FAIRFAX

Investment Research

West African Iron Ore Review

The race to the finishing line in this emerging iron ore region

3rd February 2012

Carole Ferguson

Company	Ticker	Px US$	Mkt cap US$m	Contained Fe Resource Mt	EV/tonne cents/t	NPV US$m	Disc/Prem to NPV (%)	Rec	Country
Afferro	AFF LN	1.20	125	643	6*	na	-	Hold	Cameroon
African Iron	AKI AU	0.61	304	51	551	450	48%	Buy	Congo
African Minerals	AMI LN	8.59	2,825	3,985	72	na	-	Hold	Sierra Leone
Equatorial Resources	EQX AU	2.54	290	No JORC	na	350	21%	Buy	Congo
Bellzone	BZM LN	0.46	341	1,451	10	1096	222%	Buy	Guinea
London Mining	LOND LN	4.67	586	336**	181	1,400	139%	Buy	Sierra Leone
Sundance	SDL AU	0.46	1,350	972	134	na	-	Hold	Cameroon/ Congo
West African Mineral	WAFM LN	0.26	49	No JORC	na	na	-	Spec Buy	Cameroon/Sierra Leone
Zanaga Iron Ore	ZIOC LN	1.63	458	716	57	na	-	Hold	Congo

Source: Fairfax IS, Bloomberg, Company data (* Including proceeds from the sale of Putu project, US$65m; ** Marampa resource only)

Summary

West Africa is emerging as a new region of potential iron ore producers as large scale projects are being pursued by the majors and junior projects come on stream.

Juniors have been able to enter this market despite infrastructure challenges with capital coming from external parties mainly the Chinese attracted by the large scale infrastructure opportunity.

We prefer juniors that are pursuing smaller deposits with higher DSO potential with a lower capital outlay.

As iron ore prices remain in balance against a weaker demand outlook and concerns remain on a Chinese soft landing, there will be greater scrutiny on the quality of the resource and projects.

A large magnetite resource without the benefits of a sufficient oxide cap can be challenging and needs a greater capital commitment.

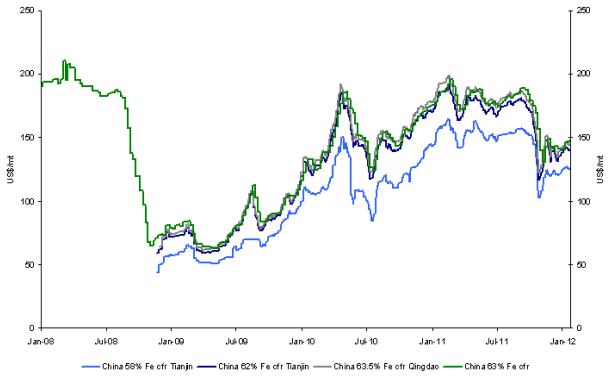
The political history of West Africa has not been for the faint hearted but there appear to be more sensible emerging regimes in the Congo, Cameroon and Liberia which help in bringing down country risk and discount rates.

Lessons can be learnt from the listed juniors in terms of capex projections which have risen considerably from initial projections.

Despite all this, high margins based on lower operating costs offer attractive returns on these projects once capital is secured.

Corporate activity will continue to underpin value for good quality projects with African Iron being a prime example.

Benchmark iron ore prices



Source: Fairfax IS, Bloomberg

Research Analysts
John Meyer +44 (0)207 598 5364
Email: jmeyer@fairfaxis.com

Carole Ferguson +44 (0)207 598 5362
Email: cferguson@fairfaxis.com

UK Equities Sales/Trading
Jody Downes + 44 (0)207 460 4375
Richard Parlons + 44 (0)207 598 5367
Suzie Skinner + 44 (0)207

Overview

West Africa is rapidly emerging as a new region of potential iron ore producers as large scale projects are being pursued by the iron ore majors (Rio Tinto, Vale and BHP Billiton) as part of their expansion plans and junior miners are bringing their projects through to production. New entrants to the iron ore space such as Xstrata have bought their way in through their acquisition of Sphere Minerals and their investment (50% + 1 share) in the Zanaga Project in November 2009 for $206m.

A background of high prices, despite the recent setback, has high margin potential and has attracted significant capital to the sector. The partnership and the capital being offered by Chinese Groups has also enabled junior miners to enter the market where the infrastructure investment required would have put these projects outside their reach.

As iron ore prices, while still high, are likely to attract more uncertainty against a fragile recovery in the developed economies and concerns about slowing Chinese growth, we believe that investors and the market will become increasingly discerning on assigning value to upcoming projects.

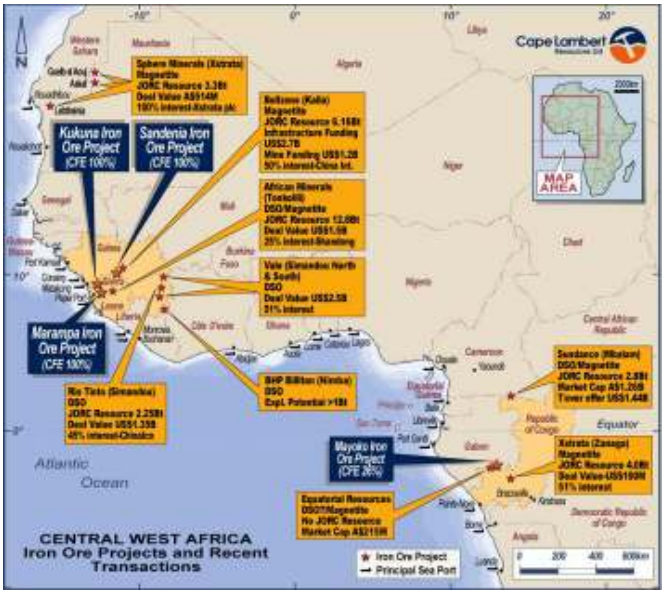
The right strategy and the right resource need to be coupled with crucial access to existing infrastructure or deep pockets to fund infrastructure. Our preferred business model would be to pursue projects with high quality DSO (Direct Shipping Ore - haematite) which can produce significant early cash flows for projects with a positive uplift to project NPVs. A large magnetite resource without the benefits of an oxide cap can be challenging and needs a massive capital commitment for infrastructure – for transport which is most obvious but also often not considered, power. Processing magnetite and to a much lesser extent "beneficiating" lower grade oxides does require power.

The political history of West Africa has not been for the faint hearted but closer examination would suggest sensible not necessarily democratic regimes are emerging where new mining regimes are being put into place. Most West African regimes are learning from their experiences of their southern counterparts – setting higher royalty streams and a minority ownership at the outset. This enables any detraction from project value to a known rather than to suffer value destruction at a later stage.

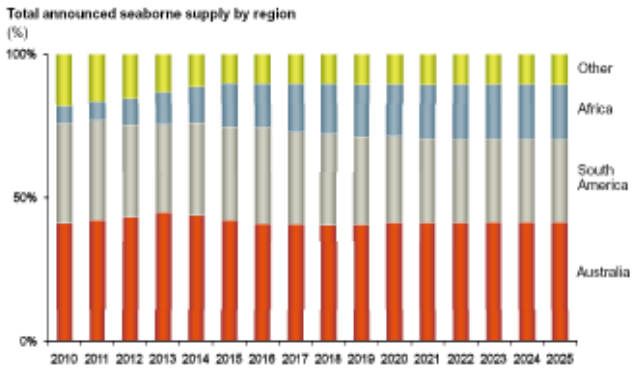
Regimes leading the way are the Congo, Cameroon and Liberia.

West African Projects Becoming Meaningful

Based on supply projections by region, African iron ore (dominated by West African Iron ore) is likely to become a meaningful source of supply over the next 10 years.



Source: Cape Lambert



Source: BHP Billiton

Based on the proposed projects being brought by Rio Tinto and Vale, Guinea could become the world's third-biggest source of seaborne iron ore by 2016.

The Majors are planning large scale projects

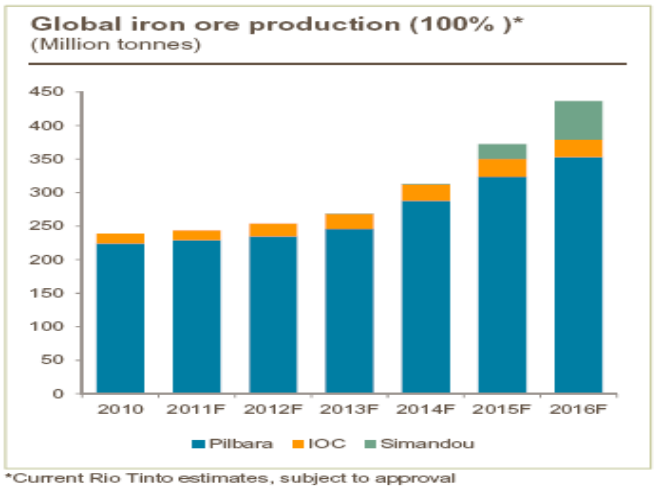
Rio Tinto's Simandou - One of the largest projects

Rio Tinto's Simandou project is one of the high profile projects being developed in West Africa and will be the largest integrated mining project in Africa.

The project located in south-eastern Guinea has attracted more than $3bn of investment to date including $2bn of mining expenditure. The project has had 300,000 metres of exploration drilling and will involve the construction of a 650 km railway.

On the 18th October, Rio Tinto announced the acceleration of the Simandou project with approval of a further $211m for continued studies and $1.1bn of funding for commitments for early works and procurement of early lead time articles. First production is being targeted in mid-2015 increasing to 95 mtpa over five years – Simandou will become a meaningful

part of Rio Tinto's iron ore production growth from 2016.



*Current Rio Tinto estimates, subject to approval

Source: Rio Tinto – Investor Seminar – Nov 2011

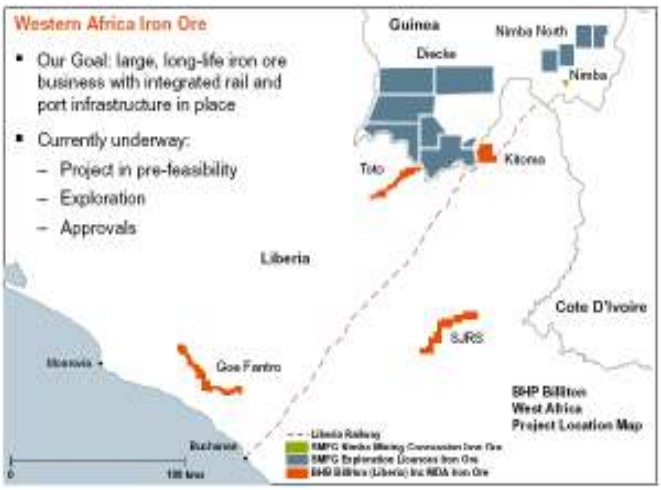
Vale's Simandou Project

Vale paid $2.5bn for the Northern concession of the Simandou project – the government has a 15% free carry in this project and is entitled to buy into a further 20%.

The project is expected to be developed in two phases with a total estimated production capacity of 50 mtpa. Phase 1 involves the development of the Zogota Mine and the construction of a dry processing plant and around 100 km of railway tracks connecting mine operations to existing railroad in Liberia. Production is scheduled to start in 2012 with 2 mtpa and ramp up to 15 mtpa by 2014. Phase 2 which is still subject to board approval may result in a 50 mtpa capacity by 2020.

BHP Billiton's West African Project

The BHP projects are at an earlier pre-feasibility stage in Guinea with concessions in Liberia.



Source: BHP Billiton

There is limited information on BHP Billiton's projects in Liberia but we are aware from other projects in the region that the company is actively advancing its projects in country. Arcelor Mittal has already successfully started iron ore production in Liberia.

Juniors with a DSO strategy more likely to succeed

We list below some of the junior miners that have active exploration licences. While a number of projects have been announced, not all of these in our view will have the right pre-requisites to come to commercial production. We would be cautious of large scale magnetite projects which are not close to transport infrastructure and do not have access to power. The commercialisation of these projects will require significant capital and require the backing of partners with deep pockets.

Our preferred junior explorers in the sector based on exposure to DSO

- African Iron (AKI AU) – A$0.56, Mkt Cap A$283m (Now subject to a takeover from Exxaro).
- Equatorial Resources (EQX AU) A$2.37, Mkt Cap A$271m
- West African Minerals (WAFM LN) 16.38p, Mkt Cap £30.8m
- **We would also recommend London Mining and Bellzone.**

African Iron (AKI AU) A$0.56, Mkt Cap A$283m - BUY – Target valuation potential $450m (75c/s)

This company is now subject to an agreed cash offer by Exxaro Resources. African Iron has a high quality asset and we are not surprised it has attracted the attention of a buyer.

The project had all the criteria to achieve commercialisation – good quality deposit with DSO which could be readily mined and transported.

At A$0.51 cents a share, the bid is valued at A$302m and at the increased offer of A$0.57, $338m – on a fully diluted basis (595.98m shares vs 501.82m undiluted). The company has a 120 mt high grade hematite resource – 44 mt of DSO with 77 mt of upgradeable DSO.

The company were targeting a 5 mtpa operation for a 10 year mine life based on 50 Mt DSO hematite resource with the project requiring a capex of US$300m. Potential production was targeted for mid 2013 for mainly fines of 55-60%.

The price of just north of US$300m does not appear high for project cash flows of around US$125m a year assuming a 50% margin, $100 FOB over 10 years for an initial capex of $300m.

The bid for Exxaro leaves value for the bidder although African Iron's project still needs licensing, upgrade to the rail line and port facilities and funding to get into production.

Equatorial Resources (EQX AU) A$2.37, Mkt Cap A$271 m

BUY - Target valuation range $330-350m, (A$2.88/s – A$3.06/s)

Equatorial has two iron ore projects in Congo. The company's main project is the Mayoko-Moussondji project which is right next door to the African Iron ore deposit.

Equatorial does not yet have a resource but does have double the strike of African Iron right next door and early drill results from their Mayoko-Moussondji project are encouraging – intersections from first 5 holes showed potential for DSO at 60% Fe.

The company are targeting a resource of 50-100 Mt by June 2012. With the potential cash and an upcoming resource, Equatorial is in our view a buy.

West African Minerals (WAFM LN) 16.38p, Mkt Cap £30.8m – Early stage iron ore (DSO, haematite) potential

BUY – Speculative Potential

West African Minerals is a speculative and extremely interesting iron ore play. The company is at a very early stage of its exploration programme but is following a very targeted strategy of finding tenements where there is DSO (haematite) potential.

The team have already identified six permits in the Cameroon DSO with potential from aeromagnetic geophysical surveys. Two of the key licenses are located near the Cameroon coast and discovery here could enable relatively easy transportation.

The company also hold five exploration licences in Sierra Leone. These projects are around six months ahead in its exploration programme. The company is backed by some highly successful and regarded mining entrepreneurs, Jim Mellon, Stephen Dattels and Brad Mills.

While at an early stage we like the management strategy and the targeted approach to look for DSO material with near term production potential.

We are cautious of magnetite projects unless you have partners with deep pockets to bring them to market

Bellzone (BZM LN) 28.8p, Mkt Cap £213.1m

The company has two projects Forecariah and Kalia in Sierra Leone. Both have potential for early cashflows from oxide product and sufficient cash as well as backing and investment by Chinese partners, to help fund the required infrastructure.

The Forecariah project has been fast tracked but does not have a JORC resource hence uncertainty will remain on the quality and quantity of the resource until the company starts production from the project. Kalia will come into production in 2014 targeting 50mtpa by 2018.

Zanaga (ZIOC LN) 101p, Mkt Cap £284.6m – Large scale magnetite, now 50% plus 1 share owned by Xstrata.

Zanaga which is 50% + 1 share owned by Xstrata has become virtually an Xstrata project with most of the project team transferring across from Zanaga to Xstrata.

This is a large scale project 4.3 bn tonne magnetite resource of 33% Fe (60% in measured and indicated), 50 km of strike (only tested 50% of this), 140-150,000 m drilled so far with 45,000 m planned. The project is targeting 30-45 mtpa pellet feed production targeted at very low cash cost of US$16-20/t depending on the transport option to be adopted.

The project has PFS and a Value Engineering Exercise (VEE) which came up with two transport options – a railway and pipeline option. The next phase will be deeper investigation of the pipeline option running into a Feasibility Study which is being targeted for completion in Q1 2014. At this point Xstrata can exercise its option to buy out the rest of the Zanaga project and take it forward to development with mining commencing in Q3 2016.

Both transport options require significant capex $7.5 bn and $6.06 bn respectively – the railway option which was originally option outlined by Zanaga when they did their IPO is estimated at around $7.5bn for a 45 mtpa capacity.

Xstrata has spent $200m on the project taking this up to $300m by the middle of next year with $250m budget for the feasibility study. With a burn rate of $12m/month and the budgets being set this is an expensive project with high standards for health, safety and technical competence – the Zanaga/Xstrata team is striving to make the project self sufficient in a remote location.

Zanaga have set out clear NPV parameters for valuing their part of the project at the stage when Xstrata takes it over and expects $500m as a floor price.

Afferro Mining (AFF LN) 76p, Mkt Cap £78.8m

Afferro has demonstrated a large predominantly magnetite resource at Nkout in Cameroon. They announced a 41% increase in resource to 2 bn tonnes of magnetite with 32.7% iron and also the potential for 18.5 mt of DSO grading 60.3% Fe in November 2011.

The company had a 38.5% stake in the Putu project, a JV with Severstal in Liberia which they divested at an estimated EV/tonne of 26.8 cents – this was low, but still an enhancement to the low levels at which Afferro had been trading at 7.4 cents/tonne at the end of last year.

This was a good move for Afferro as it gives them the cash they need to develop their Nkout project, releasing them of their capex at Putu and realising some value. Afferro retains an option on any further upside on the project should Severstal on sell to a third party if they have not exercised their option to take the deferred payment.

The market has given little value to Afferro's projects given the concerns on funding and the lack of clarity on infrastructure and strategic partnerships.

There is resource potential at Nkout but logistics and infrastructure clarification is needed to capture value for these assets. Nkout is 30 km from the planned Sundance rail line but there is no clarity on the access to this line. The Sundance Mbalam project is 510 km from port and the timing and the success of this project depends on the success of the Hanlong bid and the financing that will be put in place.

There is also a danger that while the company progresses through the feasibility stages that market fundamentals change for iron ore, changing the economics for potentially high capex project.

African Minerals (AML LN) 436 pence, Mkt Cap £1,435 m – Key milestone -loading of First Ore at Tonkolili

African Minerals is the first one out of the gates of the African junior iron ore miners and their success in getting to a functioning operation will be closely followed.

This is the first test of the integrated mine, rail and port infrastructure at Tonkolili. The Tonkolli project's three phases are – Phase I to generate cashflow from a 20 Mtpa DSO cap for 6 years as well as develop and refurbish rail and port infrastructure at Pepel at an estimated cost of $1.2bn. Phase 2 is for a 15 year 50 mtpa mine at a cost of $3bn with a final phase of magnetite concentrate production to be confirmed.

The company has got to first production but at 1.3 Mt of saleable iron is well short of a projected target of 20 mtpa of DSO for Phase 1. Capex and opex have escalated on a project which has high capex requirements - $1.2bn for Phase 1 and Phase 2

While Phase 1 had been fully funded including a $417.7 m secured loan facility – the company had little headroom and a forthcoming $1.5 bn expected from SISG has been slow in coming. The company announced a $300m 8.5% 5 year convertible bond and refinancing of $518m to pay down the existing $417.7m which was restrictive.

SISG's investment of $1.5 bn is for a 25% interest in African Minerals' Tonkolli iron ore project in Sierra Leone. The agreement includes a discounted off-take agreement – SISG will purchase 2Mtpa of Phase 1 production, an incremental 8Mtpa after Phase II is commissioned and 10 Mtpa during phase III. Discounts range from 0% below $60/t to 15% at $120/t.

The company announced its first shipment of DSO from its Tonkolili mine in Sierra Leone in November 2011 as part of the offtake and the agreement. The test work by SISG is ongoing and the agreement is still subject to approval by Chinese authorities. Risks still remain in the shares although in theory the 20 mtpa projected has scope to generate significant cash flows.

London Mining (LOND LN) 278p, Mkt Cap £337.8m – Marampa Project

London Mining's Marampa project is a brown field magnetite project in Sierra Leone with total resource of 1 Mt with 30.9% iron content. The project has different stages – Phase 1 production of 3 mtpa expanding to 5 mtpa of sinter concentrate and a Phase 2 expansion in two stages – Phase 2a expansion to 8 mtpa with capex of US$659m for soft weathered material and further expansion to a total of 16 mtpa at a capex of US$1.18 bn using hard rock material.

London Mining has gone into production at Marampa ramping up at a rate of 3,500 tpd with 57,000 t of concentrate produced to 16th January 2012.

The company is forecasting production of 3.5 Mt in 2013 and 4.6 Mt in 2014 based on the installation of gravity circuit in Q4 2012 and a duplication of the processing capacity. The production schedule has been revised recently with lower initial production but with a higher production as new capacity is added.

The product is a high quality concentrate quality at 66.2% Fe, 1.88% silica and 1.02% alumina and is currently being stockpiled for shipment to Europe.

The company recently raised US$90m through a share placing to fund capex. This will result in an increase in nameplate capacity to 5Mtpa (from 4Mtpa) for the Phase 1 plant, estimated capex has increased from US$234m to US$300-310m of which US$168m has been spent.

The increase in capacity will result in better economies of scale bringing down the forecast operating cost of US$35/t. The company is also reviewing the BFS for Phase 2A expansion and the potential to reconfigure the Phase 1 processing plant to increase processing capacity to 9 Mtpa of 65% sinter concentrate. The first BFS is expected to be completed in 2012 with a further study to be conducted to increase capacity to 17 mtpa in Phase 2.

As with African Minerals, capex projections have gone up through the life of the project and the recent fund raising of $90m and a prepayment of the offtake agreement of an additional $45m will be required to complete Phase 1. While capex has gone up, the absolute level is relatively low to get 5 mtpa of high grade concentrate and as cash flows come in they will be in a better position to fund capex requirements.

This step-up in production enables the company to increase production with improved cash flows over time allowing the project to be de-risked.

The company will now be able to fund Phase 1 expansion but in our view will have a funding gap for Phase 2a. Should Phase 1 be up and running, financing through debt should be available to fund any shortfall.

Based just on a phase 1 production level of 5 mtpa, the NPV for Marampa only is $1.4bn bn or £900m giving significant potential from the current level.

We have not discussed or included any valuation for the company's projects outside West Africa.

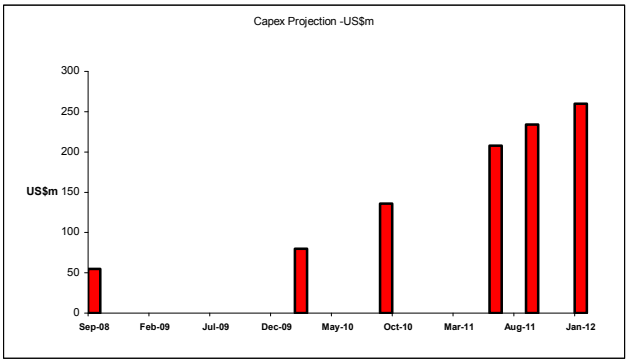
Lessons to be learnt from West African juniors

Resource size and scale does not always matter

A significant proportion of capital raised to date has been invested in proving up resources and adding to tonnages- the scale of the project does not always matter particularly if you have high quality DSO (oxidised cap) which is more easily mined and shipped. A small scale DSO project (3-5 mtpa) has the advantage of using existing transport infrastructure and not constrained by lack of power infrastructure.

Margin for error high in capex projections

Capex projections can increase significantly through the life of the project – below we show how projections grew at London Mining from initial estimates of US$55m for a 1.5 mtpa in 2008 Phase 1 production to 1-3mpta operation projected through 2009/2010 to a capex number of $234m for a 3.5 mtpa of production. The last increase in capex of 11% to $300-310m announced in the recent fund raise of $90m does increase the scope of production to close to 5 mtpa (ie incremental revenues of $150m year based on a concentrate price of $100/t).



Source: Fairfax, Company Reports

The latest announcement of project costs at African Minerals Phase 1 of the Tonkolili iron ore project in Sierra Leone showed costs escalating by $284m – 50% of this relates to cost overruns. Project costs have left the company with a minimal cash balance to achieve first production by December 2011.

Partners with capital critical to meet high infrastructure costs

The capex required to get projects off the ground includes a significant element of infrastructure exceeding more than 50% of the capex associated with a project. This is not surprising given the remote locations of projects and the requirement to upgrade existing infrastructure. The scale of investment required can run to billions of dollars.

Sundance Resources Mbalam project in the Cameroon is for a two stage development of 35 mtpa DSO for 10 years followed by 35 mtpa concentrate product for a further 15 years. The Definitive Feasibility Study shows the rail and port costs of $2.6bn, 74% of project cost excluding a further $1.2 bn for EPCM, owners costs and contingency.

Definitive Feasibility Study – Stage One

CAPEX [1]	US$M
Mining, Processing and Infrastructure	914
Rail	2,019
Port	537
Subtotal	3,471
EPCM, Owners Costs and Contingency	1,214
Total (US$M, real as at December 2010)	**4,686**

Source: Sundance Company Report

Hanlong which has launched a full bid for Sundance Resources at a revised offer of A$0.57 cents a share (A$1.65 bn) is expected to take the Mbalam project forward if the bid is successful. The bid which has been recommended by the board is subject to the success of a Scheme of Arrangement which must be approved by the majority of shareholders in each class who vote and have 75% of the votes cast on the resolution at the scheme meeting. The scheme is conditional on receiving necessary government approvals in China and Australia as well as necessary permits in the Cameroon and Congo. Voting is anticipated to take place in April 2012 with completion in May 2012. Sundance shares are trading at a 30% discount to the bid reflecting the length of the process (7 months since the bid was made) and concerns about Hanlong being able to fund the bid. Hanlong is expected to fund the bid with the backing of China Development Bank Corp.

African Minerals has had a protracted process of finalising funding arrangements with Shandong Iron and Steel (SISG) – the MOU was signed in July 2010 and is yet to be finalised with an extension to the MOU for another month past the last set deadline of December 31st 2011. the first shipment of 40,000 t of DSOto SISG being accepted.

Operating costs in West Africa compare well to Pilbara.

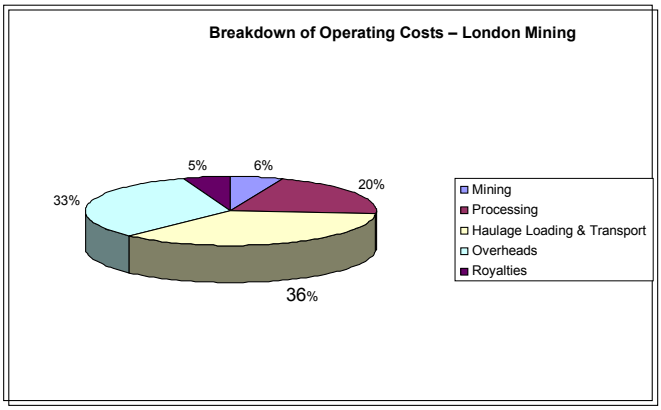
Operating costs for West African projects compare well with low cost operations in the Pilbara – the range is as low as $16/t to US$45/t.

Company	Project	Country	Stage of Production	Tonnage Projected	Product	Opex/ Tonne
African Minerals	Tokolli - Phase 1	Sierra Leone	In production - Q4 2011	20 mtpa	DSO	$27.60
African Iron (Takeover by Exxarr0 Resources)	Mayoko	Rep of Congo	Feasibility - Target Production - 2013	5 mtpa	DSO	$40 - $50
Bellzone	Forecariah (50%	Guinea	Awaiting approvals Q1 2012	4.0 mtpa	Upgraded Oxide	
	Kalia Stage 1	Guinea	Feasibility End 2014	30 mtpa	Magnetite Concentrate	$26-$30
London Mining	Marampa	Sierra Leone	In Production- Q4 2011	3- 5 mtpa		$35
Sundance (Subject to agreed offer by Hanlong)	Mbalam	Cameroon/ROC	Feasibilty Production - 2014	35 mtpa	Pellet Concentrate	$20-$40
Zanaga Iron Ore	Zanaga (50% +1 Xstrata	Republic of Congo	Feasibility Production - 2017	35-45 mtpa	Pellet Feed Concentrate	$16-$20

Source: Company Reports, Fairfax

Breakdown of operating costs will vary with projects depending on type of end product, resource quality and mode of transport.

We show below the breakdown of costs for the London Mining Marampa project where haulage, road and transport form a large part of the costs (36%) and as expected processing costs are much higher than mining costs.



Source: Fairfax, London Mining **Report**

Likely to go up as magnetite projects come on stream

Processing costs can change with the quality of the resource base particularly for magnetite products which are the second stage of a number of projects that are coming on stream.

We expect to see greater scrutiny of magnetite projects as they come closer to production where mass recovery rates and grind size can vary across projects and dictate production rates. We also think there is a lack of clarity from some companies on the quality of the concentrate grades that they are likely to produce.

The type of resource drives the economics for the project. Coarse grains lend themselves to purely dry magnetic separation through a simple process of separation of the magnetic ore and the waste.

For fine grains, wet magnetic separation is needed. This achieves better recoveries but higher cost in terms of recoveries. Wet separation for 75 microns requires 10/kwh per tonne of mined ore for 80-90% liberation. To lower the micron size from 75 to 50, you double the amount of power required. To add a wet separation circuit, the capex requirement is $20-30m.

Product quality will drive pricing based on Iron Content and Impurities.

Iron ore pricing is driven by the iron content as well as the presence/absence of impurities such as sulphur, alumina, silica and phosphorous.

The acceptable level for iron content is 62.5% for most steel mills and the main impurities they are concerned with phosphorous, sulphur and silica.

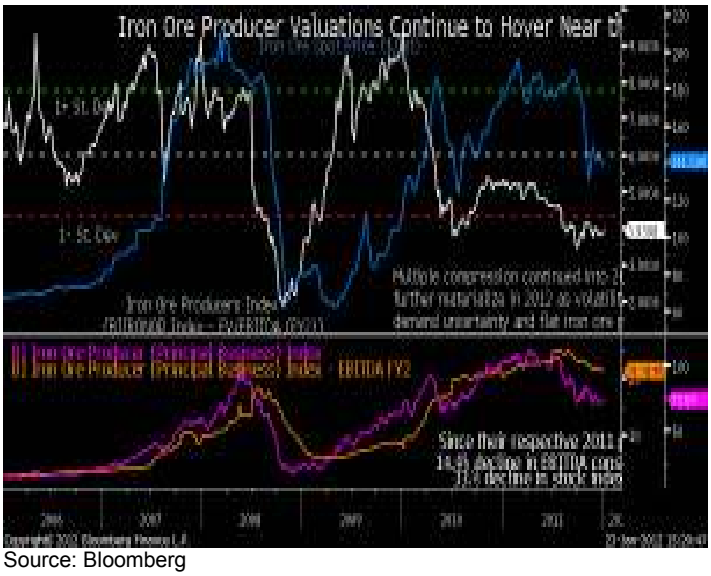
The maximum % in concentrate that steel mills look for is 0.2% for phosphorous and 0.1% for sulphur. The type of phosphorous in the deposit is also important (you need phosphorous which is soluble)-apatitic phosphorous is soluble - 1% seems to be the acceptable level for alumina and silica before attracting penalty payments.

In terms of pricing a 1% change in iron content can lead to a 4-5% swing in the price achieved.

Good quality projects will still attract industry players and capital

Timing for the Stocks/Sector

Iron ore producer valuations fell throughout 2011 through a combination of de-rating as iron ore prices held up more than analyst forecast and share prices came under pressure as concerns on global growth accelerated in the fourth quarter of 2011.

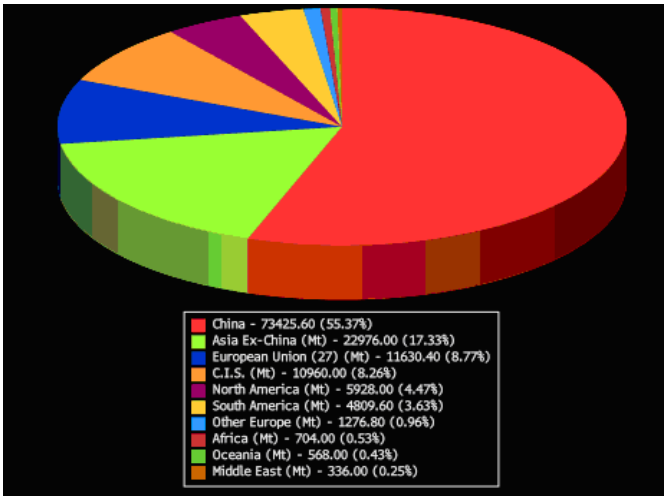


Source: Bloomberg

While uncertainty is likely to persist on the Eurozone, projects/companies that are pursuing valuable projects which are likely to come to market could get re-rated in 2012.

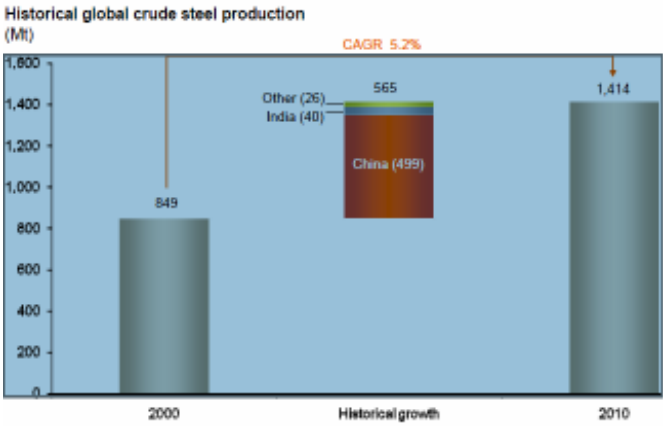
Chinese demand will still be the main swing factor in driving prices

With China accounting for 55.3% of global demand, the pace of demand is still crucial in setting short term pricing.



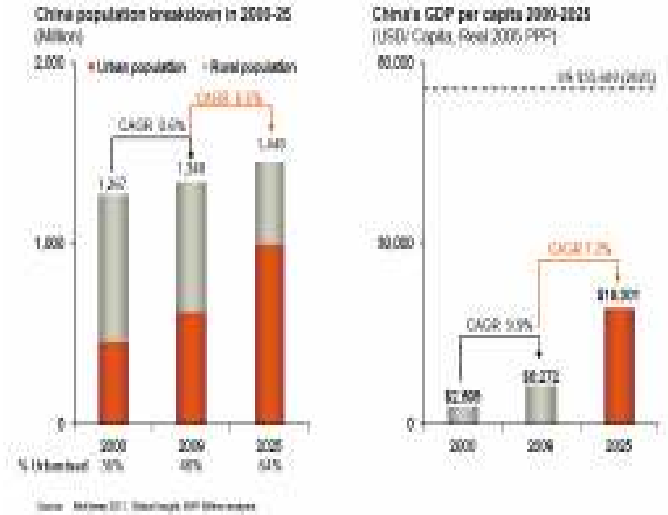
Source: Bloomberg

China accounted for 88% of growth in global steel production in the last decade.

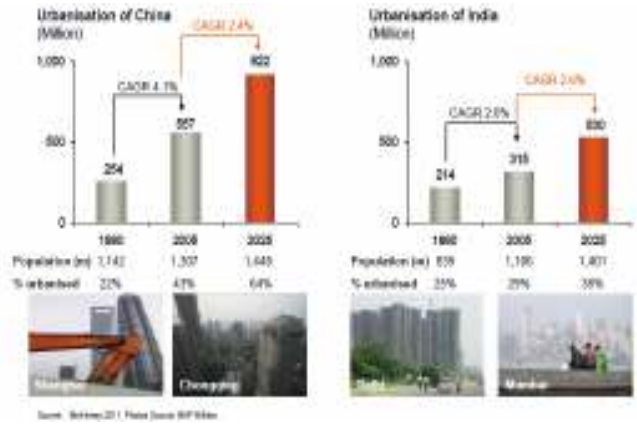


Source: BHP Billiton – March 2011

Continuation of this demand going forward depends on belief in the Chinese urbanisation story.



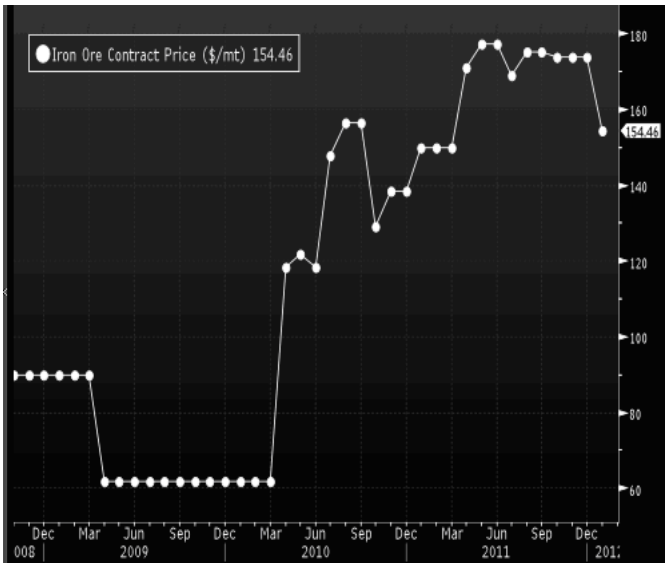
There is also hope that other countries such as India will emerge to take up any slowdown in Chinese growth which may happen over time.



We expect iron ore prices to be finely balanced in 2012 against a weaker demand outlook. Prices are unlikely to collapse as Chinese demand remains strong and supply is likely to disappoint.

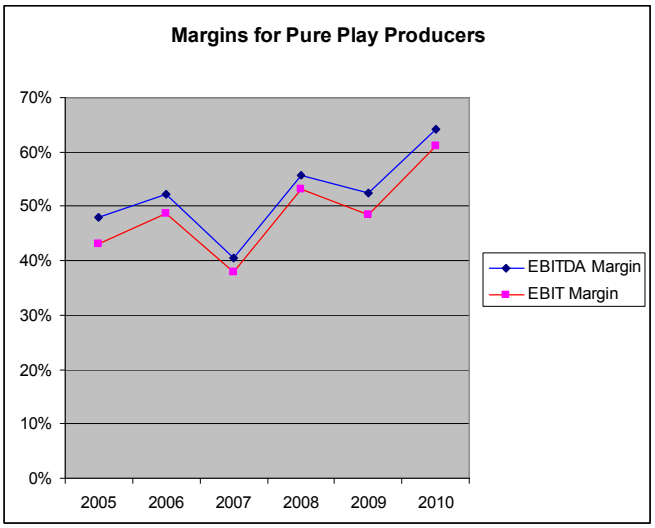
EBIT Yield for the large producers at all time high which will continue to attract supply to the sector

The price for iron ore despite a recent set back remains at an all time high.



Source: Bloomberg

This has resulted in margins in the sector which are high continuing to expand.



Source: Bloomberg

Valuation

The use of EV/ton as a valuation metric has limited use as it does not take into consideration the quality of the resource, access to infrastructure, financing, country risk and the stage of the project.

NPVs where project economics are available provide a better guide as revenue and cost projections can take into account the quality of the resource, financing assumptions can be built in and discount rates adjusted to reflect the risk of the project/country.

NPVs on projects that we have assessed would suggest that there are high returns to be had from the right type of project and this will continue to attract capital to the sector.

IRON ORE OUTLOOK

We forecast an average price of US$125/t in 2012 and US$120/t in 2013 for 62% Fe content material. Prices stood at US$138.5/t as of the end of 2011.

Iron Ore 62% Fe content forecasts (US$/t)

2009	2010	2011	2012e	2013e	2014e	2015e	Lon Term
86	147	168	125	120	120	115	90

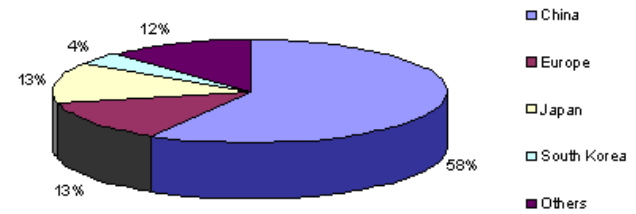
Source: Fairfax IS

Iron ore prices seemed most resilient to a drop in commodity prices which started in August 2011. However, after China's Golden Week ended in the beginning of October iron ore prices for 62% Fe content dropped 30%, more than US$50/t, to US$118/t.

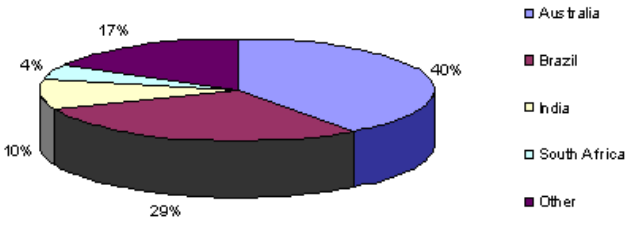
We expect iron ore prices to be finely balanced in 2012 against a weaker demand outlook. Prices are unlikely to collapse as Chinese demand remains strong and supply is likely to disappoint this year.

Steel producers delayed their iron ore purchases on expectations of further decrease in prices and brought maintenance works forward in the final quarter of 2011 rather than staying operational and incurring losses amid weak demand and rising costs. Benchmark prices for hot and cold rolled coil dropped 12% and 6% from September to the beginning of November.

Iron Ore Seaborne Importers 1,041Mt 2010



Iron Ore Seaborne Exporters 1,070Mt 2010



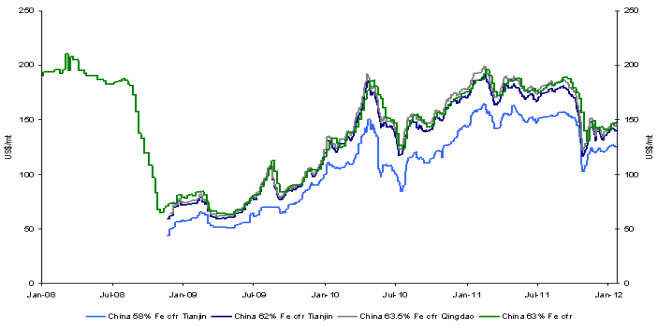
As of end of October, 60 blast furnaces had decreased output by 2-3mt or 5% of average monthly steel production.

The "Big 3" – Vale (Brazil), Rio Tinto (Australia, Canada) and BHP Billiton (Australia, Brazil) – dominate the market and represent 67% of total seaborne iron ore traded in 2010. They also control nearly 80% of mining rail and port capacity.

Despite lower prices the "Big 3" has reiterated its expansion plans. Rio Tinto is looking to boost production by 50% to 333mtpy by 2015, BHP by 37% to 220mtpy and Vale by 52% to 469mtpy.

Major miners that have moved to quarterly and monthly pricing conditions after abandoning annual benchmark system in 2010 are now starting to price iron ore shipments closer to spot. 14% of Rio Tinto's Q3 sales were made on the spot market, while Chinese buyers get a 1-month lag on their orders.

Benchmark iron ore prices



Source: Fairfax IS, Bloomberg

BHP said short-term pricing will provide customers with less reason to dispute or delay shipments.

The world seaborne iron ore market – iron ore that is shipped by ocean trade routes to steel mills and other purchasers – accounted for 60% or 1070mt of total production in 2010 according to Bloomberg. In H1 2011 total iron ore shipments amounted to 540mt, a 2% yoy increase compared to 2010, with Australia (212mt), Brazil (148mt) and India (55mt) being leading exporters and accounting for around 75% of the market.

World crude steel production totalled nearly 1,420mt (+15% yoy) in 2010, while total iron ore output was marginally short of 1,800mt (+13% yoy).

Emerging economies are expected to drive next decade's economic growth. In particular, China's crude steel production is forecasted to grow by 4% CAGR from current 680mt and average above 1bn tons by 2025 according to BHP Billiton primarily driven by increasing urbanisation of Western and Central provinces. (see charts below on drivers of Chinese crude steel demand).

High marginal cost of iron ore production in China forces the nation to import 65% of domestic supply mostly from Australia, Brazil and India. Chinese iron ore deposits are normally low grade, deep in the ground and found far from transportation links.

Production cash costs average around US$110-126/t with grades ranging between 25-35% compared to top foreign producers' costs of c. US$50/t and grades of about 65%.

The Chinese industry is being forced to consolidate, to improve control over pricing, raise the efficiency of supply and reduce reliance on imports. On 28 October 2011, Hebei Iron Steel, the largest steelmaker in China, and Shougang Group signed an agreement to combine nearly 700mt of iron ore reserves in Hebei province and form Asia's biggest base for steel production raw material.

China targets 45% self sufficiency rate in iron ore by 2015 and plans to own 50% of foreign iron ore resources it imports according to the China Iron and Steel Association.

In the first 9 months of 2011, China imported 510mt of iron ore, up 10% yoy.

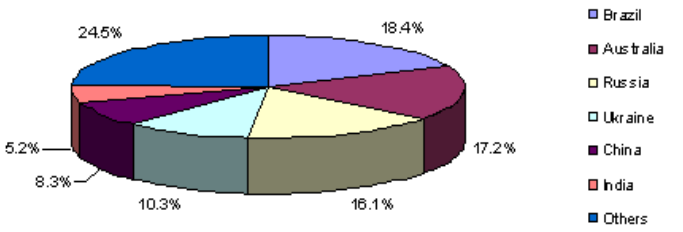
Iron ore inventories in Chinese ports were 94mt as of 4 November, 1mt short of a record level recorded in August this year, and more than 30% compared to last year.

Indian seaborne iron ore exports account for 10% of total supply are expected to be limited as the government increased export taxes and rail transport rates for local producers. The government treats iron ore as a strategically important material and aims to secure supply to meet local demand. Shipments to China recorded a 24% yoy drop in the January-September period.

Having said that, a reduction in Indian supply is unlikely to provide support to prices as Australian and Brazilian producers are ready to close the gap.

Growing volatility and a move towards shorter contract pricing more than doubled iron ore derivatives volumes to 9mt in October compared to 4mt in July 2011. The size of the paper market is no match of above 1bn tons per year physical market. By contrast, nearly 820m tons of copper futures were traded on the LME in 2011 which is around 40x times the physical market.

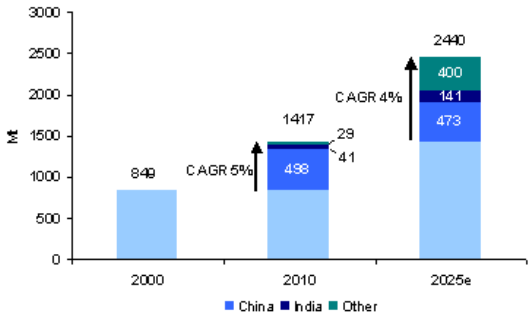
Iron Ore Content Reserves 87,000mt 2010



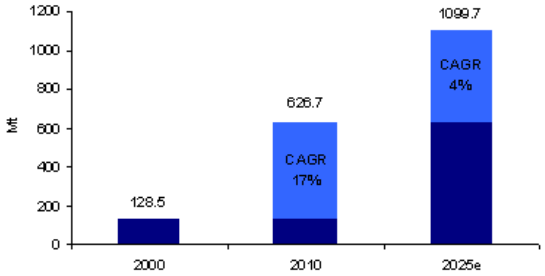
Source: Fairfax IS, USGS

Steel Demand drivers and projections in China

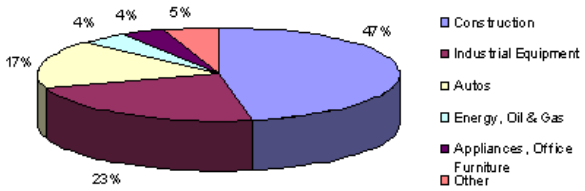
World Crude Steel Production



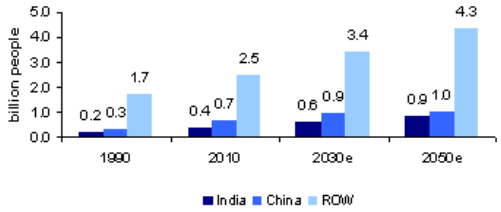
China Crude Steel Production



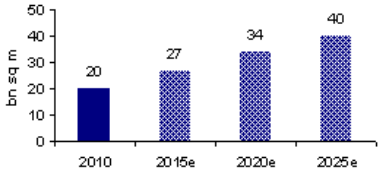
End Use of Steel in China



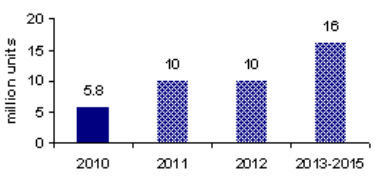
Forecasted urbanisation of India, China and ROW



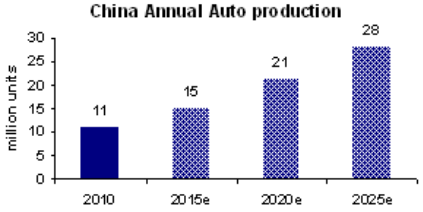
China urban residential floor space



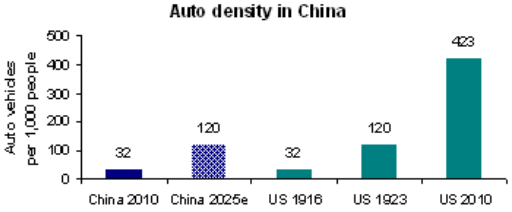
China's affordable housing starts in 2010-2015



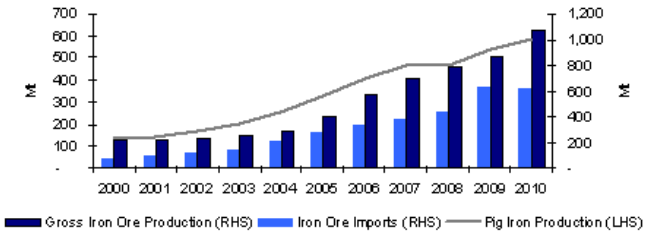
China Annual Auto production



Auto density in China



China Iron Ore Production, Iron Ore Imports and Pig Iron Output



Source: Fairfax IS, Bloomberg, BHP Billiton

Investment Research **DISCLAIMER**

This note is investment research which has been prepared on an independent and objective basis by Fairfax I.S. PLC in accordance with the legal requirements for preparation of investment research. This note has been issued by Fairfax I.S. PLC in order to promote its investment services. Neither the information nor the opinions expressed herein constitutes, or is to be construed as, an offer or invitation or other solicitation or recommendation to buy or sell investments. The information contained herein is based on sources which we believe to be reliable, but we do not represent that it is wholly accurate or complete. Fairfax I.S. PLC is not responsible for any errors or omissions or for the results obtained from the use of such information.

No reliance may be placed for any purpose whatsoever on the information, representations, estimates or opinions contained in this note, and no liability is accepted for any such information, representation, estimate or opinion. All opinions and estimates included in this report are subject to change without notice. This note is confidential and is being supplied to you solely for your information and may not be reproduced, redistributed or passed on, directly or indirectly, to any other person or published in whole or in part, for any purpose.

In some cases, this research may have been sent to you by a party other than Fairfax I.S. PLC, and if so, the contents may have been altered from the original, or comments may have been added, which may not be the opinions of Fairfax I.S. PLC. In these cases Fairfax I.S. PLC is not responsible for this amended research.

The investments discussed in this report may not be suitable for all investors. Investors should make their own investment decisions based upon their own financial objectives and financial resources and it should be noted that investment involves risk. Past performance is not necessarily a guide to future performance and an investor may not get back the amount originally invested. Where investment is made in currencies other than the currency of the investments, movements in exchange rates will have an effect on the value, either favourable or unfavourable.

This note is intended only for distribution to Professional Clients and Eligible Counterparties as defined under the rules of the Financial Services Authority and is not directed at Retail Clients.

You are advised that Fairfax I.S plc and/or its directors and employees may have already acted upon the recommendations contained herein or made use of all information on which they are based. Fairfax I.S plc is or may be providing, or has or may have provided within the previous 12 months, significant advice or investment services in relation to some of the investments concerned or related investments.

Fairfax I.S. PLC is a company registered in England and Wales with company number 5496355 and its registered office is Fairfax I.S. PLC, 7 Queen Street, Mayfair, London W1J 5PB, United Kingdom. Fairfax I.S. PLC is Authorised and Regulated by the Financial Services Authority whose address is 25 The North Colonnade, Canary Wharf, London E14 5HS and is a Member of the London Stock Exchange plc.

Fairfax I.S. PLC Equity Research Ratings Distribution for the period 01/10/11 – 31/12/11

	Buy	Hold	Sell
4Q11	75.00%	25.00%	0.00%

Fairfax I.S. PLC definition of research ratings:

Expected performance over 12 months
Buy - expected return of greater than +10%
Hold - expected return from -10% to +10%
Sell - expected return of less than -10%