IRC

A promising Russia iron ore miner

IRC (1029 HK) is an iron ore producer listed on Hong Kong Stock Exchange (HKEx). Its key assets are located in Far East of Russia at regions namely Amur and EAO, which are relatively close to the North-eastern Chinese border. Currently developing iron mine assets are namely Kuranakh, K&S and Garinskoye. They are all open-pit mines with access to local railway networks. Three iron ore mines are at three difference stages. Kuranakh is the only producing project by the end of 2011, which is a relative small mining project producing 820k tons of iron ore and 83k tons of ilmenite in FY12/11A. The value of the company will be revealed as the K&S project nears production. It is currently at advance construction stage and targeted to complete by the mid of 2014.

Investment summary

- Strategic Resources, solid in demand – Iron Ore, key resources for nation development.
- Strategic Location, producing mine close proximity to the world largest buyer
- IRC – An indication of Sino-Russia relationship.
- Completed first drawdown of ICBC Loan Facility, K&S project is one step toward to completion
- Attractive valuation HK$1.55, good pick for mid to long-term investment
- Free Option - potential extension projects: Garinskoye Flanks, Kostenginskoye and Bolshoi Seym.

Strategic Resources, solid in demand. IRC's key product is iron ore concentrate, which is the key component in steelmaking, and essential for country growth and economy development. Pricing of iron ore is a matrix of supply and economy growth. We believe the short run spot price can be volatile due to uncertainty of future economy and impact on reduction of fixed asset investment in China. Despite all of these, we believe the volume demand and short in supply will provide a floor price for iron ore products in the foreseeable future.

Fully funded – K&S project. On 19th Dec 2011, IRC announced first drawdown of ICBC loan of US$7m for K&S. It was a milestone for IRC. K&S denotes most IRC's future upside potential, and hence, and hence any changes of the development process might draw a lot of attention from investors. Management is confident that production can begin around mid of 2014F.

Top pick for mid-long term investment. We see a potential in IRC to become a larger iron ore miner in the world. IRC has sound amount of resources and reserves, at total around 1,500m tons, despite the current production volume is relatively small and not competitive.

Initiates BUY at Target Price HK$1.55. We initiate a target price of HK$1.55, representing 82% upside, based on DCF model at discount rate 22%. The accounting result can be volatile in next two fiscal years. We believe market will realize the true potential of the company as the executive/ business risk reduced.

Free Option, potential extension projects Garinskoye Flanks, Kostenginskoye and Bolshoi Seym. These projects located at a close proximity to current developing projects Kuranakh, K&S and Garinskoye. It is said that they share similar size and grade with the existing projects. They are currently relatively Greenfield and yet to take account into our financial model valuation.

Ticker	**1029 HK**
Rating	**BUY**
Price (HK$)	0.85
Target Price (HK$)	1.55 (82%)
12m Price Range (HK$)	0.83-1.96
Market cap. (US$m)	366.4
Daily t/o (US$m)	0.4
Free float (%)	26.2

Financial summary

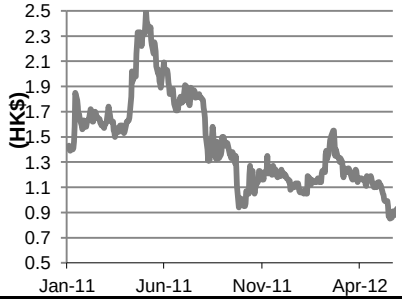
Year to Dec	11A	12F	13F	14F
Turnover (US$m)	122.2	150.4	170.4	300.0
Net Profit (US$m)	1.6	(8.7)	(21.8)	7.4
EPS (US$)	0.0	(0.2)	(0.5)	0.5
P/E (x)	476.0	-	-	90.3
P/B (x) pre-CB	0.92	0.83	0.85	0.85
EV/EBITDA (x)	(4.1)	32.2	37.9	14.4
Yield (%)	-	-	-	-
ROE (%)	-	-	-	1
ROCE (%)	-	-	-	4
N. Gear. (%)	Cash	5	26	37

Source: SBI E2-Capital

	12F	13F	14F
Consensus EPS (HK$)	-	-	-
Previous earnings (HK$m)	-	-	-
Previous EPS (HK$)	-	-	-

Price performance

Year to Dec	1m	3m	12m
Relative to HSI (%)	(10.8)	(19.2)	(46.9)
Actual price changes (%)	(21.6)	(28.1)	(57.1)



Source: Bloomberg

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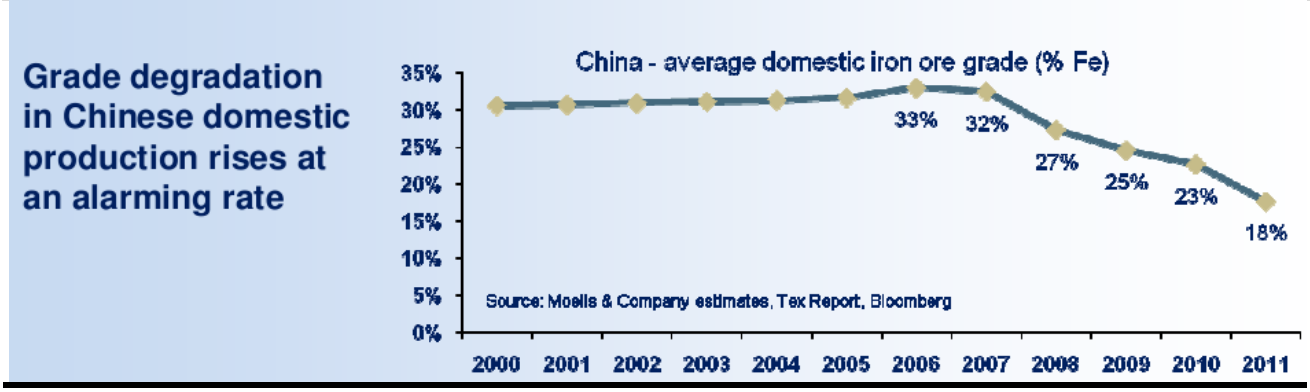
Content:

Investment Thesis:

Strategic Resources – iron ore under grade degradation in China. IRC, a Russian based iron ore mining company, has total iron ore resources and reserves of over 1,500m tons. Iron ore is a strategic resource, which is essential for every nation development. Over 90% uses of iron ore are in steel making process, of which largest portion of them have been used in construction of building and infrastructure. Being the largest steel maker and one of the fastest growing economies in the world, China consumes most world production of iron ore. However, domestic supply cannot keep up with demand, as a result of lower in Fe grade and highly disparate to norm coupled with no major new discovery of large scale mines in recent decade. Statistically, China's domestic iron ore grade has fallen to 18% in 2011 from 43% in 2004. The issues in domestic supply coupled with fast growth in demand led to rapidly widen supply shortfall, and consequently increase dependence on seaborne market. On the other hand, the seaborne market is monopolist by few larger players; they are Vale, Rio Tinto Ltd and BHP Billiton, representing over 60% seaborne market supply. Therefore, buyers have limited bargaining power on pricing. Furthermore, major exporters, such as Australia, often use Iron ore as political tools or bargaining chip to negotiate with Chinese government to capture higher economic benefit. Other emerging market suppliers also started to restrict their iron ore export as a result of raising demand in domestic markets. For example, India and Indonesia government is increasing its export tariffs on iron ore and mulling to takes more restrictions to ban iron ore exports. That's why, IRC assets are strategically important to China.

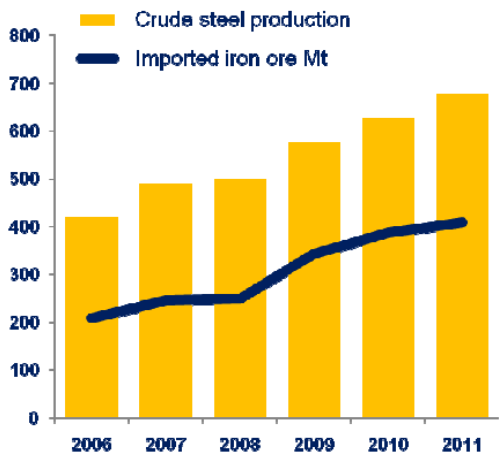
Table 1. China average domestic iron ore grade (%Fe)

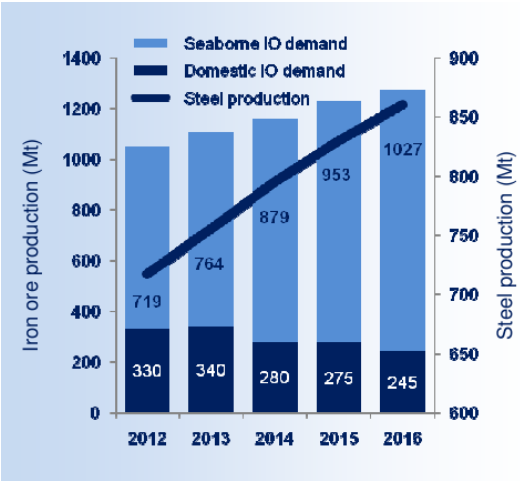


Source: FMG

Strategic Location, close proximity to the world largest buyer. IRC's assets are located at close distance to China in the Far East of Russia at regions namely Amur and EAO. All mine assets are situated relatively close to the North-eastern Chinese border with access to national railway network. According to the company managements, the shipment time from Kuranakh to Chinese border normally takes around 10 days and 5 days for Kuranakh project and K&S project respectively, whereas Australia-, Brazil- to China it might take 12-40 days just for the shipping time excluding the land/rail transport in China and domestic area. Yet, rail cargo transportation is more stable and predictable than sea freight shipment, which steelmaker values. Steelmakers bear high cost to shut down and re-open the steels processing plants due to the nature of the business. Since, they often store certain level of iron ore inventory in warehouse to prevent shortage/problem in supply; large steel mills tend to maintain/optimize the current production to reduce the marginal cost during crisis. The China second largest private steel mill, Jianlong, has signed a 15 years off-take agreement in 2005 to secure 100% titanomagneitite concentrate produced from Kuranakh project. We believe this is an indicator of hot demand on IRC's iron products. Table 2 below illustrated the positive relationship between import volumes and Crude steel production, which China's steel production up by 60% over 5 years whereas the import on Iron ore increased by 110%.

Table 2. (Left) Chinese Crude steel production and Imported Iron chart (Right) Demand foreast for iron from 2012 to 2015





Source: FMG

IRC – A Bridge between two nations – Sino-Russia relationship. Since the end of the Cold War, two countries began to develop a new type of state-to-state relationship. The relationship has been upgraded three times from 'good-neighborly and mutually beneficial' in 1992 to 'strategic partnership of coordination' in April 1996. The state-to-state relationship is not only based on the commonality of ideology; it is also based on national interests. We believe the relationship is solid and long lasting. In the past years, this relationship has been growing in depth, encompassing all areas, such as political, economic, cultural, scientific, diplomatic, etc. The engineering contract between IRC and China National Electrical Engineering Company (CNEEC), the cheap financing from Industrial and Commercial Bank of China (ICBC) and the Rubicon Bright project are the good indicators of cooperation between two nations. In our view, smooth development and good prospects of Sino-Russian relation will promote the political guarantee for the IRC.

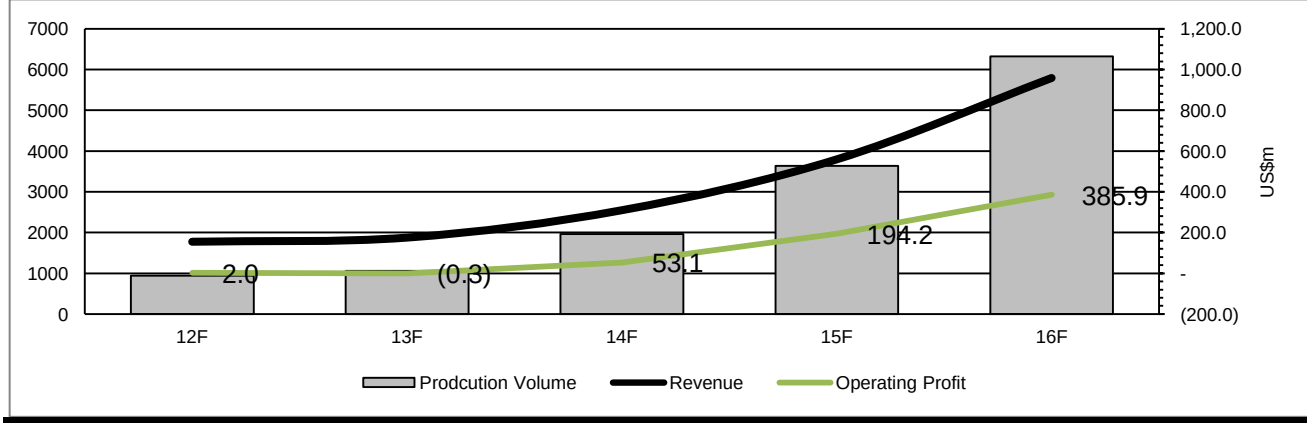
Table 3. IRC and Two governments

Source: IRC. Chinese Vice-President Xi Jinping (习近平) watches IRC Chief Executive Yury Makarov sign the Engineering, Procurement Construction memorandum for K&S, March 2010 (left); Prime Minister of the Russian Federation, Vladimir V. Putin; Amur Governor Oleg N. Kozhemyako and IRC Chief Executive, Yury Makarov - inspecting a model of IRC sites, Khabarovsk, December 2010.(Right)

First drawdown of ICBC Loan Facility, K&S project is one step toward to completion. K&S project is definitely the key milestone for IRC development. K&S project is a large scale iron ore mining project. It has a comparative Fe grade, resources and reserve and is situated at close proximity to Chinese borders. K&S project will produce 3.2m tons of iron ore concentrate per annum at full capacity with an estimated mining life of 50 years. It will potentially contribute between US$448m and US$500m in turnover and between US$175m and US$240m in net profit. The K&S project is also significant better than the current producing Kuranakh project in various aspects. The first drawdown of US$340m ICBC loan facility on 14 Dec 2011 ensures the future funding of K&S project development. The whole construction should be completed within 30 months. According to the managements, they are confident to commence production in the mid of 2014.

Why IRC. We see IRC as a good buy for mid to long term investment. We expect IRC's production volume will rapidly increase in next five years and will gain economic of scales. The uncertainty of execution might imply opportunity for investors to buy at a good price. Mining companies or commodity prices often tie with economy cycle, and ca7n be over bearish by the market. We believe demand for iron ore is inelastic while there is no major evidence support substantial increase in supply in 2012F and 2013F. Therefore, the future price might be up and down, but will eventually restore to equilibrium level to reflect the demand and supply. Given, the current IRC's production level, company profitability is sensitive to changes in seaborne price till 2014F. We believe investors are now investing in the future K&S project, and risk reduces as more towards commencement production in K&S project. The table 4 illustrates IRC next five years delivery schedule and key financial projections.

Table 4. Delivery schedule and key financial projections



Source: SBI E2

Attractive valuation HK$1.55, good pick for mid to long-term investment. We applied DCF model based on 9 years free cash flow to equity to FY12/21F at discount rate 22% and a terminal value calculated base on the 9th year net profit. The model suggests an attractive valuation at target price HK$1.55, representing 82% upside from current price HK$0.85. In the near terms, IRC's earning is relative sensitive to change in iron ore selling price, small changes in price might induce negative result. We believe company true potential reveals as step toward commencement of K&S sales. We recommend IRC as a good pick for mid to long term investment with potential to earn more than double at current price in 2 years.

Table 5. Sensitivity analysis of target price to market risk premium and beta

Target Price		Market Risk Premium				
		11	11.5	12	12.5	13
Beta	1.65	HK$1.99	HK$1.85	HK$1.73	HK$1.61	HK$1.51
	1.7	HK$1.90	HK$1.76	HK$1.64	HK$1.53	HK$1.43
	1.74	HK$1.83	HK$1.70	HK$1.55	HK$1.47	HK$1.37
	1.8	HK$1.73	HK$1.60	HK$1.49	HK$1.38	HK$1.29
	1.85	HK$1.65	HK$1.53	HK$1.42	HK$1.32	HK$1.23

Source: SBI E2

Background Information:

What is IRC selling? IRC's major product is iron ore concentrate and also produces ilmenite as by-product of Kuranakh project.

Iron ore, is a ferrous metal, commonly uses in building construction, transportation, infrastructure in simple form or alloys. We often use to the term ferrous (**Fe**) to the percentage of iron in ore. **Magnetite ore** is the mineral resources found in K&S and Garinskoye project, which also commonly found in Asia Pacifica regions. Magnetite ore generally has Fe content less than 30%. The standard Fe of iron for industrial use is at least 60%. Therefore, magnetite requires upgrading (refinery process) to decrease the grain size of the material. Iron ore might also merge with other elements naturally. **Iron ore concentrate** refers to material that has undergone beneficiation at the mine. For instance, IRC planned to upgrade iron ore Fe content to 65% iron ore concentrate at the K&S project. It can also refer to as either pellet feed or fines.

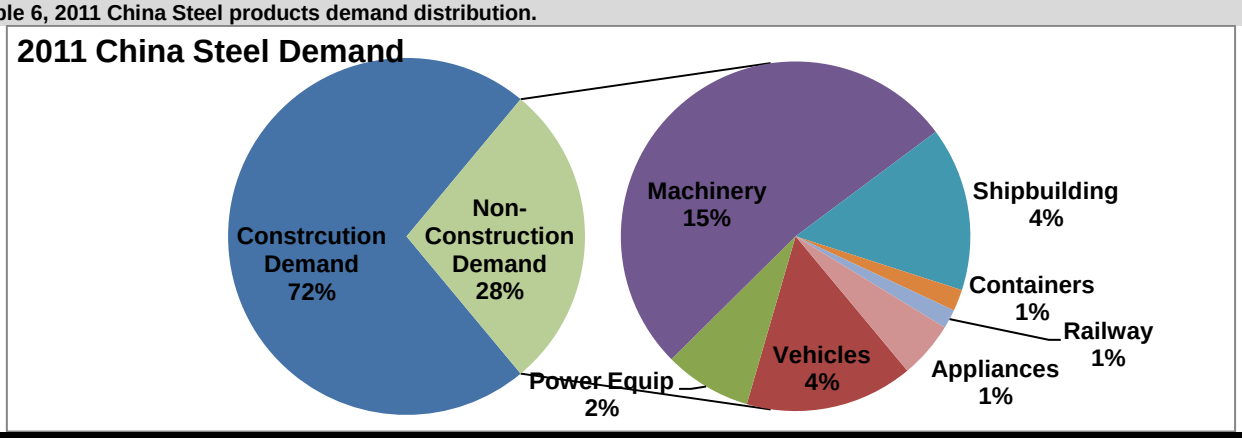
Titanomagnetite is the type of ferrous contains high level of titanium and vanadium. For example, Kuranakh project and large portion of China VTM (0893 HK) iron minerals are titanomagnetite. Titanomagetite is not suitable for conventional steel making; hence extra extraction process is often required. The extraction of process increases the cost of iron production by roughly 50%, but vanadium is economic recoverable. Vanadium can be processed into vanadium pentoxide for chemical application or into ferrovanadium used to produce high strength steel, which is economic favourable. **Vanadium pentoxide** often is used to strengthen the steel. The strength of steel containing 0.1% vanadium can be improved by 10% to 20% as compared with steel without vanadium.

Ilmenite is an iron titanium oxide in crystalline form and one of five titanium mineral concentrate product. Ilmenite is the primary ore of titanium. It is also used in the manufacture of titanium dioxide for paint pigments. Titanium is used to manufacture a wide variety of metal parts where light weight and very high strength are needed. Ilmenite concentrate is a by-product/mineral in Kuranakh mine, which is similar to vanadium, is economic favourable. According IRC's announcement, average selling price of ilmenite jumped 34% QoQ to US$259/t for 4Q FY12/11A and further increase in price is expected. Ilmenite is used to manufacture a wide variety of metal parts where light weight and very high strength are needed. Examples include: aircraft parts, artificial joints for humans and sporting equipment such as bicycle frames.

Glory in iron ore price came to an end? What the demand and supply tell us?

Iron ore demand. Over 90% of iron ore products are used in steel industry. Normally, iron ore making process is the conversion of primary iron ore to a product that is around 96% Fe. Iron ore normally process with other raw materials being coke and limestone in a blast furnace (BF) and natural gas in a direct reduction furnace (DRI Furnace). Most commonly, the end user of iron ore is the construction industry, of which often uses in railway rails, pilling and reinforcing bars for construction. Flat products are most widely used steel products that many other downstream products are made from it. The consumption of steel is vital for iron miner while demand of steel can be seen as an integral part of a nation's economic development. Hence, Iron ore demand is highly related to country development. Yet, China is the largest steel producing countries, produced 681m tons or 45% of the world's production of crude steel in 2011. The table 6 illustrated the use of steel consumption allocation in 2011. 72% of steel usage went to construction while the remaining 28% allocated to machinery, shipbuilding, power equipment, vehicles, appliances, railway and containers.

Table 6, 2011 China Steel products demand distribution.



Source: Bloomberg

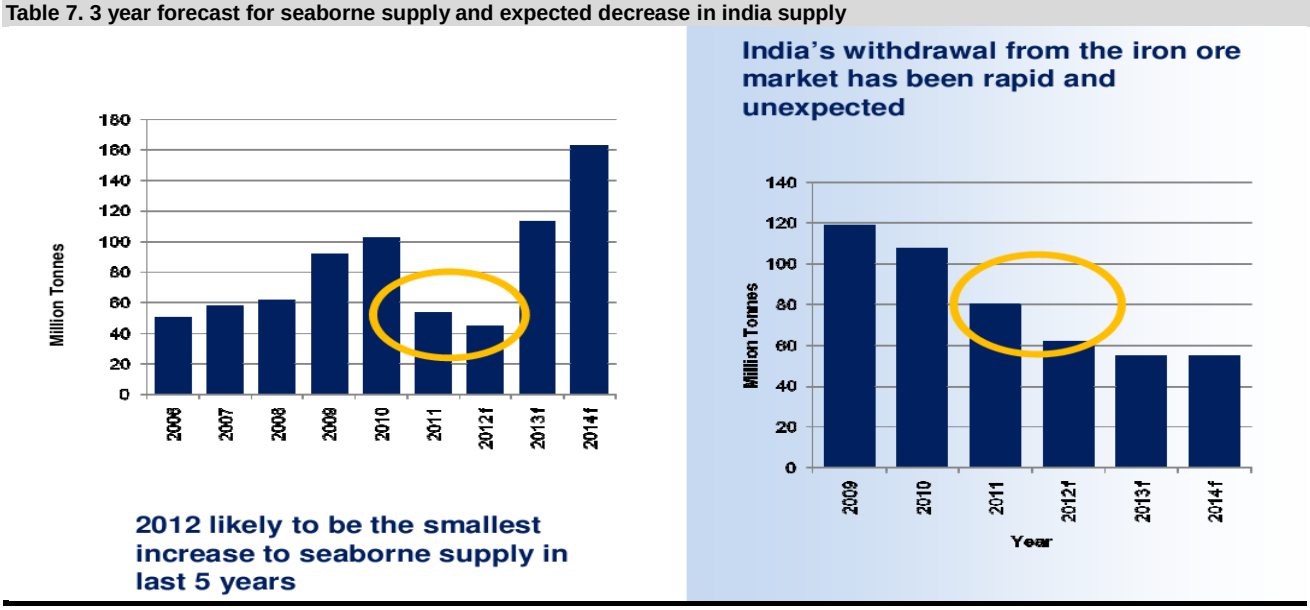
For the period from 2000 to 2011, global demand for iron ore products increased at a CAGR rate of 4.1% to reach roughly 1,800m tons in 2011, of which China, the biggest consumers and importers of iron ore, accounted for roughly 87% of total world iron ore consumption. As a result of rapid increase in domestic demand for iron ore in China, the iron ore products imported from seaborne market increased at a faster rate than steel production. The seaborne iron ore products market grows at CAGR of 8% from 2005 to 2011, of which around China consumed about 60% of the global seaborne market of iron ore product in 2011. Currently, the worry of China Government pays more emphasis on internal consumption than fixed asset investment lead to the concern of lower-than-expected growth rate on iron ore demand.

In addition, many believe that the Chinese steels market is currently overcapacity and undertaking an industrial consolidation. Many of them made substantial losses in 2011 as a result of raising raw material costs and other macro factors, while most steel producers continued lost making for 1Q FY12/12F. However, we believe the demand for iron ore is still strong, but not growth as fast as previous, It is simply due to the business natural of steels industry. Steel makers often bear very high operation expenditure to shut down and re-open steels making facilities, which also take a long time to re-open steels processing facilities. Therefore, they cannot quickly response to changes in market condition. Instead, large players will delay expansion plan but optimize production volume to capture the economics of scales and lower marginal cost. In the short term, steels makers will try to maintain and optimize their current production volume to reduce the marginal cost of production and postpone the expansion plans. Despite the negative market sentiment, it is believed that the overall steel production volume in China will increase over 4% YoY in 2012. World crude steel production is expected to experience further growth of an average of 4.5% per year in the period to 2015, and the expected growth will be mainly driven by China.

Seaborne Iron ore supply. The global iron ore supply dominates by top three iron ore producers, namely, Vale, Rio Tinto and BHP Billiton, their iron ore production accounted for 36% of the world's iron ore production and about 55% of the world's exports in 2010. Yet, the top ten major exporters of iron ore accounted for about 69% of world exports in 2010. Therefore, the industry is highly concentrated. These companies can easily manipulate the price by changing production volumes and changing the expansion plans since the demand is relatively inelastic. For example, Vale has delayed the start of four projects in 2011 in response to lower than expected future growth in demand for iron ore. On the other hand, the top three iron ore exporting regions are Australia, Brazil and India. In 2011, Australia exported about 462m tons of iron ore, increased by 6.8% YoY, while Brail exported about 325m tons of iron ore in 2011, increased by 4.3% YoY. They represent roughly 46% and 33% of the world export respectively.

In current years, the advance in community prices has increased these major exporters incentive to capture more upside via different policies, such as, higher export tariffs. In Nov 2011, Australian government proposed to impose a 30% minerals resources rent tax on iron ore and coal. It is highly likely to enact on July 2012. On the other hand, rapid growth in other emerging countries apart from China has increased the domestic demand on iron ore, and consequently reducing net export. The third largest iron ore exporter, India, has gradually decreased iron ore export, and actually imposed government policy to restrict and reduce exporting in order to protect supply for raising domestic consumption. These factors provide a good support for the iron ore spot price, despite the pessimistic sentiment on Chinese steels industry outlook. In the longer term, several large scale iron ore projects will enter into production within 5 years to fill the dropping growth on iron ore export from emerging countries as well as increase in overall demand. In the short run, the imposes of minerals resource rent tax in Australia; lower export from India and Indonesia coupled with inelastic in demand for Chinese steel mills will support good price floor for iron ore.

Table 7. 3 year forecast for seaborne supply and expected decrease in india supply



Source: FMG

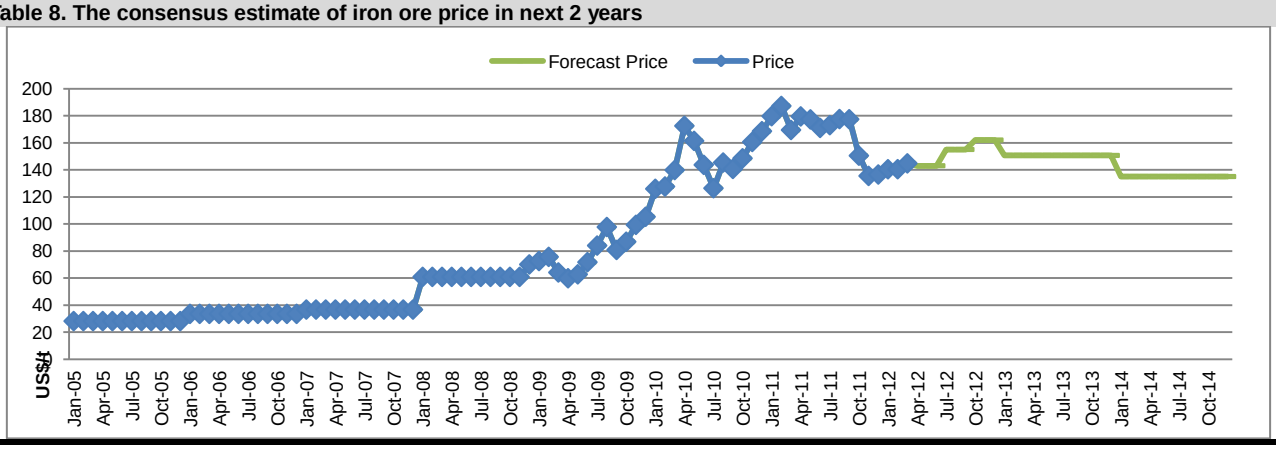
Iron ore supply in China. Iron ore production in China is highly disparate to norm. Large scale open-pit iron ore mines are often vertically integrated by state-owned steel makers. Privately-held mine assets are often underground mining, low grade and small scale. In addition, Iron ore resources are mostly Magnetite or Titanomagnetite, which implies low grade and requires additional refinery process for conventional steel making. China's domestic iron ore grade has fallen to 18% in 2011 from 43% in 2004. As a result, the lower in grades and small scale production restricts the rapid expansion in domestic supply as well as higher extraction costs. The rapid development in economy also widens the shortfall in between domestic demand and supply and hence increases reliance on supply in seaborne market. In term of China iron ore reserves, China ranked fifth largest iron ore reserves country, accounted for 13% or 23,000m tons of global iron ore reserves in 2010. Most iron ore reserves were situated in the north-eastern and northern region of China representing about 61% of China's total iron ore reserves. In 2011, the total Chinese iron ore production was 1,326.9m tons, of which 41.9%, 10.8%, 9.5%, 7% and 5% were produced by Hebei, Liaoning, Sichuan, Inner Mongolia and Shanxi respectively.

Iron Ore Pricing.

Traditionally, the pricing mechanism adopted for iron ore was the benchmark system. Benchmark pricing system set a one-year price for the raw material based on negotiation between steelmakers and iron ore suppliers (usually the agreement between Rio Tinto and Japanese steelmakers). When the price was set, everyone else would generally follow that benchmark price for the rest of the year, as shown on the price chart below, the iron ore price prior 2009 was flat for a year. In 2010, the benchmark pricing system was discontinuous; instead, the price is set against a daily index price for iron ore sinter fines delivered China on either a spot, monthly or quarterly basis.

The international spot price is highly correlated to the Chinese economy. Since 2004, the Chinese steel industry production increase beyond expectation, causing rapid increase in price, and reached over US$140/t prior to credit crisis. The credit crunch in late 2008 adversely affects global economy, especially for steelmakers, and iron ore price fell sharply. The decrease in drop was subsequently caused by increase in fixed asset investment by Chinese government as well as rapid urbanization in China. During the period 2H 2010 and 1H 2011, the Australian flood crisis led to an unexpected shortfall in supply further boost the spot price to reach a peak as high as US$191/t. The current sovereign debt crisis and recovery of Australian iron ore export hit the iron ore spot price hit and fell to the lowest at US$116.9/t in 2011. Recently, the price has stabilized between US$145/t~US$150/t. According to consensus, the average forecast for 2Q, 3Q,4Q 2012 are US$143/t, US$162/t and US$150.6/t respectively, as shown in table 6 below.

Table 8. The consensus estimate of iron ore price in next 2 years



Source: Bloomberg

Our estimate is in-line with the consensus that near term iron ore price will have a strong resistance at spot price US$140/t, while we estimate the worst case for iron ore price is US$100/t, which would have induced most Chinese miners force to shut down production. In our financial model, we modeled a constant price for titanomagnetite concentrate at US$130/t and magnetite iron ore concentrate at 10% higher than titanomagnetite concentrate selling price.

Business analysis:

IRC's mineral resources and reserves overview. IRC's iron ore assets are located in the Far East of Russia in Amur and EAO regions. Three iron ore mines are currently developing, namely Kuranakh, K&S and Garinskoye. Three prospective mining projects sustain the longer term development; they are namely Garinskoye Flanks, Kostenginskoye and Bolshoi Seym. Table 9 gave an overview IRC's assets:

Table 9. IRC's Key assets

Source: IRC, SBI E2 Capital

Total amount of reserves and resources:

At 31 December 2011, IRC has total measured, indicated and inferred of iron ore 1,514m tons, of which 1,051m tons are measured and indicated while inferred are 463m tons. The overall proven and probable iron ore reserves is 801m tons. Table 10 provided a resources and reserve summary in accordance with the Guidelines of JORC (2004) and NI41-101(Jan 2012)

Table 10. IRC resources and reserve summary

Project	Deposit	Category	Resources (Mt)	Fe % Grade
Kuranakh	Kuranakh	Indicated	14	30.5%
		Inferred	6	31.7%
	Saikta	Indicated	22	31.4%
K&S	Kimkan-Center	Indicated	98	33.2%
		Inferred	27	32.7%
	Kimkan-West	Indicated	53	33.3%
		Inferred	54	33.5%
	Sutara	Measured	196	32.5%
		Indicated	231	32.2%
		Inferred	66	31.0%
	Maisky	Indicated	15	32.0%
		Inferred	21	31.9%
	Sovkhoniy	Inferred	4	30.2%
Garinskoye	Garinskoye	Indicated	220	32.0%
		Inferred	156	29.3%
Bolshoi Seym	Bolshoi Seym	Indicated	202	17.4%
		Inferred	130	16.5%
	Total Resources	Total Measured and Indicated	1,051	
		Total Inferred	463	
		Total Measured, Indicated and Inferred	1,514	

Source: IRC

Overall development plan, sustainable assets portfolio.

One issue often address when evaluating mining companies is whether they are able to acquire and maintain the current assets portfolio in the future. It is known that mineral properties have limited mine life and they are scarce. Therefore, mining company often maintain a basket of greenfield projects to sustain future development. However, it is hard to find a good quality mine at nearby location to replace the existing projects. IRC planned well ahead that the portfolio is sufficient for over 50 years of development. Firstly, IRC is developing three iron ore projects at three different stages, namely Kuranakh, K&S and Garinskoye. Kuranakh project engaged in production stage in 2010 and fully ramped up in 2011. K&S is currently at an advance construction stage, it is targeted to commence production in the mid of 2014. At last, Garinskoye is currently at exploration stage, and planned to enter to production stage in 2015F. The estimated mine life for these projects are 13, 50 and 40 years respectively. Furthermore, three green file projects, namely Bolshoi Steym, Kostenginskoye and Garinskoye Flanks, will be extension of the current asset portfolio. IRC will plan to utilize the exiting process facilities for these mining projects. Based on the preliminary review, the mineral deposits of these extension projects shares similar properties as the exiting mine.

Three potential ore exploration projects

Beside Kuranakh, K&S and Garinskoye, three current mining projects with feasible plan, IRC has the right to explore and develop these iron ore deposits at region next to the three existing projects. It is still early stage to evaluate the economic value of these projects. Base on the preliminary review from POG, these iron ore assets are comparable to existing projects. The major advantage of these potential projects is the location. They are located at a close proximity to existing or planned processing plants (as illustrated in table 8), i.e. IRC can utilize the exited facilities to significantly reduce in future capital expenditure. These projects also ensure the sustainability of the company mid-long term development. The extension projects have yet to include in valuation, and can consider as a free option for investors.

Three potential mining projects are namely, Bolshoi Seym , Kostenginskoye and Garinskoye Flanks:

- **Bolshoi Steym.** IRC has currently acquired remaining 51% interest from LLC management for a total consideration of US$11.5m. The Bolshoi Seym deposit is located in the Tyndinskiy region, 0.4km away from Kuranakh project process plant. Therefore, the Bolshoi Steym project is a view of an extension to the Kuranakh project. The mineral license covers an area of 26km^2 and extends to a depth of 1,000m. The Bolshoi Steym project contains roughly 331.5m tons of reserves and resources, and potential annual production capacity of 200k tons.
- **Kostenginskoye.** Kostenginskoye is located at 24km south of the K&S project. IRC obtained the exploration right in May 2007, and has been conducting exploration project in the area. Kostenginskoye is considered as an extension to the K&S project, 100% owned by IRC.
- **Garinskoye Flanks.** Garinskoye Flanks project is located central Amur Region in Russia, nearby Garinskoye project. The Garinskoye Flanks project is considered as an extension to the main Garinskoye deposit. Pursuant the mining license, it is provision that mining will begin by March 2019.

Table 11 summarized the core information of these ore deposit.

Table 11. Early stage iron ore assets

Mining project	Ownership (%)	Location
Bolshoi Steym	100%	24km South of Kimkan Deposit
Kostenginskoye	100%	40km south east of the Kuranakh Deposit
Garinskoye Flanks.	100%	Central Amur Region, Russia, Next to Garinskoye project

Source: IRC

Simple mining and processing technique.

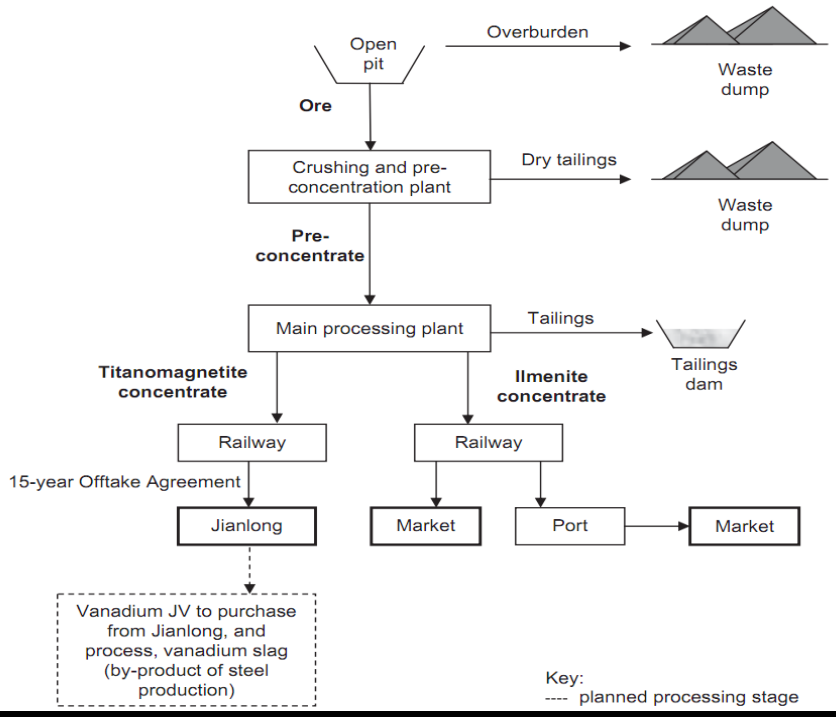
The working steps for iron ore mining is relatively simple compared to other minerals miners. The production of iron ore concentrate often does not require chemical component during the extraction, it is a process to separate ore into mineral and waste. We can loosely describe iron ore concentrate production into three steps, 1) mining at the site, 2) initial crushing and screening to produce pre-concentration, 3) further beneficiation at the processing plants which might also involve magnetic separation to produce iron ore concentrate.

All IRC mining projects are open-pit; therefore the mining step is simple and relatively safe. The major problem for iron ore project is transportation due to the its nature – heavy, include the transportation the ore from mine sites to primary crushing and pre-concentration plant, the transportation from pre-concentrate plant to beneficiation/main processing plant and finally the transportation from the warehouse to end customers/ contracted connection points. Tables 12-15 illustrated the planned production flow and development plan for Kuranakh, K&S and Garinskoye project.

Production flow for Kuranakh.

The mining operation simply mines the ore reserve from earth, and then shift via trucks to crashing and screening plant to produce pre-concentrate via flows of processing steps. The crushing and pre-concentration plant has a designate production capacity to process 2.6m tons of ore and produce 1.8m tons of pre-concentrate per annum. This process will increase Fe grade to an average grade of 39.4% from 31.6% while increase TiO^2 grade to an average of 13.4% from 10% at a recover of 97.5%. Subsequently, pre-concentrate moves by trucks at a distance of 40km to processing plant to extract iron ore concentrate and ilmenite concentrate. The minerals concentrate is finally transported by railway to Chinese border or to sea ports.

Table 12. Production flow - Kuranakh.



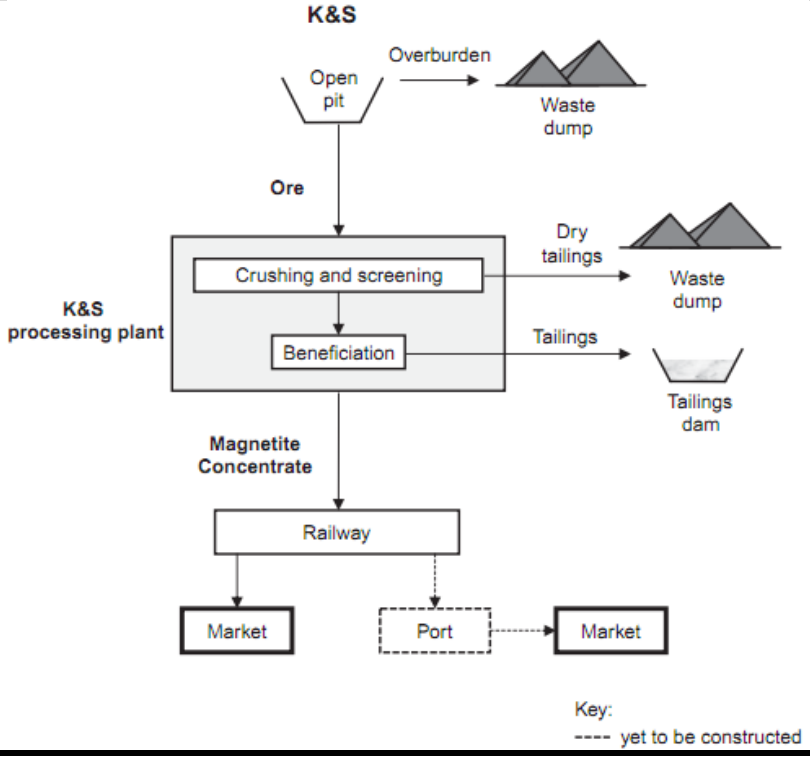
Source: IRC

Production flow and development plan for K&S

The overall development in the K&S project can be divided into three stages. The first stage will be very similar to the Kuranakh project. The Second stage will expand of existing production capacities in K&S processing plant in order to cope with additional iron ore concentrate input from Garinskoye project. The third stage will construct a facility to further upgrade part of the concentrate production.

The stage 1 of construction plan is to construct a mining facilities and processing plant that production iron ore concentrate from ore output from K&S project. The production flow is simply mining the ore body from earth, then shift toward crushing and screening machines to increase its iron content and produce iron ore pre-concentrate. Subsequently, the pre-concentrate goes to main processing plant to produce high grade of iron ore products. The processing facilities are located at Kimkan (K) leading to small transportation cost from the deposit to the plant, while transportation from Sutara (S) to the plant incurs a slightly higher cost of roughly US$0.4/t. The designated mining capacity of the processing plant is to process 10m tons of iron ore and produces 3.22m tons of 65% iron concentrates per annum. The estimated capital expenditure for this stage is around US$400m, while 90%, i.e. US$340m of funding is secured from a low interest bearing loan by ICBC.

Table 13. K&S project (stage 1)

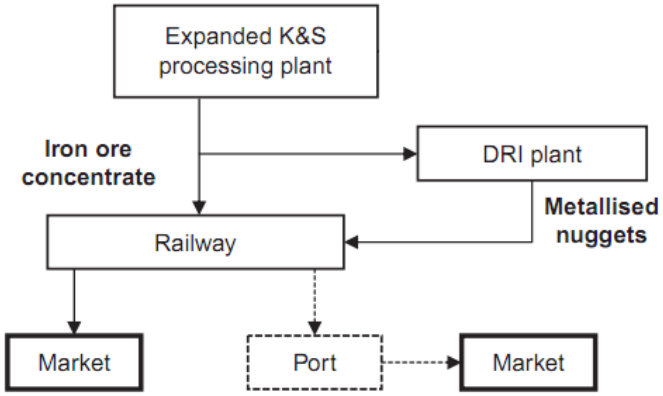


Source: IRC

Stage 2 of development programme is to increase the production capacity in the Kimkan (K) processing plant in order to cope with future Garinskoye mining output and to avoid construction of large scale processing plant at Garinskoye. Further on Garinskoye development plan is discuss in next section.

Stage 3 of the development programme is to construct a processing plant to further upgrade part of the concentrate production. The processing plant is to manufacture metalized products, such as metalized nuggets, standard pellets, direct reduced iron or pig iron. The upgrading process will create high value-in-use products leading to higher project margin, higher selling price and further utilized company resources. This stage of process does not committed in any blinding agreement, and hence whether IRC implements the plant will depend on the future economic condition.

Table 14. K&S project (stage 3)

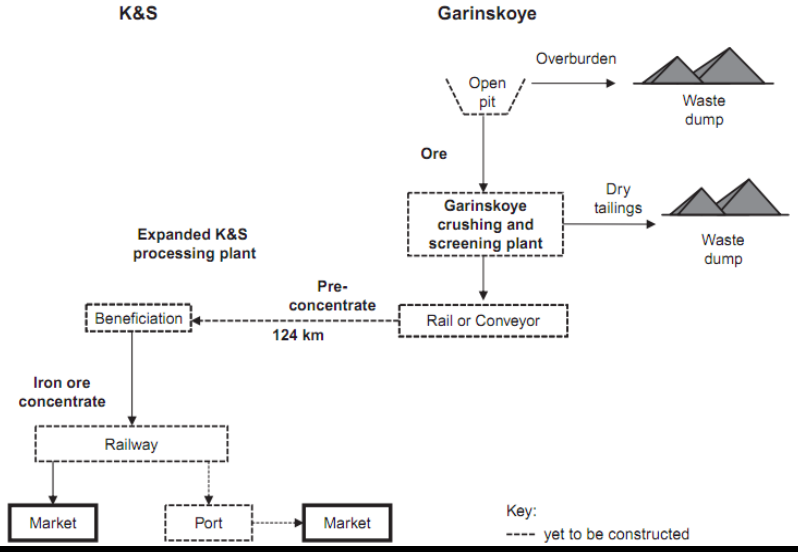


Source: IRC

Production flow for Garinskoye.

The construction plan and production flow for Garinskoye is different from the previous project. It is similarly planned to construct a pre-concentrate crushing and screening plant at nearby area. The iron ore pre-concentrate will be subsequently transport to the expended K&S processing plant (stage 2) for the further upgrade process to produce iron ore concentrate. The distance between the Garinskoye and expanded K&S processing plant will be 124km. It is proposed using rail or conveyor to shift the pre-concentrate. However, the final development is yet to confirm due to the technique issues involved, such as costs concerns, availability of private rail, and financing availability.

Table 15. Garinskoye processing flow



Source: IRC

Key projects:

1) Kuranakh project.

Kuranakh is located in the Tynda district of the Amur region, in the east of the Russian Federation. The deposits are located at a distance of 45km south-east the route of the Baika Amur Magistral (BAM) railway line. Kuranakh project consists of two iron ore bodies namely Saikta and Kuranakah, along with a processing plant facility at targeted run-rate production of 2.6mtpa. Kuranakh project commenced preliminary mining at Saikta in 2008. The crushing and screening plant commenced production of pre-concentrate in 2008, but terminated operation in 2009 as a result of downturn in the market for iron ore pre-concentrate, was re-commissioned in May 2010. The processing plant facility for iron ore concentrate was built by the end of 2009, and commenced producing concentrate in 1H 2010. Kuranakh project ramped up to its full capacity in Jan 2011, targeted to produce 900k tons of iron ore concentrate, 160k tons of ilmenite concentrate per annum (previous target 290k tons of ilmenite).

Reserve and Resources

The Kuranakh and Saikta deposits are both titanomagnetie, meaning that the iron ore is magnetite and contains levels of titanium and ilmenite. The Kuranakh project license area is 85km^2. The Kuranakh and Saikta are both open-pit deposits with total mineral resources of 43.06m tons. The average grade of Fe% in ore is roughly 31%. Base on the targeted mining production, the estimated mine life is 14 years. Kuranakh project is a small to medium size iron ore project. The table 16 illustrated the details of Kuranakh and Saikta ore features:

Table 16. Information of Kuranakh and Saikta ore deposit features

Resource Classification		Ore Resources (Mt)	Fe% (total)	Fe% (Magn)	TiO2%
Saikta	Indicated	23.32	31.57	20.98	9.65
	Inferred	0.091	25.45	15.47	10.43
Kuranakh	Indicated	14.06	30.5	19.04	9.4
	Inferred	5.59	31.65	19.65	9.97
Total		43.061	31.22		

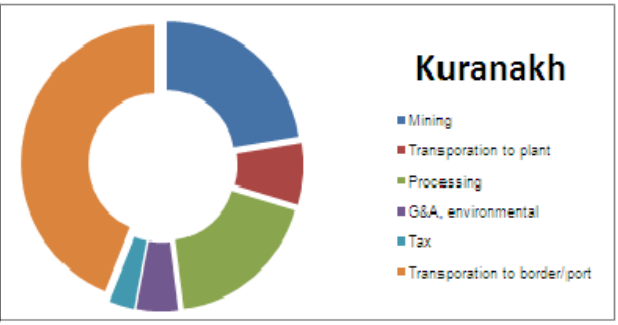
Source: IRC

Cost and Return - Kuranakh project.

Kuranakh project, has total iron ore resource of 43m tons, is a small to medium size project. According to the management, the estimated average lifetime cash cost exclude railway transportation per ton is roughly US$55/t. The actual cash cost for 1H FY12/11A was approximately US$66.2/t, which 20% higher than the target level. In addition, the average railway tariff cost from Kuranakh to Chinese border/sea ports via railway was US$43.8/t. Table 17 showed the optimal cash cost breakdown for the Kuranakh project:

Table 17. Cash cost Breakdown - Kuranakh

Csah cost Breakdown - Kuranakh	US$/t	%
Mining	22	22%
Transporation to plant	7	7%
Processing	18	18%
G&A, environmental	5	5%
Tax	3	3%
Transporation to border/port	43	44%
Total	98	100%



Source: SBI E2 Capital

The railway tariff represents a petty large portion of total cash cost, which is around 44% in FY12/11A. The national railway network is monopolist by Russian Railways, and IRC has no control on railway costs. The domestic cargo tariffs are denominated in Russian Publics and subject to information adjustments in line with change of consumer price index. As a result, we expect the railway price will gradually increase. In addition, different cargos have a specific tariff classes in accordance to a price list – 'Freight Tariff 10-01'. For example, ore minerals and coal are class 1 tariff, while Ferrous metals, such as ilmenite, are class 3 tariff. Loosely speaking, ilmenite is charged roughly between 2.5x and 3x higher than iron ore. Given the current average railway tariff for iron ore was US$40/t, if ilmenite was selling at the same distance, the transportation cost for ilmenite would have been between US$100/t and US$125/t. IRC targeted to double the production volume of ilmenite from 63.5k tons to 125k tons in 2012F and further ramp up to 160k tons from 2013F and onwards.

Despite Kuranakh project is small scales mining project, it will continue to dominate the turnover and profitability of IRC till 2014. We can simply examine the project by changing the average selling price and production volume using the cost guidance provided by IRC, as show in the table 18 & 19 below:

Table 18. Cash profit matrix when produced 900k of iron ore and 125k of ilmenite

Average Selling Price \Avg Total Cash Cost (US$/t)	99	104	109
Iron Ore:110, Ilmenite:220	24,145,000	19,420,000	14,695,000
Iron Ore:110, Ilmenite:270	30,395,000	25,670,000	20,945,000
Iron Ore:110, Ilmenite:320	36,645,000	31,920,000	27,195,000
Iron Ore:120, Ilmenite:220	32,345,000	27,620,000	22,895,000
Iron Ore:120, Ilmenite:270	38,595,000	33,870,000	29,145,000
Iron Ore:120, Ilmenite:320	44,845,000	40,120,000	35,395,000
Iron Ore:130, Ilmenite:220	40,545,000	35,820,000	31,095,000
Iron Ore:130, Ilmenite:270	46,795,000	42,070,000	37,345,000
Iron Ore:130, Ilmenite:320	53,045,000	48,320,000	43,595,000
Iron Ore:140, Ilmenite:220	48,745,000	44,020,000	39,295,000
Iron Ore:140, Ilmenite:270	54,995,000	50,270,000	45,545,000
Iron Ore:140, Ilmenite:320	61,245,000	56,520,000	51,795,000
Iron Ore:150, Ilmenite:220	56,945,000	52,220,000	47,495,000
Iron Ore:150, Ilmenite:270	63,195,000	58,470,000	53,745,000
Iron Ore:150, Ilmenite:320	69,445,000	64,720,000	59,995,000
Iron Ore:160, Ilmenite:220	65,145,000	60,420,000	55,695,000
Iron Ore:160, Ilmenite:270	71,395,000	66,670,000	61,945,000
Iron Ore:160, Ilmenite:320	77,645,000	72,920,000	68,195,000

Source: SBI E2 (Excluding central expenses and other non-cost expenses)

Table 19. Cash profit matrix when produced 900k of iron ore and 160k of ilmenite

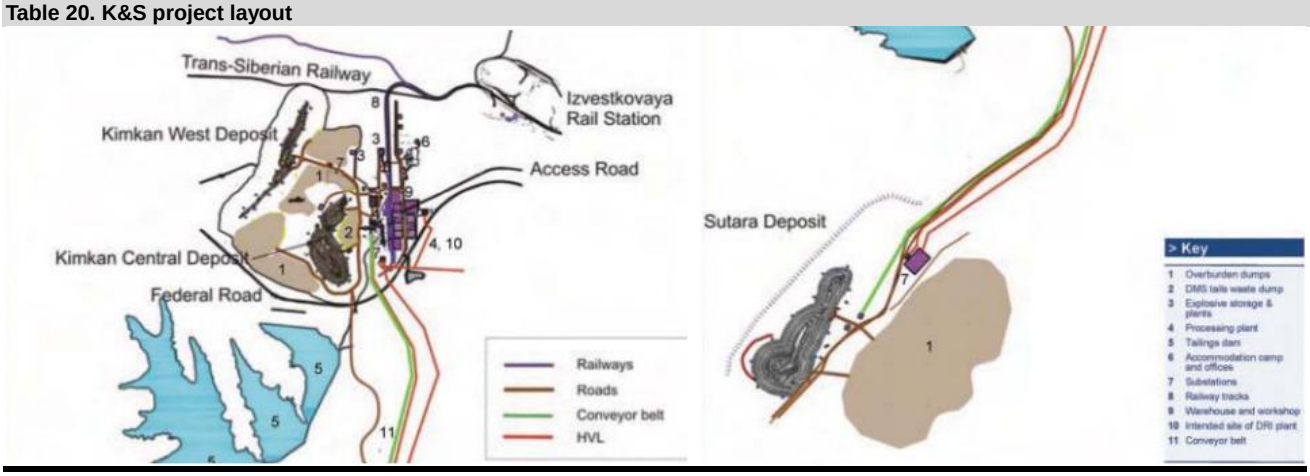
Average Selling Price \Avg Total Cash Cost (US$/t)	99	104	109
Iron Ore:110, Ilmenite:220	28,380,000	23,480,000	18,580,000
Iron Ore:110, Ilmenite:270	36,380,000	31,480,000	26,580,000
Iron Ore:110, Ilmenite:320	44,380,000	39,480,000	34,580,000
Iron Ore:120, Ilmenite:220	36,580,000	31,680,000	26,780,000
Iron Ore:120, Ilmenite:270	44,580,000	39,680,000	34,780,000
Iron Ore:120, Ilmenite:320	52,580,000	47,680,000	42,780,000
Iron Ore:130, Ilmenite:220	44,780,000	39,880,000	34,980,000
Iron Ore:130, Ilmenite:270	52,780,000	47,880,000	42,980,000
Iron Ore:130, Ilmenite:320	60,780,000	55,880,000	50,980,000
Iron Ore:140, Ilmenite:220	52,980,000	48,080,000	43,180,000
Iron Ore:140, Ilmenite:270	60,980,000	56,080,000	51,180,000
Iron Ore:140, Ilmenite:320	68,980,000	64,080,000	59,180,000
Iron Ore:150, Ilmenite:220	61,180,000	56,280,000	51,380,000
Iron Ore:150, Ilmenite:270	69,180,000	64,280,000	59,380,000
Iron Ore:150, Ilmenite:320	77,180,000	72,280,000	67,380,000
Iron Ore:160, Ilmenite:220	69,380,000	64,480,000	59,580,000
Iron Ore:160, Ilmenite:270	77,380,000	72,480,000	67,580,000
Iron Ore:160, Ilmenite:320	85,380,000	80,480,000	75,580,000

Source: SBI E2(Excluding central expenses and other non-cost expenses)

2) K&S project

K&S project is a sizable iron ore project with aggregate iron ore reserves and resource of 764m tons. Base on the resources volume, K&S project is 16x greater than Kuranakh. In many aspects, K&S project is superior to the Kuranakh. K&S consists of two mineral bodies, namely Kimkan and Sutara. These two ore deposits are situated in the Obluchensky District of the EAO region. The Kimkan deposit is located 15km north-east of the Sutara deposit. K&S deposits are both open-pit mine, at average Fe content of 32.5%. The estimated mine life of the K&S project is roughly 50 years. The K&S project is located close to China, 60km away. The nearby accessible railway network is Trans-Siberian Railway, which is only 0.4km from the mines. The project is currently at development stage, detail of progress as below, and expects to commence production in 1H 2014F. The designated mining and production capacity are 10m tons of iron ore, and 3.2m tons of 65~68% iron ore concentrate per annum. The estimated capital expenditure of the first stage of development plan is around US$400m.

Table 20. K&S project layout



Source: IRC

Reserve and Resources

Unlike Kuranakh, K&S's mineral type is magnetite. Kimkan (K)'s deposit is divided into four distinct ore zones with indicated and inferred ore resources 166.2m tons and 105.7m tons respectively at average Fe grade around 33% whereas Sutara (S)'s deposit is divided into three ore zones with measured & indicated resources and inferred resources of 426.6m tons, and 65.5m tons respectively at average Fe content of 32%. There deposits cover an area of 49.4km^2. Both are open-pit mine.

Table 21. Information of Kimkan and Sutara ore deposit features

Resource Classification		Ore Resources (Mt)	Fe% (total)	Fe% (Magn)
Kimkan	Measured & Indicated	166.2	33.1	55
	Inferred	105.7	32.8	34.7
Sutara	Measured & Indicated	426.6	32.3	137.9
	Inferred	65.5	31	20.3
Total	Measured & Indicated	592.8	32.5	192.9
	Inferred	171.2	32.2	55

Source: IRC

Exclusive summary for K&S project

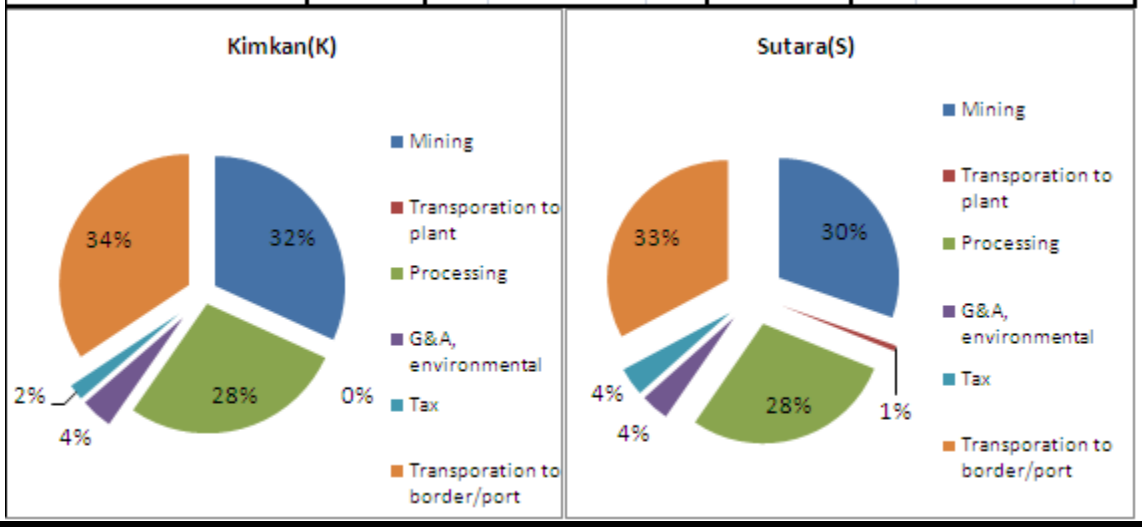
- Low mining cash cost as a result of economic of scales at estimated average US$43/t
- Much lower rail tariff to Chinese borders at estimated US$19/t
- 50 years of estimated mine life
- Processing plant facilities to produce 65%~68% iron ore concentrate, potentially charge for high selling price
- 2.7x higher than existing production capacity
- Drawdown of US$340m ICBC project finance facility, ensuring K&S funding
- Planned to commerce production in 1H 2014F
- Higher selling price, lower costs, and shorter distance to customers along with world scale deposit and money in place.

Estimated Cost breakdown – K&S project.

According to the management, the estimated average lifetime cash cost per ton is roughly US$37.4/t excluding railway tariff. In addition, the foreseeable railway transportation cost from K&S to Chinese border is US$19/t, which is significantly lower than Kuranakh. As a result, total mining cash including rail transportation will be around US$56.4/t. Table 16 illustrated the details of the cash breakdown prior to optimization and after optimization:

Table 22. Cash cost Breakdown – K&S

Csah cost Breakdown K&S		US$	optimized) US$/t	%		US$	optimized) US$/t	%
Mining	Kimkan(K)	17.6	16	31%	Sutara(S)	17.6	16	29%
Transporation to plant		0.0	0	0%		0.4	0.4	1%
Processing		15.4	14	27%		16.5	15	28%
G&A, environmental		2.2	2	4%		2.2	2	4%
Tax		1.1	1	2%		2.2	2	4%
Transporation to border/port		19.0	19	37%		19.0	19	35%
Total		55.3	52	100%		57.9	54.4	100%



Source: SBI E2 Capital

The aggregate mining estimated cash cost per ton for K&S project prior to enforcement of optimization plan is roughly US$56/t, representing 43% discount of Kuranakh's average mining cash cost per ton. Upon the completion of optimization plan (page 23), K&S's average mining cost per ton expected to further decrease by 5% to around US$53/t. The lower in cash cost, better products, short distance and much larger scale imply an improvement in turnover in term of volume per sales, in gross profit and operating profit margin as compared to Kuranakh project. As a result, K&S Project is less sensitive to changes in iron ore selling price.

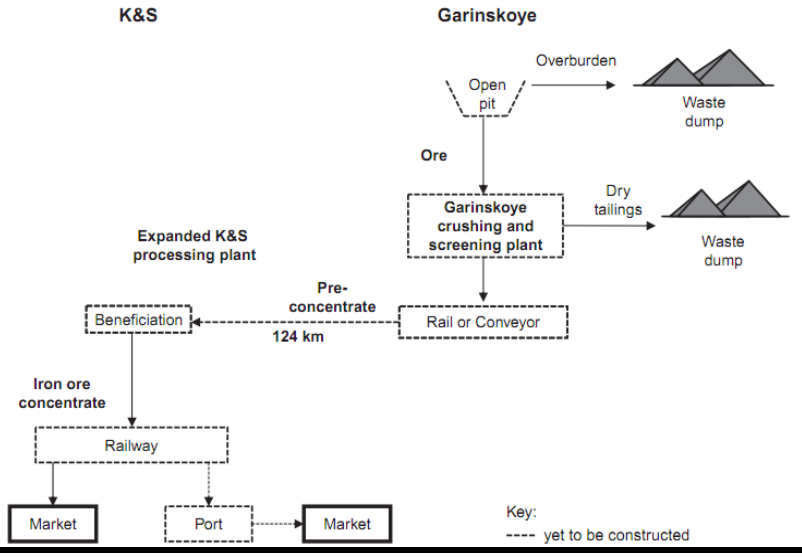
Table 23. K&S project (constrcution site)

Source: IRC

Garinskoye project overview

Garinskoye project is an advance stage iron ore exploration project. The initial preliminary exploration project was conducted in 1950s. More detail testing, drilling and sampling was done in 2007, and completed a feasibility study in 2008. The mineral resources report was scoped with Canadian standard - JORC-compliant. The total mineral reserves and resources are 375.9m tons at average grade of 30.9%, based on limited exploration study were done in the pass; we may see significant increase in resources and reserves as more detail exploration studies are completed. Garinskoye is also located at a close distance to the Chinese border in the Russian Far East. The current construction plan for Garinskoye is to build a crushing and screening plant with production capacity to produce 7.3m tons of iron ore pre-concentrate per annum. The pre-concentrate from Garinskoye then transports to processing beneficial plant in K&S (Stage 2 of development, enlarged processing capacity at K&S processing plant). Therefore, additional 2.2m tons of iron concentrates will contribute from Garinskoye to the group per annum. The construction stage targeted to begin in 1H FY12/12F, and to commence production in 2015F. We model Garinskoye will commence production in the mid of 2016F. The estimated mining life of the project is 40 years. Table 24 indicated the operation flow of Garinskoye:

Table 24. Garinskoye processing flow



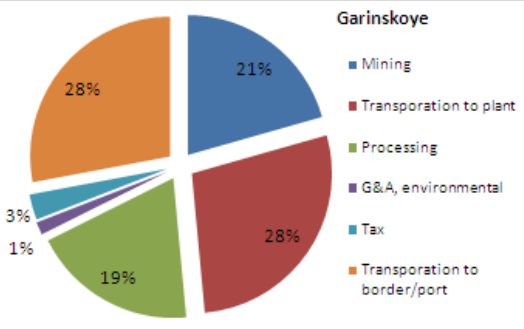
Source: IRC

Estimated Cost breakdown – Garinskoye

Similar story to K&S project, Garinskoye is a relatively large scale mining project. The overall development plan for Garinskoye is to construct a transportation cannel to enableto shift iron ore pre-concentrate from Garinskoye to K&S processing plant for upgrading process. Consequently, substantial increase the transportation cost to plant. The actual transportation method is yet to determine. According to company management, the estimate aggregate capital expenditure for the project is around US$350m and the estimated mining cash cost is US$68/t. The table 25 illustrated the detail breakdown of Garinskoye mining cash cost which is estimated by the company:

Table 25. Cash cost Breakdown - Garinskoye

Csah cost Breakdown - Garinskoye	US$/t	%
Mining	14	14%
Transporation to plant	19	19%
Processing	13	13%
G&A, environmental	1	1%
Tax	2	2%
Transporation to border/port	19	19%
Total	68	69%



Source: IRC

Other supportive business activities.

Assets other than mineral:
IRC has also integrated small arms in mining related business activities via JV agreements with strategic partners, and operates a small mining consultancy firm.

1) Vanadium JV

IRC has estimated a Joint Venture, namely Jianlong Vanadium, Jianlong to operate a vanadium process plant in Heilongjiang province. IRC owns 46% interest in the Vanadium JV. The JV is to process vanadium slag for the production of vanadium pentoxides and other vanadium products derived from vanadium slag. The Jianlong Vanadium process plant has the designate production capacity of 5k tons vanadium pentoxides per annum. The JV established in Nov 2009, commenced construction in early 2010 and completed a trial run in 4Q 2011. The process plant is now in production, with annual designated capacity of 5k tons. Assume the selling price of vanadium pentoxides will constant at US$15k per tons, which will generate a turnover of US$75m per annum. If the profit margin of the processing plant is close to industry norm at around 5% to 10%, we expect IRC will record a share result from the JV between US$1.725m and US$3.45m annually.

P.S. **Vanadium pentoxide** is used as a catalyst to make sulfuric acid. Sulfuric acid is one of the most important chemicals for industry. Vanadium pentoxide is also used to make maleic anhydride and some ceramics. In the future, it may be used in lithium batteries as an anode and could also be used in rechargeable batteries.

2) Giproruda – a small mining consultancy

IRC owns 70.3% interest in a Russian mining engineering instate, namely Giproruda. Giprorude provides consultant services in term of the design, coordination, construction and commissioning of quarries and mines for miner, especially for those located in challenging location and climatic condition. IRC required 70.3% interest in Giproruda for a consideration of US$8.3m in 2007. The consulting company enhances company ability to develop and execute mine planning for existing project, as well as utilized company resources. The Giproruda has been major revenue contributor since acquisition as a result of early stage of other company project. For YE FY12/10A, the consulting services contributed US$13.2m, i.e. 51% of IRC total revenue. We expect the income from this arm will become trivial once the K&S's production begins.

Secured demand, strategic relationship with Jianlong.

IRC has signed a 15-year off-take agreement with Jianlong, which IRC has granted an executive right to Jianlong to purchase all titanomagneitite concentrate produced from Kuranakh project on monthly basis, with quantities agreed in advance. IRC is responsible to transport the iron ore concentrate to the Chinese border. IRC has another cooperation contract with Jianlong to cooperate a JV that is engaged in Vanadium pentoxide manufacturing and distribution in China with designate production capacity of 5k tons Vanadium pentoxide. The contracting company is Heilongjiang Jianlong Steel, a subsidiary of the large domestic private enterprise, namely Beijing Jianlong Group. Beijing Jianlong is the second largest private steel company in China. The company reported its turnover up by 41% YoY to RMB72.1b for FY12/11A, while production of crude steel increased by 23% YoY to 12.4m tons. The strategic relationship with Jianlong secured 100% demand for iron ore products for Kuranakh project, given that the high impurity in the titanomagneitite concentrate for steelmakers compared to magnetite, and might also imply a stable demand for IRC projects.

Potential options to increase mining scale, and early the production volume.

IRC has evaluated different plans to potentially increase the existing production capacity or bring forward the future cash flow. For example, increase the ilmenite production capacity of Kuranakh project, the K&S project optimization plan and DSO proposal for Garinskoye. These options can potentially increase early production volume, and consequently bring forward the future cash inflow. However, the execution of these options will depend on number of factors, for instance, availability of capital, infrastructure, government approval, etc.

Optimization plan - K&S project. IRC has evaluated a potential plan to increase K&S mining capacity by bringing forward Sutara(S) construction plan. Pursuant to the optimization plan, they expect, upon completion of optimization, K&S mining capacity will be double to 20m tons of iron ore pre-concentrate as well as 6.3m tons of iron ore concentrate per annum and mining cash cost would be lower by 10% to US$37/t. The estimated capital expenditure is US$400m. Table 26 showed the optimized production profile.

Table 26. Information of Kimkan and Sutara ore deposit features

Year	2014	2015	2016	2017	2018~29	2030	2031~39	2040	2041~42	2043
Kimkan (mt)	2	8	10	10	5	5	5	2	-	-
Sutara (mt)	0	0	5	10	15	15	15	15	15	5
Total	2	8	15	20	20	20	20	17	15	5
Increase	-	-	50%	100%	100%	100%	100%	100%	-	-

Source: IRC

The new capital expenditure of US$400m will largely expense in construction of new crushing and screening plant at Sutara mine, construction of conveyors connects between Sutara's crushing and screening plant and Kimkan's processing plant and enlarge the capacity of original processing plant. If we assume US$400m extra capital expenditure for the implementation of K&S optimization which can be financed at similar term as ICBC loan and discount rate of 22%, the NPV with K&S optimization is 1.7x higher than NPV without the project.

Direct shipment Ore Proposal for the Garinskoye project.

Currently, IRC has carried out a scoping study to examine possible options to unlock the Garinskoye value sooner. The original plan of Garinskoye project development was to transit the iron ore pre-concentrate from Garinskoye to K&S processing plant for upgrading process. IRC proposed DSO (Direct shipment Ore) opportunity to produce 2.1m tons high-grade ore at Fe 60% per annual. If the future iron ore price fluctuates between US$140/t and US$150/t, the proposal project might contribute between US$294m and US$315m turnover per annual. The Direct shipment ore denotes that selective mining of high-grade ore zones with a grade of 53% which can simply upgrade to 60% for direct sale and proposed a mining operation project with combined production of 2.4m tons of high-grade ore and 8.5m tons of lower-grade ore for stockpiling. The life of mine for DSO is estimated at 14 years. The start-up cost is US$129m which the construction can be completed in less than 2 years. According to company announcement, they assume industry leading capital intensity rate of US$54/t of annual capacity and a high margin operation with cost of US$40/t delivered cost to the Chinese border. The execution of the project will also depend on the economic condition.

Company History and Shareholding.

Spun off and listed on HKEx. IRC was formerly the non-precious metals division of Petropavlovsk (POG:LN), listed on London Stock Exchange (LSE) main board. The development history of IRC can trace back to 2001. Peter Hambro Mining, currently known as POG, sold the 74% interest in Kuarnakh product to Aricom. Same year, Aricom was admitted trading on AIM board on LSE in 2003 to develop Iron project. Since successful of listing, Aricom acquired various mining projects from time to time, including the current K&S project, and Garinskoye project. After expansion of business, Aricom listed on main board of LSE in 2007, and subsequently engaged in more M&A in mining projects. In 2008-9, as a result of financial crisis and turbulence of the community market, Petropavlovsk decided to privatize Aricom and formed as the non-precious metals division of Petropavlovsk.

Table 27. Majro development of Aricom

Year	Event
2003	• In Sep, Aricom was incorporated in UK • In Dec, Petropavlovsk divested its 74% interest in Kuranakh Project to Aricom • In Dec, Aricom shares were admitted to trading on AIM.
2007	• In Oct, Aricom shares and warrants were moved from AIM to Main Market of London Stock Exchange.
2009	• In Apr, Peter Hambro Mining (Petropavlovsk) privatized Aricom via Peter Hambro Mining share in exchange for 16 Aricom shares.

Source: HKEx

Eventually, POG spun off its non-precious metals division, and formed IRC as an entity to be listed on Hong Kong Stock Exchange. IRC was listed on 21 Oct 2010 in accordance to listing rule chapter 18 and raised US$240m. The table 28 below indicated the current shareholders structure of IRC.

Table 28. IRC's Shareholding stucture

Shareholder	%
Petropavlovsk PLC	65.6
Blackrock Inc	6.9
ARF (Asia Resources Fund)	6.4
Market Float	21.1

Source: HKEx

Brief description of Petropavlovsk (POG.LN)

Petropavlovsk (POG LN) is one of the leading Russian gold producers. Petropavlovsk's key assets are located in the Amur region in the Russian Far East. The Amur region is one of Russia's leading gold producing and mineral-rich regions. Petropavlovsk has produced 506,800oz of gold and annual turnover of US$612m in FY 12/10A. Petropavlovsk was founded in 1994 to develop a gold project in the Amur region in the Russian Far East and then company's share were admitted to trading on AIM as Peter Hambro Mining on 29 April 2002. Since then, company has expanded into a multi-mine gold producer and moved to the main market of the London Stock Exchange and entered the FTSE 250 in 2009.

Other Institutional Investors:

Blackrock Inc (NYSE: BLK) is an USA-based multinational investment management corporation and the world's largest asset manager, provide investment, advisory, and risk management service. Currently, BlackRock currently manages over US$3.6 trillion assets.

ARF (Asia Resources Fund) is a fund specializing in emerging growth, growth capital and industry consolidation. The fund invests in natural resources sectors with a focus on oil and gas, coal, metals, forestry, and services between US$20m to US$100m. Investing regions includes Australia, China, India, Indonesia, Thailand, Vietnam, Mongolia, South Africa, Philippines, etc.

Potential risks.

General risk in iron ore mining investment. There are various risks when investing in mining companies. The primary risk is the commodity price risk which directly affects the profitability of the company. In particular, different stage of development emphasizes different risks. For example, high variable in terms of the amount of mineral reserve and resource is under the ground. Metals and mining companies usually required large amount of investment for infrastructure at development, and often finance via debt financing, hence their gearing ratio or leverage and maybe high. Mining companies also have a long lead time to bring on new capacity, which can take up to 5 – 10 years to commence production. Not to mention the country risks. General risk for mining sector:

- Financing risk
- Permitting risk
- Lower- expected resources amount
- Country risks
  - i. Political risk (government stability, taxation instability, laws environmental policy)
  - ii. Economic risk (currency stability, foreign exchange, restriction)
  - iii. Geographic risk (transportation, climate)
  - iv. Social risk (corruption, local labour laws, etc.)

In particular for IRC, there are three major risks that need to be considered 1) Transportation 2) Political and Country risks 3) Further delay in K&S construction timetable

1) **No control over transportation cost.** All IRC projects have access to the Russian national railway network. Russian railway is monopoly run by Russian Government via an entity called Russian railway. Usually, transportation cost is high for iron ore mining company, it is often the largest component in term of total cash cost. FY12/11A, the rail cash cost represents 47.5% of total cash cost for the Kuranakh project, hence changes in tariffs rate can be influential. According to the freight tariff (price list) 10-01 carried out by Russian Railways, there are three tariff classes, of which iron ore is classified as tariff class I, while ilmenite as tariff class III. According to the management, transportation cost for ilmenite will be around 2.5x to 3x higher the iron ore given the same travel distance. And hence, if there is any reclassification of iron ore tariff class, it will have an adverse impact on IRC valuation, given the fact the only economical transportation way for IRC is by railway. In addition, Russian railway tariff adjusts annually in line with changes of consumer price index. As a result, we expect gradual increase in rail transportation costs. Table 29 illustrated breakdown of charge under different mineral classes:

Table 29. Russian railway Freight Tariff (10-01)

	Tariff class	Share in loading, %	Share in ton-kilometres, %	Share in revenues, %	~η, (T/P) %
Ore minerals	I	10,3	8	5,6	31
Coal	I	22,9	28	13,4	26
Mineral and construction products	I-II	19,6	7	6,8	15
Oil	II-III	17,7	16	29,6	8*
Ferrous metals	III	6,3	18	11,6	4
Total		76,8	77,0	66,6	

Source: National Railway

2) **Political and country risks for IRC.** Political stable often the biggest concern when investing in Russian companies, risks include corruption, inefficient governor of any property, national resources nationalism, likelihood of political violence, possibility of restriction on investment, capital or trade. Yet, the changes in Sino-Russia relationship will affect IRC operation. For example, cancellation of loan facility from ICBC.

3) **Delay in K&S construction schedule.** As mention throughout the report, the current producing mine is relatively small in terms of production volume as well as resources sizes. K&S project is the key profit driver for IRC in near future. Therefore, any changes in K&S project will substantially affect the company valuation, and consequently the intrinsic value.

Financial performance review.

IRC delivered maiden net profit for 1H FY12/11A, and FY12/11A of US$3.7m and US$1.0m respectively. Table 30 illustrated the Key breakdown of P&L figure for 1H FY12/11A, 2H FY12/11A and FY12/11A.

Table 30. FY12/11A P&L result overview

US$'m	1H 11A	2H11A	Changes %	11A
Revenue	60.4	61.8	2%	122.2
Net operating expenses before Headquarter expenses	(52.7)	(52.1)	-1%	(104.8)
Result from JV and Associate	(0.7)	0.3	-139%	(0.4)
Operating profit before Headquarter expenses	7.1	9.9	40%	17.0
Headquarter expenses	(13.5)	(13.1)	-3%	(26.6)
Operating profit / (loss)	(6.4)	(3.2)	-50%	(9.6)
Other gain and losses	10.1	2.6	-75%	12.7
Net Financial Income	0.2	(0.0)	-120%	0.2
Profit before tax	3.9	(0.7)	-117%	3.3
Tax expense	(0.2)	(1.5)	686%	(1.7)
Net profit	3.7	(2.2)	-158%	1.6
Profit attributable to the own	3.6	(2.6)	-172%	1.0

Source: SBI E2 Capital

During the reporting period, the turnover was contributed by sales from Kuranakh project. Despite Iron ore selling price decreased by as much as 11% HoH to roughly US$158/t for 2H FY12/11A, IRC's turnover increased by 2% which largely due to increase in both sale volume and selling price of ilmenite. In turn of operating result, IRC recorded operating loss during the reporting period, the operating loss for 2H dropped by 50% HoH to US$3.2m. The operating loss was largely due to net operating profit from mining and consultancy did not fully cover the central administrative expenses.

Comparison on year over year basis, turnover increased by 3.7x YoY to US$122.2m as a result of ramp up to full capacity during FY12/11A, coupled with favourable selling price during the 1H FY12/11A. The mining output of Kuranakh project excelled the year target that iron ore concentrate by 7% to 800.3k tons and ilmenite concentrate by 22% YoY to 63.5k tons. Result before tax generated from mines production was US$20.2m and US$27.5m with and without depreciation respectively. The net profit was largely driven by other gain and losses. IRC recorded other gains and losses and other expenses of US$12.7m, of which there were two main one-off non cash profit; 1) reversal of listing expenses and 2) de-recognition of financial liability result from lower than expected final payment to surrender acquisition of a technology 'know-how' during the year, for total amount of US$10.7m. As a result, IRC recorded net profit of US$1m as compared to previous period net loss of US$82.4m.

Table 31 . Key Historical Accounting Figures

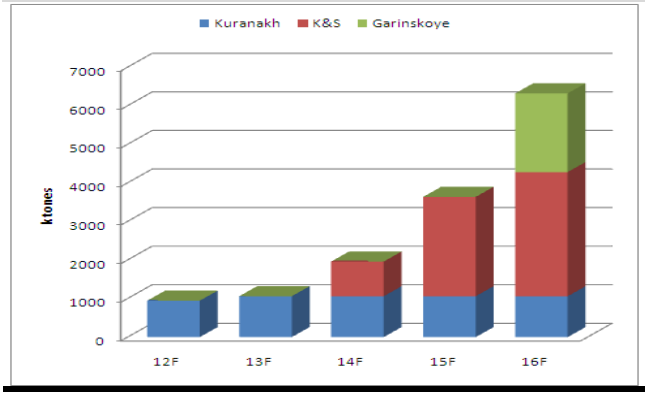
US$'m	09A	10A	11A
P&L			
Revenue	8.3	25.8	122.2
EBIT	(128.7)	(67.1)	3.3
EBITDA	(128.1)	(62.7)	14.2
Net operating loss	(129.8)	(71.9)	(9.6)
Equity holder of the Company	(139.3)	(82.4)	1.0
B/S			
Non-current assets	460.3	585.7	731.1
Property, plant and equipment	404.7	499.3	568.4
Current assets	426.6	281.8	131.5
Cash and cash equivalents	18.4	225.5	33.2
Current liabilities	18.4	57.3	36.9
Trade and other payables	16.4	57.1	21.6
Non-current liabilities	269.1	5.6	12.6
Equity attributable to equity holder of the Company	595.0	800.3	808.5
Cash Flow			
Net cash used in operating activities	(27.7)	(49.8)	(25.5)
Net cash used in investing activities	(249.6)	(105.7)	(166.3)
Net cash from/(used in) financing activities	38.7	364.7	(3.9)
Net increase/(decrease) in cash and cash equivalents for the year/period	(238.7)	209.2	(195.7)

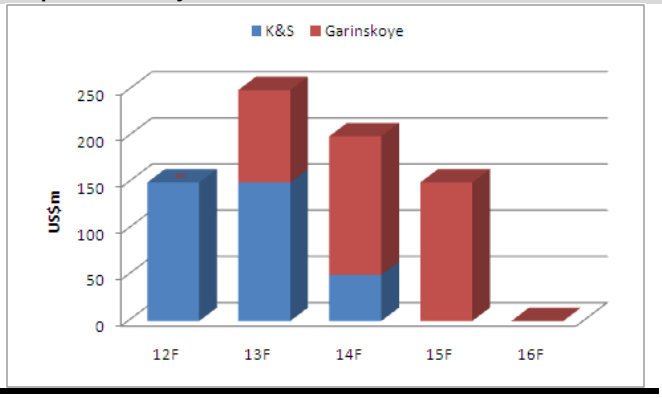
Source: SBI E2 Capital

Our hypothesis on business expansion plan in 5 years.

Since the listing, IRC has announced several expansion projects, such as, increase ilmenite production capacity in Kuranakh project, optimization plan for K&S and DSO proposal for Garinskoye project. We value these projects as a potential option to bring forward future cash flow, but do not take amount into market valuation. The business plan in accordance with prospectus is to develop three projects in the mid-term. Kuranakh project is targeted to produce 820k of iron ore concentrate and 125k of ilmenite in 2012F, and further ramp up to 900k iron ore and 160k ilmenite in 2013F and onward. In term of K&S project, the commencement of production was delay by about six months to mid of 2014F as a result of longer-than-expected time to drawdown the US$340m of ICBC loan facility. We anticipated K&S production will commence as expected in mid of 2014, and produce 900k tons of iron ore concentrate, further ramp up to 2,600k tons in 15F, and reach full capacity of 3.2m tons of iron ore concentrate in 16F. In terms of Garinskoye, the funding and comprehensive construction plan is yet to be done based on preliminary information, we expect it will start production in 16F producing 2m tons iron ore concentrate, and will gradually ramp up to full designate capacity of 3.4m tons in 18F. Tables 32 indicated the total production volumes as well as estimated capital expenditure in 5 years.

Table 32. Estiamted Overall Concentrate Prodcution Volume and Capex in next 5 years.





Source: SBI E2

Valuation:

Valuation Assumption. We model IRC by discount free cash flow to equity model (DFCFE) using discount rate 22% based on CAPM model and market data extracted from Bloomberg. We estimate 9 years of cash flow to equity of IRC to 2021F, followed by the terminal value as 2021F NPV. The terminal value assumes a constant income followed by finite company life that based on weighted average of expected mine life of the three mining projects. The potential extension projects do not include in the financial model, because too much uncertainty to take them into account in valuation. We also model the future iron ore concentrate at a constant price of US$130m/t, which many believe US$100m/t is the floor price for iron ore in the mid-term, while the iron ore products produced by K&S and Garinskoye formulated at 10% premium of Kuranakh's due to higher products' grade and lower impurity. The key assumptions are illustrated at the table 33 below:

Table 33. Our Valuation Assumption

	12F	13F	14F	15F	16F
Kuranakh - Magnetie	130	130	130	130	130
Kuranakh - Ilmenite	250	250	250	250	250
K&S, Garinskoye - Magnetie	143	143	143	143	143
Production volume (k tons)					
Kuranakh	945	1,060	1,060	1,060	1,060
K&S	0	0	900	2,576	3,220
Garinskoye	0	0	0	0	2,040
Total	945	1,060	1,960	3,636	6,320

As shown at the table below, our estimation on net profit will be negative until the commenced production of K&S project in FY12/14F, and as the production ramp up, it will give a more meaningful return. We believe IRC is a good Russian mining company with proper corporate governance. We believe IRC will grow from small to mid size company with high potential, and value at HK$1.55, which represents 82% upside from current at HK$0.85. We recommend IRC as mid-to-long term investment opportunity, since market might take time to recognize the intrinsic values of the company. Initiates BUY.

Table 34. Key Financial Figure in next 5 years

(US$m)	12F	13F	14F	15F	16F
Turnover					
Kuranakh	138	157	157	157	157
K&S	-	-	129	368	460
Garinskoye	-	-	-	-	292
Engineering Consultancy	12.6	13.4	14.3	15.2	16.2
Total turnover	150	170	300	541	925
Consolidated Net Profit	(8.7)	(21.8)	7.4	121.5	270.3
Implied EV/EBITDA	32.2x	37.9x	14.4x	5.4x	2.3x

Table 35. Our target Price

Discount rate	20%	22%	24%
Market Cap (US$'m)	814.6	668.1	585.3
US$/HK$	7.8	7.8	7.8
Market Cap (HK$'m)	6353.9	5211.1	4565.4
Number of shares (m)	3362.0	3362.0	3362.0
Target Price	HK$1.89	HK$1.55	HK$1.36

Table 36. Implied Multiplaes of our target price

	FY12/12F	FY12/13F	FY12/14F
Implied P/B (x)	0.83x	0.85x	0.85x
Implied P/E (x)	-	-	90.32x
Implied EV/EBITDA (x)	32.15x	37.88x	14.37x

Table 37. Price sensitive to change in ASP

ASP (Kuranakh) US$/t	125	135	145
Market Cap (US$'m)	586.8	750.1	913.5
Market Cap (HK$'m)	4576.9	5851.1	7125.4
Discount Rate	22%	22%	22%
Target Price	HK$1.36	HK$1.55	HK$2.12
Changes	-22%	0%	22%

Source: SBI E2 Capital (Assumption: K&S and Garinskoye's iron ore products sell at 10% premium of Kuranakh)

Simulation for K&S optimization plan, and implied new TP. We incorporated the potential execution of the K&S optimization plan into our financial model with additional capex of US$400m and adjusted in production volume in accordance with company announcement. The adjusted target price increased by 1.0x to HK$3.1, under the same discount rate 22%.

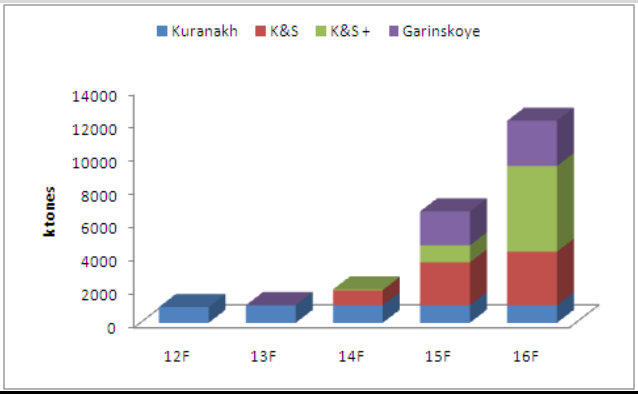
Table 38. Adjusted Key Financial Figure in next 5 years

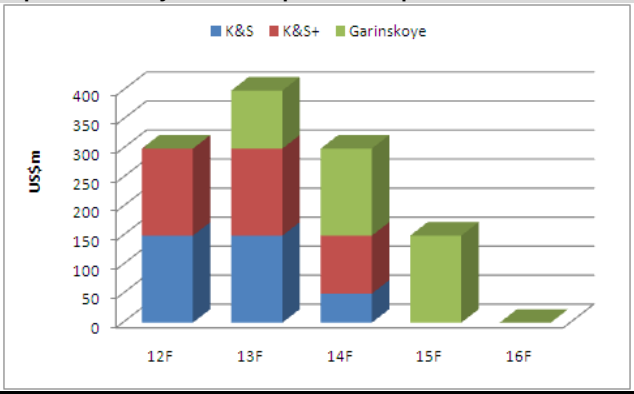
(US$m)	12F	13F	14F	15F	16F
Turnover					
Kuranakh	138	157	157	157	157
K&S	-	-	136	515	1,197
Garinskoye	-	-	-	-	292
Engineering Consultancy	12.6	13.4	14.3	15.2	16.2
Total turnover	150	172	307	687	1,662
Consolidated Net Profit	(25.7)	(59.5)	(19.1)	125.1	566.4
Implied EV/EBITDA	69.2x	76.9x	21.4x	7.9x	2.2x

Table 39. Further upside upon optimization of K&S

Discount rate	20%	22%	24%
Market Cap (US$'m)	1,626.7	1,337.8	1,173.1
US$/HK$	7.8	7.8	7.8
Market Cap (HK$'m)	12,688.4	10,435.0	9,150.1
Number of shares (m)	3,362	3,362	3,362
Target Price	HK$3.77	HK$3.10	HK$2.72

Table 40. Estiamted Overall Concentrate Prodcution Volume and Capex in next 5 years with optimization plan.





Source: SBI E2

Peer comparison.

There are five small to mid cap HK-listed iron ore miners. They are IRC (1029 HK), China Hanking (3788 HK), China VTM Mining (893 HK), Newton Resources (1231 HK) and China Zhongsheng (2623 HK), of which Newton Resources' operation is currently under suspension, therefore we exclude from the peer comparison table. There are two fundamental differences between IRC and its peers, 1) location 2) stage of development. IRC is a Russian-based mining company, while the HK-listed peers' assets are located in China. Different risk assessment might be applied by investors when pricing the company. Secondly, it is arguable that IRC is more like an advance development stage company than production stage. The current producing project incurs high cost of production, and hence, investors are most likely investing in the future K&S project rather than the current producing result, whereas the comparison companies, China VTM and Hanking, are already at matured production stage with long operation history. The valuation of mining companies also depends on the production scales, mineral grade, mineral types and continuous development prospect. Base on Bloomberg consensus, peers are trading at similar P.E between 4.3x and 7.9x for FY12/11A and between 5x and 5.9x for FY12/12F.

Table 41. Peer Comparison

Name	Ticker	Mkt Cap(HK$m)	Res & Res (mt)	FY11A Prod Cap (mt)	FY11A P/E	FY12F P/E	P/B	EV/EBITDA	ROE%
Small Scale production + Developing Project									
IRC	1029 HK	3,765.4	1,514.0	0.9	454.9x	-	0.6x	33.3x	0.1
China Zhongsheng	2623 HK	886.7	825.2	0.5	5.5x	-	-	6.4x	35.7
Production Stage									
China Hanking	3788 HK	4,410.3	368.0	1.4	7.9x	5.9x	3.2x	3.9x	53.0
China VTM Mining	893 HK	3,818.0	397.0	4.1	4.3x	5.0x	0.9x	2.4x	20.2
Average		3,220.1	776.0	1.8	118.2x	5.5x	1.6x	27.9x	27.2

Source: SBI E2 Capital (Updated March)

Appendix - Infopage.

P&L (US$m)	10A	11A	12F	13F	14F
Year to Dec					
Turnover	25.8	122.2	150.4	170.4	300.0
% chg	212	374	23	13	76
Operating Profit/(loss)	(71.8)	(9.6)	(2.1)	(4.8)	43.7
EBITDA	(62.7)	14.2	22.2	25.2	78.8
Depre./amort.	(4.4)	(10.9)	(24.3)	(30.0)	(35.1)
EBIT	(67.1)	3.3	(2.1)	(4.8)	43.7
Net int. income/(exp.)	(11.3)	0.0	(7.0)	(17.5)	(31.2)
Exceptionals	-	-	-	-	-
Associates	-	-	-	-	-
Jointly-controlled entity.	(0.1)	(0.5)	3.5	3.5	3.5
Pre-tax profit	(76.2)	1.6	(9.1)	(22.3)	12.5
Tax	(3.7)	(1.7)	0.4	0.5	(5.1)
Net profit	(82.0)	1.6	(8.7)	(21.8)	7.4
% chg	(41)	-	-	-	-
Dividends	-	-	-	-	-
Retained earnings	(236.1)	(235.1)	(243.8)	(265.6)	(258.2)
EPS (US$cent) - Basic	(3.6)	0.0	(0.3)	(0.6)	0.2
EPS (US$cent) - F.D.	(3.6)	0.0	(0.3)	(0.6)	0.2
DPS (US$cent)	-	-	-	-	-
No. sh.s o/s (m) - W.A.	3,362	3,362	3,362	3,362	3,362
No. sh.s o/s (m) - Y.E.	3,362	3,362	3,362	3,362	3,362
No. sh.s o/s (m) - F.D.	3,362	3,362	3,362	3,362	3,362
Margins (%)					
Operating	(271)	(5)	(1)	(3)	15
EBITDA	(235)	15	15	15	26
EBIT	(252)	6	(1)	(3)	15
Pre-tax	(296)	6	(6)	(13)	4
Net	(310)	4	(6)	(13)	2

Balance Sheet (US$m)	10A	11A	12F	13F	14F
Year to Dec					
Goodwill	0.0	6.1	6.1	6.1	6.1
Intangible assets	31.5	44.5	44.5	44.5	44.5
PPE	499.3	568.4	679.8	899.2	1063.6
Interest in an associate	0	0.7	0.7	0.7	0.7
Interests in JV	10.4	7.1	7.1	7.1	7.1
Other fixed assets	44.6	98.4	98.4	98.4	98.4
Inventories	0	6.1	6.1	6.1	6.1
T&R	31.5	44.5	44.5	44.5	44.5
Cash	225.5	33.2	111.1	18.3	(4.7)
Total Assets	867.5	862.6	969.3	1098.7	1265.1
L- term Borrowings	0	6.3	156.3	306.3	0.0
T&P	57.1	21.6	8.2	9.5	57.1
Curr income tax payable	0.2	0.3	0	0	0.2
S-term Borrowings	0	15.0	0	0	0
Other	5.6	6.3	0	0	2.0
Total Liabilities	62.9	49.5	164.6	315.8	474.8
Share capital	4.3	4.3	4.3	4.3	4.3
Reserves	1015.2	1021.3	1021.3	1021.3	1021.3
Treasury shares	16.9	17.9	17.9	17.9	17.9
Acc losses/ profit	(236.1)	(235.1)	(243.8)	(265.6)	(258.2)
Total Equity	804.6	813.1	804.4	782.7	790.1
Net debt	(225.5)	(11.8)	45.2	288.1	464.0

Cash Flow (US$m)	10A	11A	12F	13F	14F
Year to Dec					
EBIT	(65.0)	7.0	(2.1)	(4.8)	43.7
Depre./amort.	(4.4)	(10.9)	(24.3)	(30.0)	(35.1)
Net int. paid	(11.3)	0.0	(7.0)	(17.5)	(31.2)
Tax paid	(3.7)	(1.7)	0.4	0.5	(5.1)
Others	-	-	-	-	-
Gross cashflow	(84.4)	(5.6)	(29.7)	(47.8)	(19.5)
Chgs. in working cap.			90.0	(4.1)	(30.9)
Operating cashflow	(49.8)	(25.5)	79.1	7.1	24.1
Capex	(105.7)	(166.3)	(136.2)	(250.0)	(200.0)
Free cash flow	(155.5)	(169.8)	69	(77)	5
Dividends paid	-	-	-	-	-
Net distribution to MI	0	0	0	0	0
Investments	0	0	0	0	0
Disposals	0	0	0	0	0
New shares					
Change in bank loans	0	0	0	0	0
Others	0.0	21.3	135.0	150.0	153.0
Net cashflow	209.161	(195.7)	78.8	(92.9)	(22.9)
Cash reserve - Beg.	18.415	225.468	33.2	111.1	18.3
Cash reserve - End.	225.468	33.188	111.1	18.3	(4.7)

Interim Results (US$m)	2H 10A	1H 11A	2H 11A
Revenue	20.6	60.4	61.8
% chg	296	193	2
Net oper exp b4 HQ exp	(25.5)	(52.7)	(52.1)
Result from JV & Ass	(1.5)	(0.7)	0.3
Oper profit b4 HQ exp	(6.3)	9.0	8.0
HQ expenses	(14.0)	(13.5)	(13.1)
Operating profit /(loss)	(20.4)	(4.5)	(5.1)
Other gain and losses	(7.1)	10.1	2.6
Net Financial Income	(0.4)	0.2	(0.0)
Pre-tax profit	(27.8)	5.9	(2.6)
Tax expense	(2.4)	(0.2)	(1.5)
Net Profit	(30.5)	3.6	(2.6)
% chg	(41)	-	-
EPS (US$ cent)	(0.85)	0.11	(0.08)
DPS(US$ cent)	0	0	0

Shareholding Structure

	Shares o/s (m)	%
Petropavlovsk PLC	2,205.9	65.6
Blackrock Inc	225.5	6.9
ARF (Asia Resources Fund)	215.6	6.4
Public	715	21.1
Total	3,362	100

Background

IRC (1029 HK) is an iron ore producer listed on Hong Kong Stock Exchange (HKEx). Its key assets are located in Far East of Russia at regions namely Amur and EAO relatively close to the North-eastern Chinese border. Currently developing iron mine assets are namely Kuranakh, K&S and Garinskoye. They are all open-pit mines along with access to local railway networks. Three iron ore mines are at three difference stages. The current producing mine is Kuranakh, which is a relative small mining production, producing 820k tons of iron ore and 83k tons of ilmenite in FY12/11A.

Key Ratios	10A	11A	12F	13F	14F
Net gearing (%)	Cash	Cash	5	26	37
Net ROE (%)	-	0	-	-	1
EBIT ROCE (%)	-	0	0	0	4
Dividend payout (%)	-	-	-	-	-
Effective tax rate (%)	14.3	1.4	20.3	10.9	11.7
Net interest coverage (x)	-	5.9	-	-	1.4
A/R turnover (days)	347	129	90	39	33
A/P turnover (days)	-	-	-	-	-
Stock turnover (days)	490	139	84	15	21

Market background:

Mining simply describes the activities of extracting valuable minerals and other geological material from the earth (ore deposit). We can classify metals into two groups ferrous (Fe^{2+}) and non ferrous. Ferrous metals are mineral containing iron; while non ferrous are those minerals other than ferrous metals, except alloy. In addition, non ferrous are usually classified into three categories, namely precious, base and minor. Precious metal is rare and has high economic value, for example, gold, silver and platinum. Base metal is those mainly for industrial use, such as copper, nickel and aluminum. Minor metals assume a minor rule in metals, are produced very often both as by-products of the extraction of the major metals or are required for specific applications, such as molybdenum, manganese, and silicon.

Mining industry has high correlation with economic cyclic. The urbanization in emerging market, improvement in technology, and many things else are related to mineral resources. For example, urbanization will demand more iron, coal and steel as construction materials while increase in residual apartment will lead to higher consumption in home application, electrical appliance that which consists of copper, tin, etc. Or, changes in coal price will increase price pressure for electricity, meanwhile increase raw material cost for steel producers. In the past decade, the rapid growth of emerging market, especially China, had led mineral community price to increase beyond expectation. Investment in commodities became more attractive to investors. Supplies of mineral resources are scarce and non-renewable, and often take months or even years to adjust changes demand. Emerging market, Brazil, South Africa, India and China, are raising completion for access exploration/mining rights in resource rich countries. Correspondingly, many resource rich countries are today demand higher compensation/ consideration in exchange for access to their resource. In Nov 2011, Australia's 30% mineral resource rent tax was approved by lower house. It is fair to say mineral resources are strategically importance between countries and often are sensitive topic in political debate between counties. Most resources prices reached their record peak in early 2011, however, the recent uncertainty about sovereign crisis and expectation of slowdown in China's growth has turbulent the mineral market.

Key Terminologies:

Proved reserves is the economically minable part of measure mineral resources. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and medication by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, and social and government factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

Probable Ore Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

Measured Mineral Resource is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

Indicated Mineral Resource is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed

Ore is a mixture of valuable minerals and gangue minerals from which at least one of the minerals can be extracted economically. An ore body is a natural concentration of valuable material amenable to economic extraction. **Concentrate** refers to material that has undergone beneficiation at the mine.

By-product is a secondary or additional product recovered in the extraction process (e.g. molybdenum is a common by-product of copper, and ilmenite is a common by-product of iron).

Open pit mining is a method of extracting rock or minerals from the earth by their removal from an open pit or borrow. Mining companies choose this way to get rocks and minerals out of the ground because it is the easiest and cheapest way to do it. Open-pit mining is only used if the rocks or minerals are close to the surface of the land or if a normal tunnel-type of mine isn't possible. **Stripping ratio** is often used in open-pit mining, which measures ratio of the volume of overburden required to be handled in order to extract some volume of ore.

Listing for Mining companies and Hong Kong's Listing rule chapter 18.

There are five small to mid cap iron ore mining companies listed on the main board of HKEx. They are namely, IRC (1029 HK), China Hanking (3788 HK), China VTM (893 HK), China Zhongsheng (2623 HK), and Newton Resources (1231 HK). Except IRC, their mineral assets are located in China. For example, China VTM key assets are located in Sichuan province, whereas Hanking and China Zhongsheng key mineral assets are situated in Northeastern China.

Listing. Mining operation requires significant amount of upfront investment at early stage, and often content high risks. As a result, it is important to find 'understand the industry' investors to invest in junior miners. Resource rich countries, such as Canada and Australia, encourage finance activities in mining sector by loosen some of the listing requirements. Canada and Australian exchange have a large portion of total market capital, are mining and mining related companies. They traditionally offer favourable listing requirement especially for junior miners, to encourage finance activities. For example, Canadian stock index, TSX-V, is desire for early-stage mining companies, while TSX is more suited for a later-stage mineral properties. On the other hand, Australian exchange in 2006 launch resource industry specific index - ASX Gold index and ASX Metals and Mining Index. However, there is a raising concern about Australia mineral tax rents and other taxes impose to mining /resources outputs might harm investors' interest.

Being well-developed financial market with close proximity to China, Hong Kong market becomes more activities for overseas and mainland mining companies to seek IPO opportunities and fund raising. In June 2010, Hong Kong Stock Exchange introduced a new rule – Chapter 18 for the listing of exploration and mining companies. Chapter 18 makes easier for mining companies that have yet to generate sufficient net profit to meet the listing rule requirement chapter 8 (profit test) to undertake an Initial Public Offering (IPO). In other words, the listing rule chapter 18 offer alternative listing rule for prior production stage mining companies. Chapter 18 also offers protection to investors by requesting international standard resources reports and valuation reports to protect investors and companies' interests. Table 42 indicated key requirements for Ch18.

Table 42. Key requirements of Ch.18

Key area	Key requirements
Expertise	Directors and senior managers, taken together, must have a minimum if 5years experience relevant to the exploration and/or extraction activity
Clear operation and production plan	At least pre-feasibility study
Proved and estimated resource/reserve	At least coping study
Viable Mineral report	Viable mineral report using mineral reporting standard of JORC, NI43-101 and SAMREC code
Working capital requirement	125% available working capital of the group's present requirement, which is for at least the next 12 months

Source: HKEx

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