CRU | STRATEGIES

INTRODUCTION

Using CRU's Iron Ore Cost Model 2010 (the "Cost Model"), CRU has benchmarked estimated aggregated costs for delivering iron ore fines and pellet feed to Heilongjiang Province, PRC. The benchmarking analysis below shows the estimated cost of iron ore from the Group's operations at Kimkan and Garinskoye on a delivered basis, compared with the estimated delivered cost of iron ore from new and existing mines in Brazil, Australia, West Africa and the PRC.

Rather than modelling a delivered cost to a specific steel mill, CRU has modelled delivered costs to a central location in the Chinese steelmaking region of Heilongjiang. Indicative rail freight journeys to a central location within Heilongjiang are from (a) the Khabarovsk Bridge border between Russia and the PRC in the case of iron ore from the Group's operations at Kimkan and Garinskoye; and (b) Dalian port in Liaoning Province, PRC, in the case of seaborne iron ore from Brazil, Australia and West Africa. The respective distances are ~400km from the Khabarovsk Bridge and ~750km from Dalian port, which are considered by CRU to be indicative of a central location in Heilongjiang.

Benchmarking 2018 delivered costs to Heilongjiang (c/dmtu)

	Estimated Site Costs to Delivery Point	Estimated Ocean Freight Cost	Estimated Delivered Liaoning Cost	Estimated PRC Rail Freight Cost	Estimated Delivered Heilongjiang Cost
Kimkan and Garinskoye Average (aggregate assumed production of 8.3 mtpa given by the Group)					
Concentrate	**83.72**			**31.60**	**115.32**
Brazil Existing Mines Average (operational as of 2009)					
Fines (DSO)	28.65	58.63	87.28	49.30	136.58
Pellet feed	28.32	51.94	80.26	49.30	129.56
Brazil New Mines Average (due to begin operation post-2009)					
Fines (DSO)	N/A	N/A	N/A	N/A	N/A
Pellet feed	62.30	47.86	110.16	49.30	159.46
Australia Existing Mines Average (operational as of 2009)					
Fines (DSO)	36.17	27.20	63.37	50.80	114.17
Pellet feed	N/A	N/A	N/A	N/A	N/A
Australia New Mines Average (due to begin operation post-2009)					
Fines (DSO)	41.39	33.31	74.70	50.80	125.50
Pellet feed	61.08	30.90	91.98	50.80	142.78
West Africa New Mines Average (due to begin operation post-2009)					
Fines (DSO)	47.23	66.75	113.98	49.30	163.28
Pellet feed	N/A	N/A	N/A	N/A	N/A
Estimated PRC National Weighted Average					
Fines	166.39	**Estimated PRC Weighted Average Delivered Cost**			168.64
Pellet feed	N/A	N/A	N/A	N/A	N/A

Notes: CRU's Iron Ore Cost Model 2010 has been used to estimate delivered iron ore costs to Heilongjiang Province, PRC in 2018. Costs listed above represent an aggregate of all existing and forecast mines and projects contained within the Cost Model. Ocean freight figures are produced using time charter rate forecasts and in this respect it should be noted that companies may have a contract of affreightment or own ships which could affect ocean freight costs. Costs are CRU estimates which are based on information provided by individual companies as well as CRU's in-house economic assumptions and thus may not reconcile exactly to numbers published by individual companies. Data: CRU

OVERVIEW OF THE BENCHMARKING ANALYSIS

CRU has conducted the benchmarking analysis by taking its estimated aggregated costs of iron ore concentrate from the Group's operations at Kimkan and Garinskoye on a delivered basis and comparing them with the estimated delivered cost of iron ore fines and pellet feed from new and existing mines in Brazil, Australia, West Africa and the PRC*. Australia, Brazil and the PRC are currently the largest three suppliers of iron ore to the PRC market while West Africa is forecast by CRU to significantly increase its iron ore exports to the PRC by 2018.

The benchmarking analysis is conducted by considering the various cost elements that contribute to the delivered cost of iron ore to Heilongjiang. Heilongjiang has been selected as the final destination point for this benchmarking analysis as it is the natural end market for the Group's products and, consequently, CRU considers that it is the logical delivery point to consider for this comparison. However, it is not intended to imply that Heilongjiang is the only end market for the Group's products and this benchmarking analysis may not apply to alternative end markets (depending on the applicable delivered cost of iron ore to such alternative end markets).

The benchmarking analysis reports the following key estimated costs that are derived from the Cost Model and are explained further below:

- Estimated Site Costs to Delivery Point;
- Estimated Ocean Freight Cost;
- Estimated Delivered Liaoning;
- Estimated PRC Rail Freight Costs; and
- Estimated Delivered Heilongjiang Cost.

Estimated Site Costs to Delivery Point

This cost is derived from the Cost Model and represents the estimated cost of mining and shipping iron ore to a particular delivery point from where the material would be sold on a Free On Board basis at a named port ("FOB") or Delivered At Frontier basis at a named place ("DAF"). For example, in Australia or Brazil, this would include transport to a port for shipping to the seaborne market. For Kimkan and Garinskoye, this includes rail freight within Russia to the PRC border. The rail freight costs for Kimkan and Garinskoye are derived from the

* The processing stages for concentrate and pellet feed are identical and thus have been costed on a similar basis

Cost Model and are based upon average Russian bulk rail costs, which CRU considers to be representative of bulk rail costs in the Russian Far East (where Kimkan and Garinskoye are located). The estimated Site Costs to Delivery Point for Kimkan and Garinskoye of 83.72 c/dmtu in 2018 are calculated as a weighted average by production for the Group's operations at each of Kimkan and Garinskoye at an aggregate assumed production level of 8.3Mtpa as provided to CRU by the Group.

The Estimated PRC National Weighted Average for Site Costs to Delivery Point for fines of 166.39 c/dmtu in 2018 includes shipping costs to the consumer within the definition of site costs in the majority of cases.

CRU has aggregated all Brazilian, Australian, PRC and West African mines contained in the Cost Model that produce, or are forecast to produce, fines (DSO) and pellet feed in 2018. The estimated Site Costs to Delivery Point for Brazil and Australia are reported as separate line items in the benchmarking analysis depending on whether the mines are currently operating or not operating as of 2009 or expected to commence operations at a later date, (provided that such mines are forecast in the CRU Iron Ore Cost Model 2010 to be in production in 2018). Site costs per country (in the case of Brazil, Australia and the PRC) or region (in the case of West Africa) are supplied on an average basis.

Estimated Ocean Freight Cost

This cost takes into account, where applicable, the cost of the ocean freight to the receiving port. This cost is not applicable to iron delivered by rail from the Group's operations at Kimkan and Garinskoye to Heilongjiang nor to the Estimated PRC National Weighted Average. In the benchmarking exercise, CRU has assumed that iron ore destined for Heilongjiang from Brazil, Australia, and West Africa will be shipped to Dalian port in Liaoning Province, PRC. The Cost Model takes the following information into account in calculating the Estimated Ocean Freight Cost:

- Start port loading rate — tonnes per hour
- Destination port unloading rate — tonnes per hour
- Distance by sea — nautical miles
- Any relevant canal transit
- Size of ship — tonnage of cargo carried

The above factors are then used to model voyage days, port days and fuel consumption. The cost of the days is determined by reference to an estimated Time Charter Rate (whereby a ship is hired for a certain voyage and cargo). Estimates of Time Charter Rates are supplied by Drewry Shipping Consultants. CRU understands that the majority of iron ore is shipped on a time charter basis or with reference to time charter rates. However, some iron ore companies operate their own ships which they use for the transport of some of their ore. This

means that their ocean freight costs are not completely tied to Time Charter Rates for all cargoes. As a result, the ocean freight cost for these companies in-house shipping options may, depending on market conditions and the prevailing Time Charter Rate, be higher or lower than the Time Charter Rate available to other Companies. However, CRU considers that the Time Charter Rates used in the Cost Model are representative of Estimated Ocean Freight Costs for new and existing mines in Brazil, Australia, West Africa. The potential sensitivity of this analysis to the use of in-house shipping options by miners is discussed in the subsequent sensitivities section.

Estimated Delivered Liaoning Cost

This is the aggregate of Site Costs to Delivery Point and Estimated Ocean Freight Cost for seaborne iron ore from Brazil, Australia and West Africa. It represents the estimated aggregate cost of delivering iron ore to Dalian port in Liaoning from those new and existing iron ore mines in Brazil, Australia and West Africa.

Estimated PRC Rail Freight Cost

CRU has modelled the rail freight costs for iron ore freight to a delivery point in Heilongjiang from Dalian port in Liaoning (in the case of seaborne iron ore from Brazil, Australia and West Africa), and from the Khabarovsk Bridge border between Russia and the PRC (in the case of the Group's operations at Kimkan and Garinskoye). Chinese rail freight benchmarks are based upon internal CRU databases collected from participants in the iron ore market and inputted to the Cost Model. The distance modelled is ~750km from Liaoning and ~400km from the Russia/PRC border. These distances were selected to represent a central location in the steelmaking province of Heilongjiang**.** Heilongjiang has been selected for the benchmarking exercise as this has been determined as the natural end market for Kimkan and Garinskoye ore (having regard to the geographical proximity of Kimkan and Garinskoye to this market).

Estimated Delivered Heilongjiang Cost

The Delivered Heilongjiang cost consists of the aggregate of:

- Estimated Site Costs to Delivery Point and Estimated PRC Rail Freight Costs on a c/dmtu basis in the case of iron ore delivered to Heilongjiang from the Group's operations at Kimkan and Garinskoye; and

- Estimated Site Costs to Delivery Point, Estimated Ocean Freight Cost and Estimated PRC Rail Freight Costs on a c/dmtu basis in the case of iron ore delivered to Heilongjiang by sea from Brazil, Australia and West Africa.

- The Estimated PRC Weighted Average Delivered Cost is the estimated average delivered cost for producers in the PRC in 2018 and is not an estimated delivered cost to Heilongjiang specifically. The structure of the iron ore mining industry in the

PRC, in terms of operation size and cost is broadly similar across the country with a similar mix of large, medium and small operations on a regional scale (i.e. north-east China), relative to the size of the steel industry in that region. Hence, CRU considers that the Estimated PRC Weighted Average Delivered Cost will be representative of the delivered cost of iron ore to steel mills in Heilongjiang from PRC producers in 2018. As noted above, the Estimated PRC National Weighted Average for Site Costs to Delivery Point for fines of 166.39 c/dmtu in 2018 includes shipping costs to the consumer within the definition of site costs in the majority of cases. The Estimated PRC Weighted Average Delivered Cost is marginally higher to take into account inland freight using the domestic road and rail network. This is almost always a small distance, as steel mills are built in areas with a ready iron ore supply.

As such, the benchmarking analysis shows the estimated cost of iron ore from the Group's operations at Kimkan and Garinskoye on a delivered basis compared with (a) the estimated delivered cost of iron ore from new and existing mines in Brazil, Australia, West Africa; (b) the average delivered costs for iron ore in the PRC. It should be noted that the benchmarking analysis presents estimated costs in 2018 and that) the Cost Model does not consider whether (and therefore provides no assurance that) it will be economically feasible to produce iron ore at the Estimated Site Costs to Delivery Point presented in the benchmarking analysis.

CRU FORECASTING METHODOLOGY

Overview of the Cost Model

The estimates included in the benchmarking analysis were prepared using the Cost Model. The Cost Model covers over 125 existing mines and future iron ore projects. The Cost Model includes a number of future projects, so that an analysis of historical and future costs can be undertaken, on a year-by-year basis, from 2005 until 2018.

In determining whether to include an existing or future project in the Cost Model, CRU takes into account a number of factors, including if the mine is operating and, if not, what stage of financing the project is at. Rather than taking published figures from existing mines, the Cost Model uses a "bottom-up approach" to calculate mining and delivery costs, starting with the production amounts, mining processes, distances to market, transport logistics and equipment at each particular operation. This allows CRU to present a consistent model that can be used to compare different mines.

CRU estimates the costs of mining and shipping in the future on a consistent basis by using its internal forecasts of movements in key cost items. Furthermore, CRU also inflates the model variables to determine costs on a nominal basis. This is explained in further detail below. Inflating the modelling variables also allows CRU to include a project in the Cost Model that is not yet operating (such as Kimkan) by applying inflated costs to the project. For the purposes of the benchmarking exercise, the Cost Model has not been manipulated in any way to alter it from the version available for public sale other than to add operational information

received from the Group in relation to the Kimkan and Garinskoye projects. This information includes details on the mining schedule, freight options, stripping and overburden ratio, royalties and chemical analysis of the ore. Information from Kimkan and Garinskoye was obtained from the Group and used as a starting point for the benchmarking analysis. CRU then applied it professional judgment to that data, including the application of macroeconomic assumptions (e.g. fuel costs, labour costs etc) that are used in the Cost Model for the other mines to arrive at its cost estimates and to ensure a "like-for-like" comparison with other mines.

Selection of 2018 for the benchmarking analysis

CRU has used 2018 for the purposes of benchmarking the Kimkan and Garinskoye projects against currently existing mines and new mines which are forecast to be operating in 2018. In conducting the benchmarking analysis, CRU has sought to include a wide universe of mines whilst ensuring that the cost estimates for the mines are comparable. For the purposes of the benchmarking exercise 2018 was selected as the year of comparison because:

- Iron ore mines typically take several years to reach full production. In order to make the benchmarking analysis meaningful, it is important that the mines included in the analysis be at a stable rate of production as generally the earlier development phase of increasing production is often associated with higher costs.

- CRU has visibility on new iron ore supply coming on stream by tracking announced investments and industry news. However, after a five year period, CRU's ability to track new supply diminishes rapidly as many new projects will not have been announced or received financing if they are not expected to commence operation within the next five years.

Selecting 2018 as the year of the comparison thus ensures that those new projects that are identified by CRU as expected to commence operation within the next five years will be at a stable rate of production in order to allow a more meaningful cost comparison.

Inflating Costs to 2018

This section outlines the methodology used by CRU to inflate current costs to 2018. Costs are required to be inflated from current costs to 2018 because the benchmarking analysis shows the estimated cost of iron ore from the Group's operations at Kimkan and Garinskoye on a nominal delivered basis compared with the estimated delivered cost of iron ore from new and existing mines in Brazil, Australia, West Africa and the PRC in 2018.

In order to inflate the cost of mining operations and freight to 2018, CRU generates independent estimates of the costs incurred by each mine and then either inflates model costs or uses CRU developed forecasts as appropriate for each mine and cost under consideration. The inflators and forecasts are applied on either a global, industry or country basis as appropriate. The data and forecasts are predominantly from CRU's wide-range of

metals and raw materials publications and are updated with CRU's views and using a consistent set of economic data. The more important cost forecasts and inflators are outlined below.

Ocean Freight

The estimates of ocean freight to the receiving port contain benchmark variables for ocean-going bulk freight. Historical time charter data are sourced from Drewry Shipping Consultants Ltd. The bulk freight rate data refer to daily time charter rates of Handy, Panamax and Cape sized vessels in US$/day.

For the benchmarking exercise, Capesize ships have been used as these ships transport the majority of iron ore from Brazil, Australia and West Africa to the PRC. A key variable in the forecasts is the cost of bunker fuel for ships — CRU's forecast is based upon International Energy Agency data for 180CST bunker fuel at Rotterdam. The forecast is derived in relation to crude oil prices as forecast by CRU.

Exchange rates

Short-term exchange rate forecasts come from CRU's monthly macroeconomic forecasts which are produced using Oxford Economics' global macroeconomic model. On a country level, CRU forecasts a variety of country specific representative costs. Where possible, local costs are modelled in the local currency and then converted into USD (including Australia, Brazil, China and Russia). For the purposes of the West African region, however, costs are modelled directly in USD.

Labour costs

CRU provides a labour costs measure, including wages and benefits, for each country in the Cost Model. This is used as an average hourly cost for all workers at a given production site. The US Bureau of Labour Statistics has an ongoing program, which provides historical manufacturing and metal industry wages for the following: USA, Canada, Mexico, Argentina, Brazil, Japan, Korea, Australia, UK and all major European countries. For Russia, CRU has produced estimates of labour compensation. For the West African region, a wage is modelled based upon that region's real GDP per capita in US dollars.

Explosives

Country specific estimates of explosives costs are derived by combining country and region specific heavy fuel oil prices with the appropriate regional ammonia price to give an estimate of explosives materials costs. The materials costs are then scaled up to give an estimate of delivered costs of explosives.

Inflators

CRU uses the national consumer price index (CPI) for each country as its benchmark measure of national inflation. CPI projections are produced by the CRU economics team

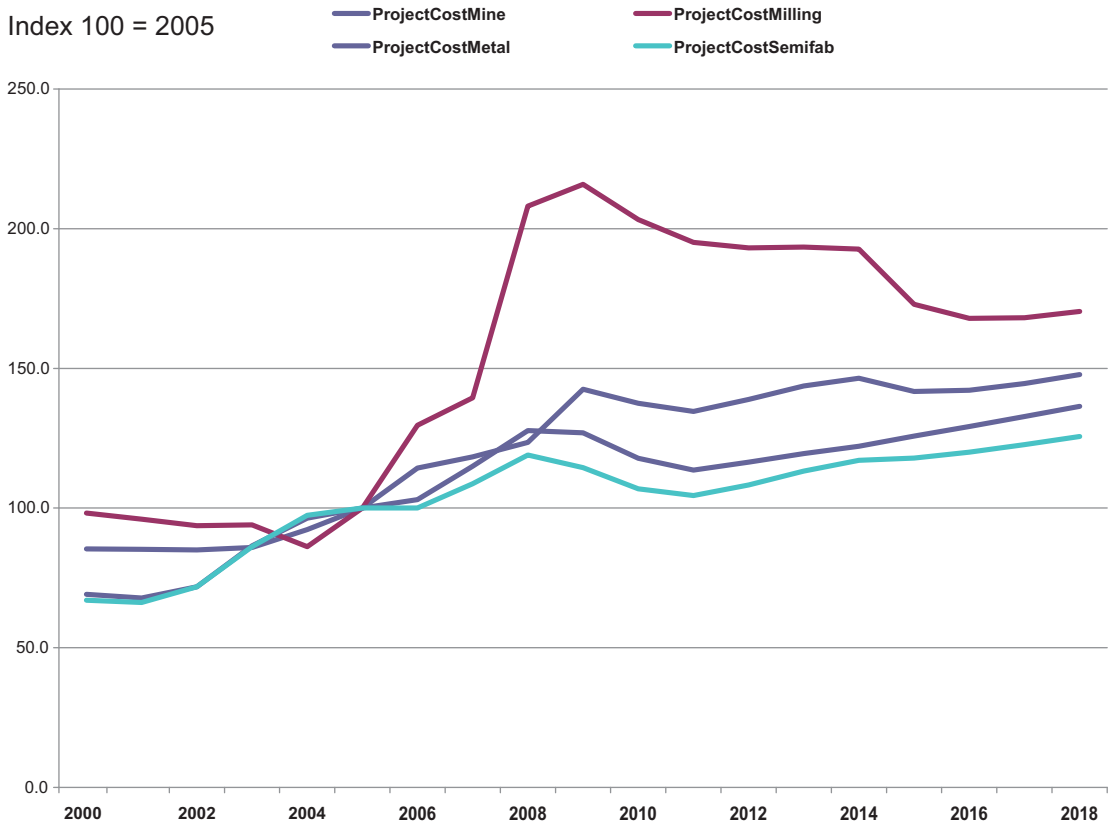
using data from governmental and international organisations and this data is fed directly or indirectly into the forecasts of the following country or region variables that are included in the Cost Model:

- National inflation index, USD basis
- Relative Cost Index (RCI): This is an index created based on movements in the cost of mining related consumables e.g. tyres, grinding media and explosives amongst other things
- Nominal exchange rate
- Hourly labour costs in local currency
- Diesel taxes and refining/distribution costs net of subsidies in local currency
- Power non-fuel costs in local currency
- Supply costs (via RCI) plus any location specific adjustments to reflect cost adjustments due to local logistical difficulties.

These factors are used to forecast cost escalation in the future, using known variables from either the current or previous year. The cost base escalation of a mining operation is more complex than a similar CPI or national inflation index; hence CRU uses a range of variables to ensure that any forecast produced is as accurate as possible. As with any complex economic modelling, no assurance can be given that any forecast will be accurate.

Project capital costs

CRU has constructed several project capital cost escalators for specific types of capital equipment. When calculating the capital costs for developing a new project in the future, these cost escalators are used to inflate the relevant costs. Project capital costs for mining, milling, metallurgical and semi-fabrication are calculated. These are then placed in an index by CRU and inflated on an annual basis. CRU uses these indices in the Cost Model to inflate specific relevant costs. The indices used to inflate costs are shown in the chart below and reflect the main inflators used in the Cost Model out to 2018.



SENSITIVITIES

In order to inflate costs for individual mines, CRU utilises a number of different inflators and forecasts, as shown above. The inflators and forecasts that are used for each mine in the Cost Model, and their relative importance, will vary from mine to mine. Moreover, the results will be based upon location and cost structure. As with any forecast, the benchmarking analysis is sensitive to changes in the underlying assumptions. Whilst the size of the model and the number of mines considered makes it impractical to quantify potential sensitivities, there are several factors to which the analysis is sensitive that should be considered. The main sensitivity factors are as follows.

Site Costs to Delivery Point — sensitivity to cost of inputs

The outcome of the benchmarking analysis will be impacted by the cost of key inputs in the mining process (as these will impact on the site costs including in Site Costs to Delivery Point). Key inputs that may impact the analysis include:

- Labour cost per hour
- Price of grinding media
- Price of electricity
- Fuel costs (e.g. diesel, heavy fuel oil, gasoline etc)
- Price of Explosives
- Cost of Equipment (i.e. trucks, drills etc.) — as inflated by the Project Cost indices above

In particular it is important to note that the relative positioning of PRC domestic producers in the benchmarking analysis is sensitive to the cost of inputs. Currently, PRC producers operate at a substantially higher cost than their overseas competitors due to inefficient mining methods and low grade deposits. If the efficiency of their operations were to be improved (resulting in a change in the site cost per dmtu of PRC producers), the relative position of PRC producers in the benchmarking analysis may change significantly as the Estimated PRC Weighted Average Delivered Cost would, all other things being equal be likely to fall.

Estimated Ocean Freight Cost — sensitivity to transportation costs

The Cost Model is sensitive to changes in assumptions regarding transportation costs. As highlighted previously, estimated ocean freight costs will be substantially affected by the forecast Time Charter Rate used in the Cost Model. Furthermore, the comparison of estimated ocean freight costs will be impacted by the number of miners using in-house freight options. Whilst at present it is only the largest seaborne miners who take advantage of in-house freight (e.g. Vale, Rio Tinto and BHP Billiton), should these miners significantly increase the volume of freight that they transport in-house, or should other miners procure

in-house freight solutions, their freight costs may vary from that implied by a Time Charter Rate, potentially resulting in lower ocean freight costs that would result in a reduction in the delivered cost of seaborne iron ore to Heilongjiang for those miners that significantly increase the volume of freight that they transport in-house procure in-house freight solutions other things equal.

Estimated PRC Rail Freight Cost — sensitivity to transportation costs

The Cost Model is also sensitive to PRC rail freight costs. Should there be substantial changes in the future to the available capacity on the railways from Dalian port in Liaoning to Heilongjiang, it is possible that rail freight costs will decline for seaborne iron ore producers. This has the potential to alter the results of the benchmarking analysis significantly, as actual rail freight costs could be lower than the Estimated PRC Rail Freight Costs for seaborne iron ore from Brazil, Australia and West Africa. Similarly, future improvement in the railways from Russia into Heilongjiang and, any consequent reduction in the cost of rail freight from the border into the PRC, has the potential to significantly alter the outcome of the benchmarking analysis (as actual rail freight costs could be lower than the Estimated PRC Rail Freight Cost for iron ore from the Group's operations at Kimkan and Garinskoye).