indication that the growth of the Chinese ferrochrome sector has not been based purely on absolute cost competitiveness of local supply.

Any such response from the Chinese stakeholders would undermine the very logic of the tax as well as the intended benefit that it would hope to bring. As such, there is great uncertainty as to whether the proposed tax will harm Chinese ferrochrome competitiveness to the point where the Chinese stainless steel sector shows a substantial increased preference of ferrochrome from South Africa instead of local ferrochrome producers in China.

It is worth noting that this would not seem to actually be a contentious point, with TIPS reaching a very similar conclusion in their report.

¹¹ It should be noted that other forms of quantitative restriction on ferrochrome imports into China may also potentially be imposed instead, or in addition to, import tariffs.

¹² FerroAlloyNet :2020-2025 Chrome Ore Market Research Report

“Perhaps the most serious uncertainty about the effectiveness of the export tax is the question of whether an export tax would result in substantial changes to the structure of the global ferrochrome industry, while it is clear ... that a tax (even as low as 10%) would give South African-based firms a competitive edge over Chinese-based firms it is not clear that this would result in a shift in production as the location of ferrochrome production is not necessarily determined by market fundamentals.”¹³(emphasis added)

... “Given the number of possible responses, it is not possible to say with any degree of certainty whether the market (or non-market) structure of the Chinese stainless steel value chain would be impacted by the tax.”¹⁴(emphasis added)

However, despite this candid acknowledgement, the implications thereof would not seem to have been fully factored into TIPS’ final conclusions and recommendations.

Finding #5: Any benefit from the tax is likely to be limited to South African ferrochrome sales into China (and to a lesser degree Indonesia) – and even here strong competition from other global ferrochrome producers will remain intact

It is important to recognise that the proposed tax only diminishes the competitiveness of those foreign ferrochrome producers who rely on South African chrome ore – and even here the extent of this impact is questionable (as discussed above). The logic of the proposed tax does not diminish the competitiveness of countries that rely on their own chrome ore for the production of ferrochrome.

This is highly relevant as China (and to a lesser extent Indonesia) are the only major global ferrochrome competitors to South Africa who make substantial use of South African chrome ore. All other major global ferrochrome competitors have significant degrees of vertical integration and therefore primarily make use of their own ore. Since neither of these countries export significant volumes of ferrochrome, it is only South African ferrochrome sales into these countries (i.e. China and Indonesia) that is likely to directly benefit from the proposed tax.

However, a large portion, potentially the majority, of South Africa’s ferrochrome exports are made to countries outside of China and Indonesia (i.e. 40%-52%). The competitiveness of competing ferrochrome producers in these other global markets will be largely unchanged by the export tax (as none of these competitors rely on South African ore). As such, for the bulk of ferrochrome sales, the tax is likely to have very limited impact in enhancing the competitiveness of ferrochrome producers in South Africa.

Furthermore, even in China any diminished competitiveness of the Chinese ferrochrome producers (which is itself unclear) will not only benefit South Africa, but also benefit other ferrochrome producers who export into that country. In China, South Africa accounts for 56% of the ferrochrome imports with the remainder supplied from vertically integrated countries such as India and Kazakhstan. The competitive constraint exerted by these other producers will remain intact and will likely dilute any benefit accruing to South Africa from the tax.

The impact on chrome ore producers in South Africa

To a large extent the TIPS report justifies the proposed export tax on the basis that China would bear the brunt of the cost of any tax as it was assumed that the South African chrome ore producers would be able to pass through the tax without losing substantial volumes. However, this extreme assumption does not hold.

¹³ TIPS Report, p.14.

¹⁴ TIPS Report, p.16.

The above findings highlight three major sources of “leakage” in the logic of the export tax put forward by TIPS in relation to the impact on chrome ore producers in South Africa.

- *First*, it is evident that international producers of chrome ore are able, in term of both cost structure and capacity, to displace significant volumes of South African chrome ore exports should the 30% be added to their selling price.
- *Second*, any decrease in competitiveness of Chinese ferrochrome will result in demand switching away from Chinese ferrochrome not only to South Africa but also to other key ferrochrome producing countries such as Kazakhstan, India, Zimbabwe, Russia and Oman. To the extent this occurs, this too will result in an indirect displacement of South African chrome ore exports.
- *Third*, the countervailing power held by China puts them in a powerful bargaining position to resist (at least to some degree) any attempts by South African producers to increase prices.

As a result of these factors it would seem implausible that South African exporters of chrome ore would be able to simply increase their export prices to the Chinese ferrochrome sector by the full extent of the tax and still maintain their volumes. Instead, it is much more likely that SA chrome ore exporters will be forced to reduce the effective export prices that they receive in order to protect volumes. The exact extent by which SA chrome ore producers would need to reduce their export prices is hard to predict but based on the above assessment it may well be significant. This indicates that the tax will likely impose a significant cost on the chrome ore exporters.

Not only will chrome ore exporters likely receive a lower price, but this lower price also has very serious implications for the sustainability of certain segments of chrome ore producers. To consider the extent of this impact we have used three pricing scenarios: (i) scenario 1: it is assumed chrome ore producers are able to pass through only a quarter of the tax, (ii) scenario 2: it is assumed chrome ore producers are able to pass through half of the tax, and (iii) scenario 3: it is assumed chrome ore producers are able to pass through three-quarters of the export tax. The extent of impact of these effective price decreases differs depending on the type of chrome ore producer:

Non-integrated primary chrome producers

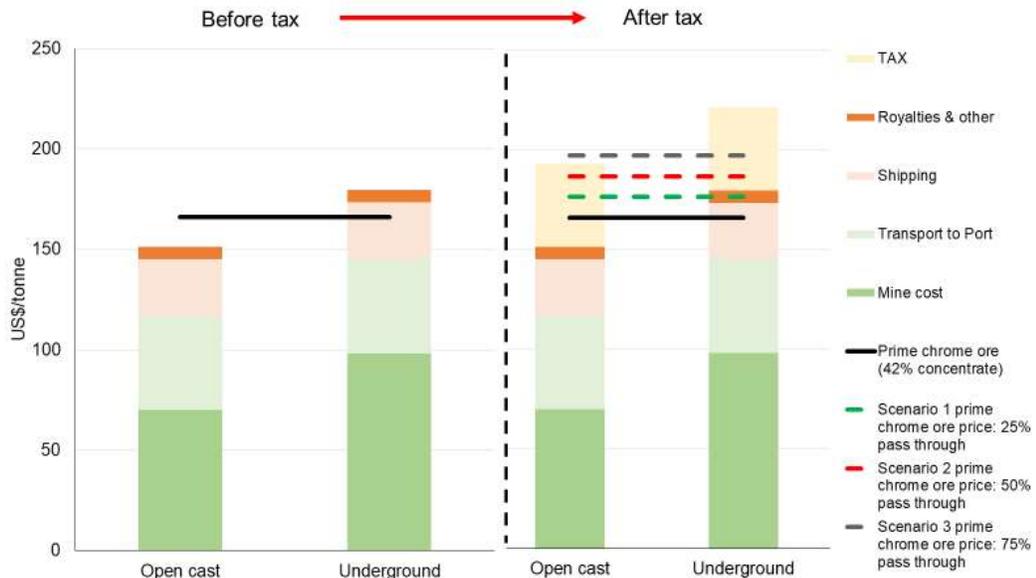
Non-integrated primary chrome ore producers will be the hardest hit by the export tax. This is due to the fact that these producers are almost entirely reliant on their sales into the export market. Additionally, these producers have relatively high-costs of production – even without the proposed tax – and are already currently selling at prices near to (or at) their cash costs. As such they generally have little scope to absorb any downward pressure on their effective export market price. This is clear against all pricing scenarios which have been modelled. Open cast mines may be in a slightly less precarious position but are still highly vulnerable. This vulnerability of primary chrome ore producers is also reflected and confirmed by the financial data received from a small sample of non-integrated primary chrome producers.¹⁵ Here, depending on the pricing scenario the primary chrome producers would see a reduction in effective price and revenue of between 6% and 17%. The upper bound reduction in revenue would see the entire profits of the sample wiped out.

Given their cost structure and almost complete reliance on exports, it will be difficult for many of these players to sustain their operations with the implementation of an export tax. This is

¹⁵ These producers would also be unlikely to benefit from any increased domestic demand for chrome ore given the vertically integrated nature of the ferrochrome suppliers.

likely to lead to some of these producers having to reduce production (either by close individual mines) or ceasing operations entirely. This may lead to large reduction in the employment across the industry, with up to **9,528** direct jobs¹⁶ (and 33,497 indirect jobs) associated with non-integrated prime chrome mining which will potentially be put at risk.

Figure 2: Scenario analysis of the impact of the 30% export tax on primary chrome ore producers, CIF China (2019) - US\$/tonne



Source: Roskill, Alloy Consult, CRU, Genesis analysis.

Note: The market price for primary chrome ore is based on the value adjusted price index for SA concentrate 44% value (to proxy the price for 42% concentrate), which we understand is the most common grade exported by South African producers.

Integrated chrome ore producers

The chrome ore production assets of integrated producers will broadly follow the same profile as that shown above for the non-integrated prime producers. As such, they too may be vulnerable if forced to absorb any of the tax. However, these producers are less exposed to exports and the bulk of their sales are made domestically to their own downstream ferrochrome smelters.¹⁷ As such, we have conservatively assumed these operations would remain viable. It should however be noted that these operations employ a significant labour force (over 12,000 direct employees) and hence should a portion of their production also become unsustainable; these employees would also be vulnerable.

UG2 chrome ore producers

The production costs of UG2 producers are well below those of primary chrome ore producers. Importantly, UG2 producers' cash costs typically only account for the incremental cost of chrome production given that chrome ore is seen as a by-product (or co-product) to PGM production, i.e. the reported costs do not necessarily reflect the true economic cost of chrome ore production. As such UG2 producers have relatively more capacity to absorb the negative impact of the export tax on their operations. Even if the tax is full absorbed, it is still likely to be above the incremental cash cost of UG2 producers.

¹⁶ This reflects a small downward adjustment on initial estimates as in reconciling various sources of information subsequently received, it was decided to take the most conservative approach available. It should however be noted that other approaches yield higher estimates of employment by non-integrated prime chrome miners.

¹⁷ Furthermore, to the extent that the tax is successful in shifting any additional demand to the domestic ferrochrome producers, these integrated chrome producers may well pick up some of that additional demand.

It is estimated that the tax will lead to UG2 producers experiencing a reduction in chrome specific revenues of between 4% and 13% (depending on the pricing scenario). This will lead to a reduction in the gross profit of these chrome operations by between 7% and 20%. Although these operations would remain viable it is understood that this reduction in profitability will likely dampen any expansionary investment.

It should also be noted that chrome revenue is accounting for a greater proportion of overall revenue for PGM producers. Therefore, this drop in revenue can also have a material impact on overall PGM revenue and profitability. This can be particularly significant in years when PGM operations are themselves marginal.

The current levels of employment – 1,280 jobs directly linked to chrome ore production (and 26,528 indirect jobs) – are likely to be largely unaffected by the export tax. However, it should be noted that in years in which PGM operations are marginal any additional pressure from the declining chrome ore revenue may increase the vulnerability of the broader PGM operations and their over 84,000 employees.

The impact on ferrochrome producers in South Africa

The ferrochrome producers have indicated that the proposed tax is needed, and even designed, to restore an equal footing with the Chinese ferrochrome sector in relation to its cost competitiveness. It is hoped that this will enable the South African ferrochrome sector to recoup the additional revenue required for operations to become sustainable. Presumably this would primarily occur through the ability of South African ferrochrome ore producers to achieve a higher international ferrochrome price (relative to chrome ore cost).¹⁸

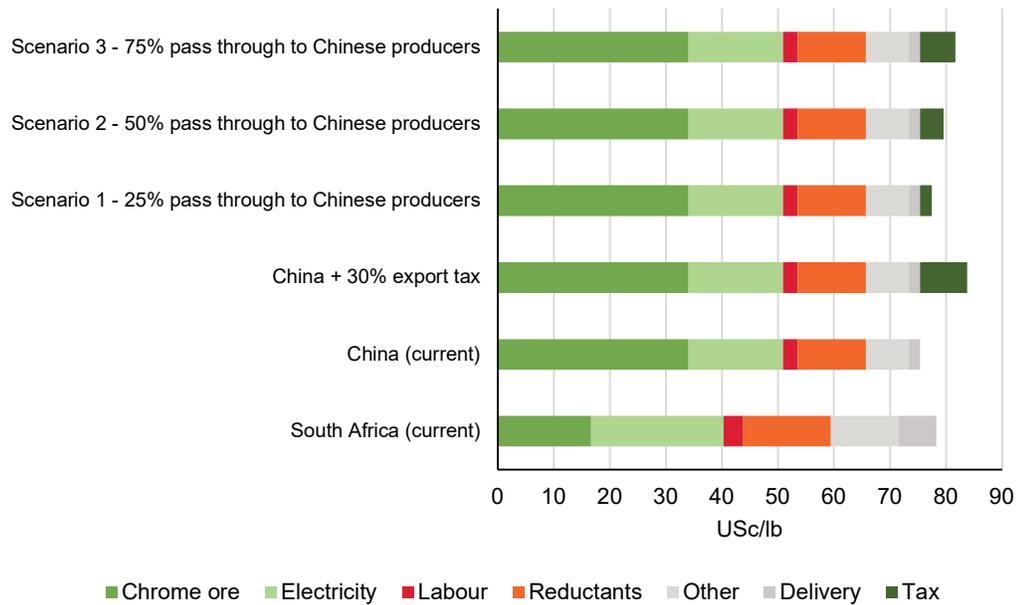
We have not been in a position to analyse in detail the financial sustainability of the ferrochrome sector in South Africa, nor how this position might be impacted by the tax. However, the above findings indicate that any benefit to the South African ferrochrome sector from the proposed tax is likely to be heavily diluted by a variety of important market factors. As such it is, at best, highly uncertain whether an export tax would ever provide the benefit that has been suggested.

Impact on relative ferrochrome competitiveness in the short run

The impact of the tax on the relative competitiveness of South African ferrochrome production will be diluted by the fact that chrome ore exporters would likely be forced to absorb a significant portion of the tax. The impact of the various pass-through scenarios on the competitiveness of Chinese ferrochrome is shown below. It is evident that only if a large portion of the tax is assumed to be passed through in higher export prices of chrome ore, will South African ferrochrome competitiveness be superior to that of Chinese producers (on average). Even then the change in relative competitiveness would be relatively muted (for example Chinese ferrochrome costs would only increase by some 5.6% if half the proposed tax were to be passed through).

¹⁸ Whilst some benefit may be achieved through increased output, this is likely to be a secondary impact given that the high proportion of variable costs associated with ferrochrome production. If ferrochrome production is currently unviable then this is also likely to be the case with somewhat higher utilisation of smelting capacity.

Figure 3: Scenario analysis – impact of the chrome ore tax of 30% on Chinese ferrochrome costs

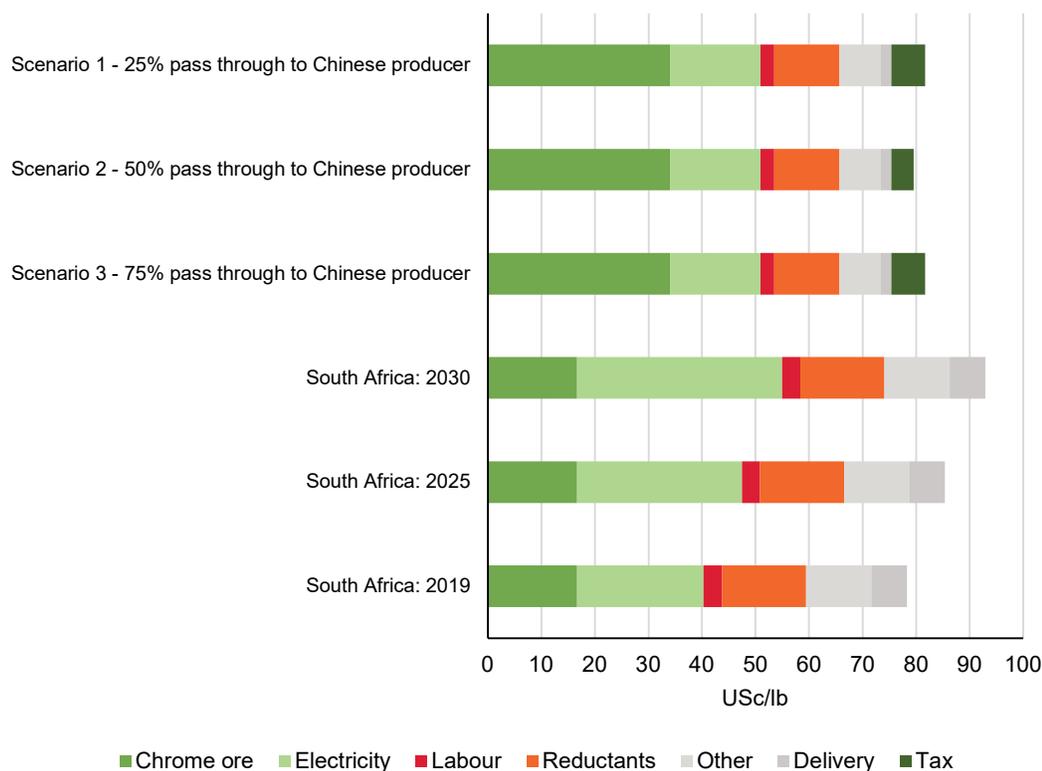


Source: CRU, Genesis analysis

Notes: (i) The tax estimate is based on the average relationship between recent FOB and delivered values for the cost structure of South African chrome ore producers. This relationship is then adjusted based on the particular scenario, i.e. pass through of 25%, 50% and 75% respectively.

The above analysis is highly conservative as it assumes no response by China which could undermine any such impact (either through reactionary policy measures or an absorption of the tax into the Chinese stainless steel value chain). Furthermore, the above analysis takes a short run view of the impact on relative competitiveness. Given South Africa’s trajectory of energy prices, any gains in relative competitiveness for South African ferrochrome producers would likely be eroded within a couple of years. The evaluation of relative ferrochrome costs over time is presented in the figure below.

Figure 4: Medium to long-term impact of energy prices on competitiveness of South African ferrochrome producers (assuming a 30% tax)



Source: CRU, Eskom, Statistics South Africa, Genesis analysis

Notes: (i) Increases in energy prices have been calculated based on the real increases in price of electricity for the industrial sector based on Eskom’s underlying tariff data for the period 2010/2011 – 2018/2019. The average annual price increases for these years have been applied to the estimated cost of electricity for South African ferrochrome producers in 2019.; (ii) All cost items, other than electricity are kept constant.

Implications for achieving a higher international ferrochrome price

It is understood that the major benefit to the South African ferrochrome sector from the proposed export tax is expected to come in the form of higher achievable ferrochrome prices. However, various “leakages” in the logic of tax suggest that the full anticipated benefit would be unlikely to accrue to ferrochrome producers in South Africa. These “leakages” include the following:

- The tax could only have a significant direct impact on achievable ferrochrome prices in countries where competition occurs with Chinese and (to a lesser degree) Indonesian producer. The reason for this is that these are the only major international ferrochrome producers who rely heavily on South African chrome ore. Since neither of these countries export significant volumes the impact of the tax is likely to be limited mainly to ferrochrome sales into these countries. This accounts for approximately **48%-60%** of South African ferrochrome sales (2019).¹⁹ The tax is unlikely to have a major direct effect on sales to the rest of the world.²⁰

¹⁹ The 48% is based on official SARS trade data – although the ferrochrome sector suggests that the figure is closer to 60%.

²⁰ Whilst it is plausible that an increase in Chinese ferrochrome cost may have some knock-on effects for world stainless steel (and ferrochrome) prices, these are likely to be highly diluted and indirect.

- Even into China, the full pass through of the chrome ore tax is unlikely due to the ability of other international chrome ore producers to displace significant volumes of South African exports and China's strong countervailing power. Scenarios used in this analysis consider pass-through of a quarter to three-quarters of the tax. This limits the ability to achieve a higher ferrochrome price in China.
- China also has a number of potential credible responses which would either completely prevent or at least mitigate the effect of the proposed tax. This creates significant uncertainty as to whether the tax would enable a material increase in the ferrochrome price that could be achieved by South African ferrochrome producers.
- In China, competition from other international ferrochrome producers that do not rely on South African chrome ore would remain intact and would restrict (at least to some degree) any ability to achieve a higher ferrochrome price in that country.

Even if the last two "leakage" factors were ignored this would still suggest that the maximum upper-bound impact that South African ferrochrome producers could expect in terms of achievable average price and revenue from the tax would be an uplift of some **1.3% to 5%**.²¹ This suggests that the extent of benefit that can be expected to accrue to South African ferrochrome producers in terms of a higher achievable ferrochrome price will be highly diluted.²²

Implications for employment

As any improvements in sustainability for the ferrochrome sector from the tax is likely to come in the form of increased achievable prices, no significant job increases are expected to result in the ferrochrome sector. Instead since the objective of the tax is to achieve a greater degree of sustainability for the sector any true benefits in terms of employment would more likely be in the form of jobs that are saved by the tax. This is still a legitimate benefit that the tax could deliver if such jobs would have otherwise been lost.

Currently the ferrochrome sector employs some **6,852** workers (20,642 indirect jobs).²³ Of these at least **1,608** are vulnerable and have been served with section 189 notices (as of March 2020). It is however acknowledged that further jobs may be at risk over the longer term given that the claims that the sector is unsustainable in its current form. Given data limitations we are not in a position to analyse in detail the financial sustainability of the South African ferrochrome sector, nor the implications this has for its current employees. However, two observations are important:

- First, the analysis of the impact of the proposed tax suggests that the benefits it will deliver to the ferrochrome sector are highly diluted. Therefore, it is very uncertain whether the proposed tax would successfully change the prospects of employees in the ferrochrome sector even in the short to medium term. In the longer term, any such benefits would be even more unlikely given the trajectory of local energy prices.
- Second, the jobs which are directly at risk in the ferrochrome sector under the section 189 notices are substantially less than the non-integrated primary chrome ore mining jobs that may be put at risk if the tax is implemented. In fact, the employment by the

²¹ This depends on the achievable price increase (as per the scenario analysis) applied to the proportion of exports to the Chinese and Indonesian markets.

²² It should be noted that while this discussion has been framed in terms of benefits accruing from a higher achievable ferrochrome price, the "leakage" factors would also apply to any benefit that may accrue through increased volumes.

²³ Total ferrochrome employment is based on presentations made by the ferrochrome sector to the chrome leadership forum in early 2020. Figures provided to Genesis as part of this research were even somewhat lower, but have not been relied on. It has subsequently been suggested by the ferrochrome sector that their employment figures may not necessarily have included all contract workers. This has not yet been substantiated.

non-integrated primary chrome ore producers, which would be vulnerable under the proposed tax (9,528 direct employees) is greater than the employment levels of the downstream ferrochrome sector (6,852 direct employees).²⁴

Weighing the cost and potential benefit

The above analysis suggests that many of the extreme assumptions which underpin the proposed logic of the export tax are either highly uncertain or simply do not hold. The main conclusions to be drawn from this report are:

- **First, the tax will likely impose a significant cost and risk on the producers of chrome ore – particularly the non-integrated prime chrome producers.** Non-integrated prime chrome producers are most at risk as they are almost entirely reliant on chrome ore exports and are already selling at prices very close to cash cost with little or no margin to absorb even part of the tax. These non-integrated prime ore producers account for 33% of chrome ore production in South Africa and employ some 9,528 workers (and 33,496 indirect jobs) that will be vulnerable should the tax be imposed. Even if only half of the non-integrated prime chrome ore production is not viable with a reduction in effective export price, this would still amount to some 4,764 direct jobs (and 16,748 indirect jobs) that would be put at risk. The significance of potential job losses associated with chrome ore production is amplified when consideration is given to the fact that the vast majority of these operations serve as vital economic hubs in non-metropole towns across Limpopo, Mpumalanga and the North West.
- **Second, the extent of benefits to the ferrochrome sector are highly uncertain.** The analysis in this report suggests there to be various “leakages” in the logic of the proposed tax which will heavily dilute any benefit to the South African ferrochrome sector. Given South Africa’s trajectory of energy prices, any gains in relative competitiveness for South African ferrochrome producers would in any event likely be eroded within a couple of years. Therefore, it is (at best) highly uncertain whether an export tax would ever provide the anticipated benefit to the ferrochrome sector in South Africa. Furthermore, under even the most extreme assumptions, the potential employment benefit for the ferrochrome sector (which employs a total of 6,852 workers of which at least 1,608 are directly vulnerable as of March 2020) would still seem to be less than the potential risk to employment levels of non-integrated prime chrome producers as a result of the tax.

In our view, the implementation of the proposed export tax would be a high-risk intervention that would impose significant cost on non-integrated chrome ore producers, while delivering (at best) uncertain benefits for the South African ferrochrome sector.²⁵

It should also be noted that the proposed export tax places the weight of risk and cost on non-integrated chrome ore producers (particularly the prime chrome ore producers), while all of the benefit that may be generated from the tax would accrue to the domestic ferrochrome producers (and the government fiscus).

²⁴ As indicated above, this relates only to employment in the downstream ferrochrome smelting sector. Although the integrated ferrochrome producers are also responsible for significant employment in upstream chrome ore production, it is assumed that the security of these jobs is not necessarily linked to the sustainability of the downstream ferrochrome smelters. As demonstrated by the non-integrated prime chrome ore producers, sustainability of standalone chrome ore production can be maintained through export activities (at least without the proposed tax).

²⁵ It is acknowledged that the tax would also bring additional benefit to the government fiscus. It is however understood that this is not the motivation of the current tax proposal.