



How can a market consultant add value to a the development of a project

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30 August 2010

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Preface

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Structure of the presentation

- **Introduction**
 - **Who is CRU?**
 - **Locations**
 - **Markets we cover**
- The importance of a market consultant
 - What is the major issue facing junior/mid-tier mining company?
 - The development of a typical project
 - Where can a market consultant assist the process?
 - Case Studies
- Conclusions



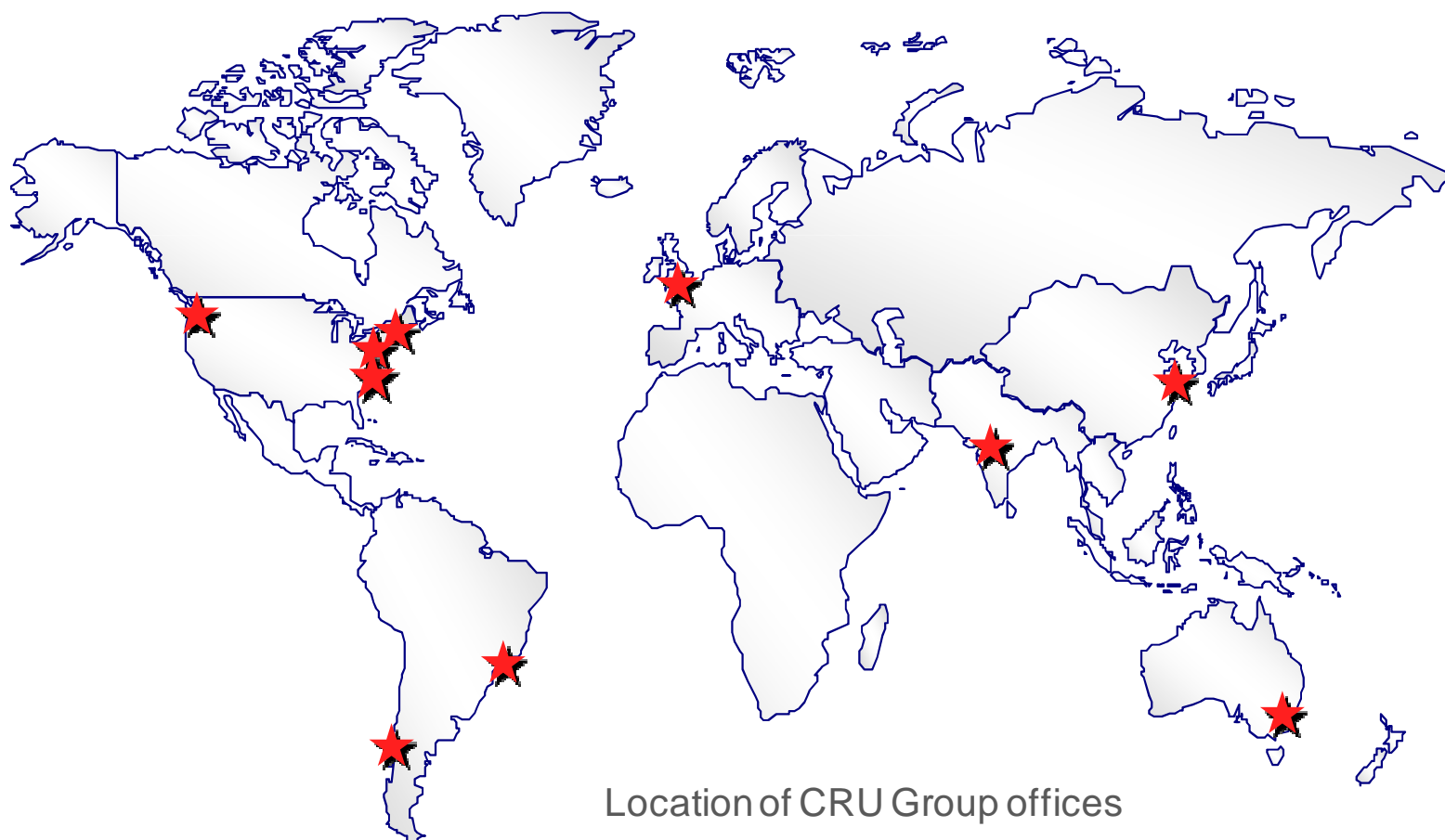
CRU provides independent analysis and consultancy to the mining and metals industries

- CRU has been the leading research group in the mining, metal and chemical industries for over **four decades**
- Providing a truly **independent view**, which is backed by proprietary data and powerful models
- **CRU Strategies** provides **bespoke consultancy** for industry participants, stakeholders and investors alike
- Prior **knowledge** ensures access to the kinds of **insights** that other consultancies struggle to achieve
- As industrial **experts and economists**, we speak **both languages**





CRU Group employs over 190 experts to provide research, analysis and intelligence on the global metals industries





CRU Strategies' expertise spans the spectrum of metals and minerals, encompassing the entire value chain

We cover...

Steel	Stainless Steel Chrome Molybdenum Iron Ore Carbon Steel Ferro Alloys Vanadium
Base Metals	Copper Nickel Lead Zinc Semis Concentrates
Aluminium	Bauxite Alumina Primary Semis
Precious Metals	PGMs Silver Gold
Wire & Cable	Aluminium Cable Copper Cable Optical Fibre
Fertilizer & Chemicals	Nitrogen Phosphates Potash NPKs

...and offer a one-stop for multi-product companies

* Via our sister company British Sulphur Consultants



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What is the major problem facing junior and mid-tier mining companies.... Financing!

- Currently there is a “Divorce” between the local capital markets and the mining sector
- Mining activity accounts for 15% of Chile’s GDP and 60% of its exports, but mining related listings on the Santiago Stock Exchange (SSE) accounted for less than 7% of the total market capitalisation.
- Presently only 4 companies are listed on the exchange: Soquimich, CAP, Molymet, and Pucobre, with most juniors/mid-tier companies preferring the Peruvian/Toronto Stock exchanges.

Capital market lacks a mining culture - expert - Chile

Thursday, July 8, 2010

The main reason junior mining companies are not listed on the Santiago Stock Exchange is that the local capital market lacks a mining culture, according to a Chilean expert.

Chilean stock market prevents mining companies from being listed, Cesar Perez-Benavente told BNAmericas.

In Chile that are as there they even production,

panies to be listed governance, to promote

at the

¿Por qué el divorcio entre la bolsa y la minería?

TALLER DE LA COMISIÓN MINERA



The full interview with Cesar Benavente, for subscribers only.

Victor Henriquez
Business News Americas

Los Problemas ...

- Falta de Información para evaluar proyectos
- Obtención de recursos en el exterior (ejemplo: listado internacional)
- “Proyectos Mesada”
- Concesiones complejas
- Falta de patentes mineras
- Mediana disponibilidad de información geológica



It typically takes 20 years from discovery to production

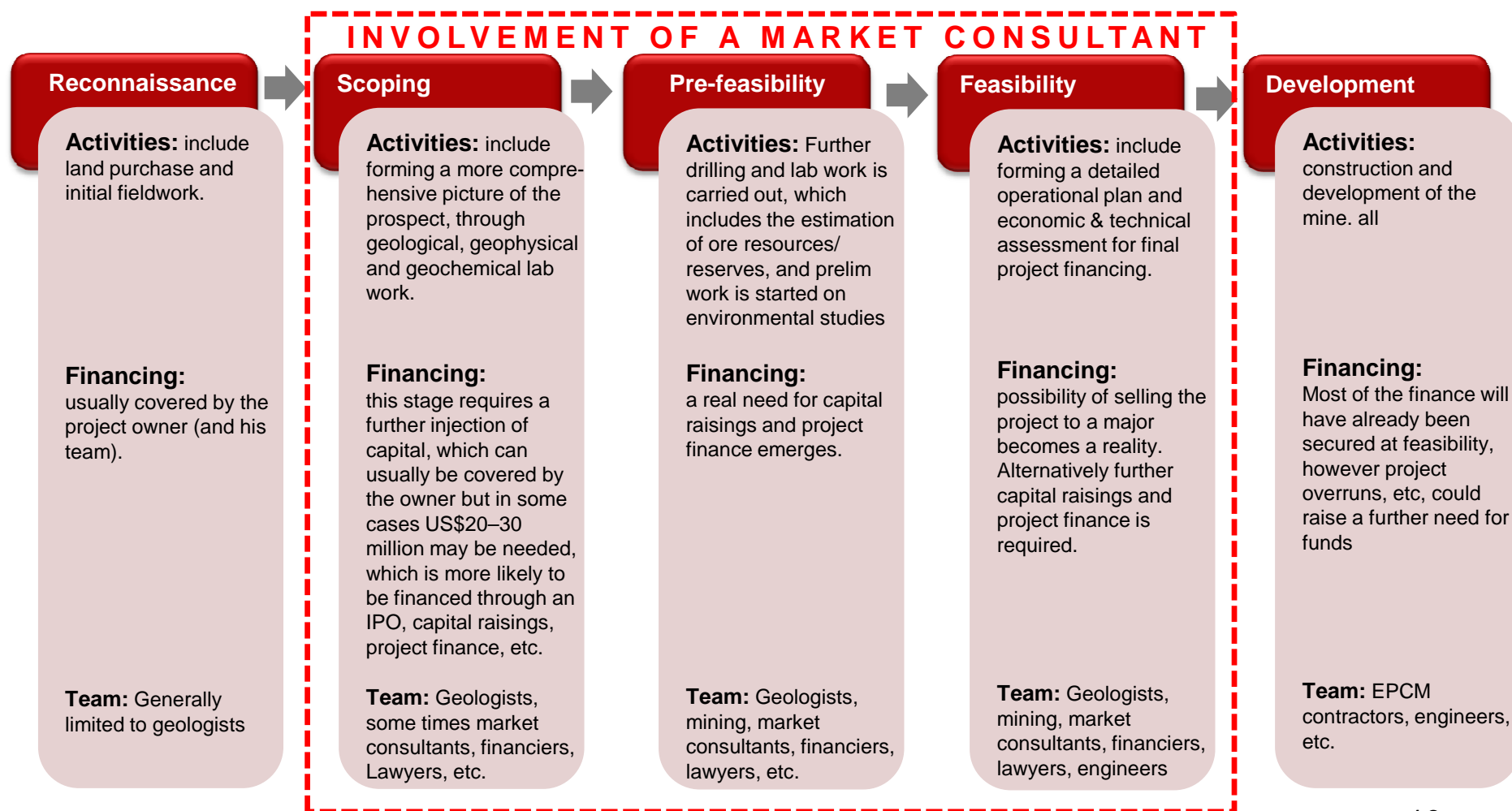
	Discovery	Exploration	Studies	Finance/Permits	Construction	Prod'n	Yrs since discovery
Antamina	1957	6 years + 2 yrs (as required by tender)	3 years	included	3 years	2001	44
Aynak	1974	16 years	6 years	included	4 years	2012	38
Collahuasi	1978	13 years	4 years	2 yrs	3 years	1999	21
Los Pelambres	1914	7 years	5 years	5 years	3 years	2000	86
Lumwana	1961	5 years + 3 years	4 years	2 yrs	3 years	2009	48
Oyu Tolgoi	1995	8 years	3 years	3 years	4 years	2013	18
Petaquilla	1968	9 years	8 years	2 yrs (estimated)	4 years	2015	47
Reko Diq	1993	10 years	4 years	2 yrs (estimated)	4 years	2016	23
Salobo	1977	5 years + 5 years	5 years	3 years	4 years	2011	44
Tenke	1918	6 years + 4 years	4 years + 2 yrs	7 years	2 years	2009	91
AVERAGE	1964	10 years	5 years	2.6 years	3.4 years		46

Average time from commencement of studies is ~10-11 years

Data: CRU, Company websites, historical articles.
Where stages are not specifically noted, CRU experience and judgement has been used.
Not all stages are continuous, both "exploration" and "studies" have many gaps.



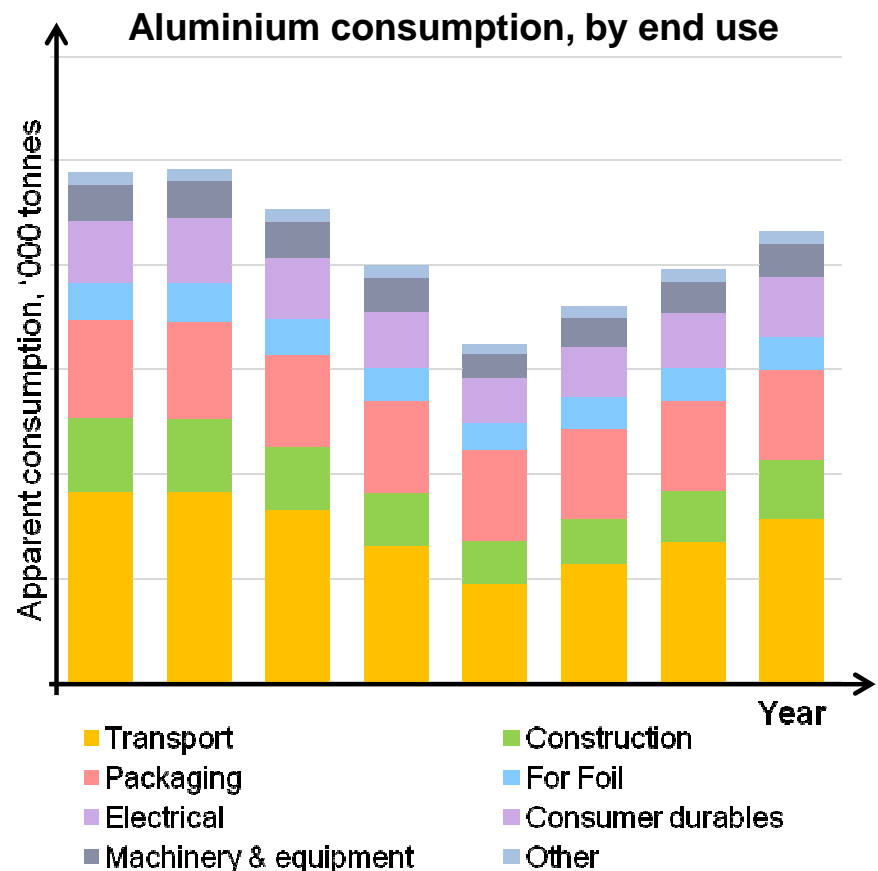
The value chain of a typical mining project...





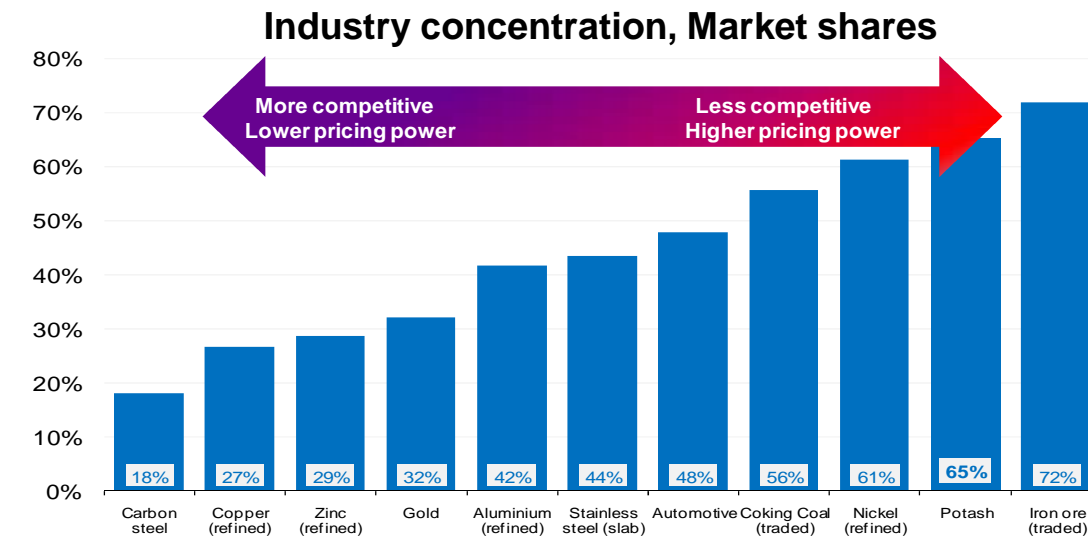
Initially, CRU can help to enhance investors' knowledge of the industry, thereby attracting venture capital:

- What do these investors need to know?
 - **What is the product...** Copper/gold and its uses thereof are well known, what about the case of molybdenum, or tungsten, or even rare earths?
 - **Where is it consumed?**
 - **What sectors consume the product?**
 - **What are the mid/long term prospects in these sectors?** remember we are not just looking 1 or 2 years ahead – a project can take up to 8 years to construct...
 - **Base/ high/ low case scenarios can be constructed..**



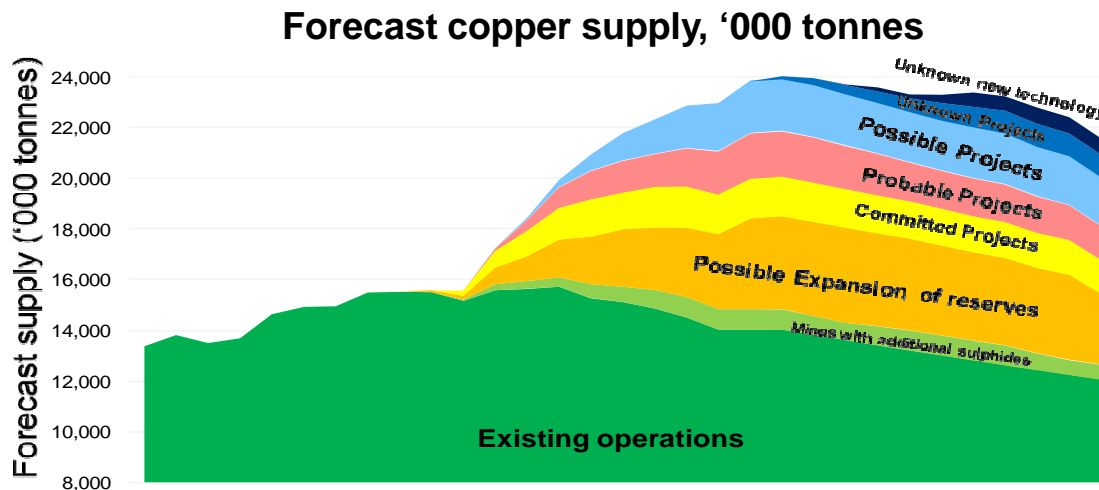


On the supply side, one needs to know who your competitors are and how the industry is structured...



Market consultants can help formulate a picture of:

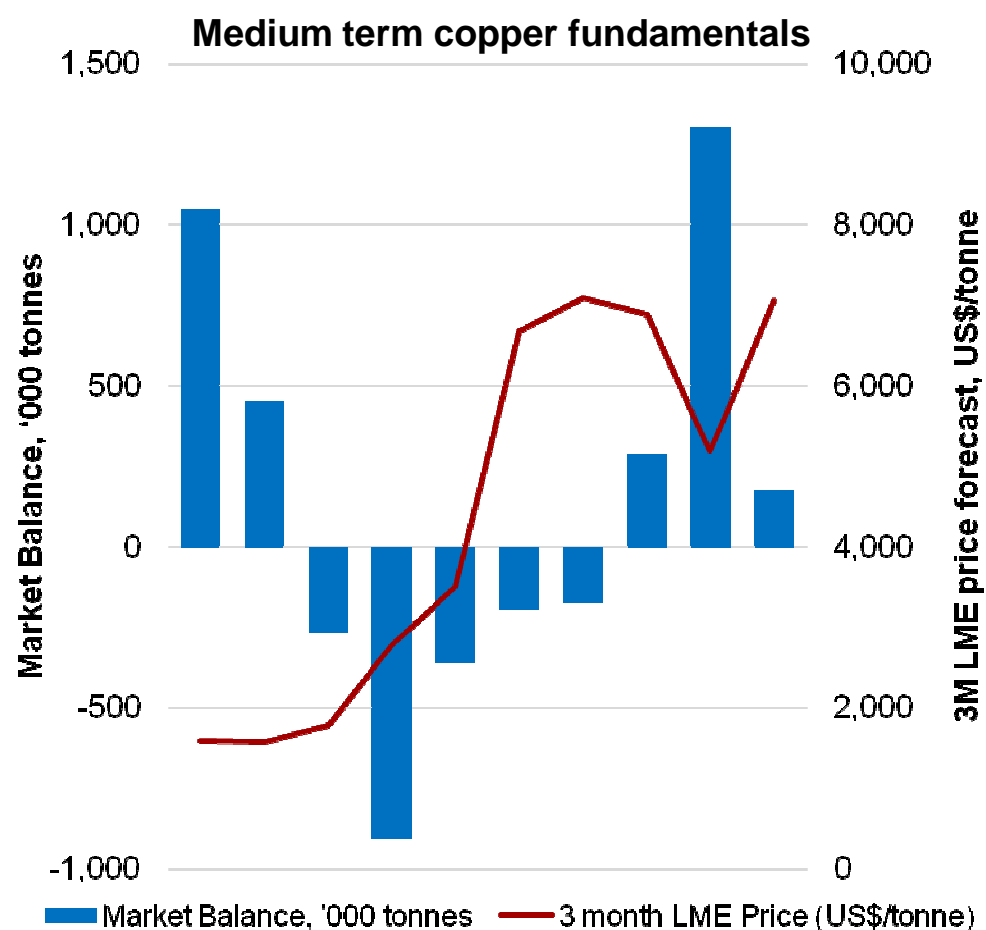
- Current competitive environment and impacts thereof...
 - Geographic distribution;
 - Concentration of incumbent producers;
 - Analysis of industry profits
- Expected expansions, including the additional tonnage and timing thereof...
 - Confirmed, possible, probable expansions...
 - Potential impact of new technology, etc.





.. but most importantly, a market consultant should provide an independent outlook on benchmark pricing

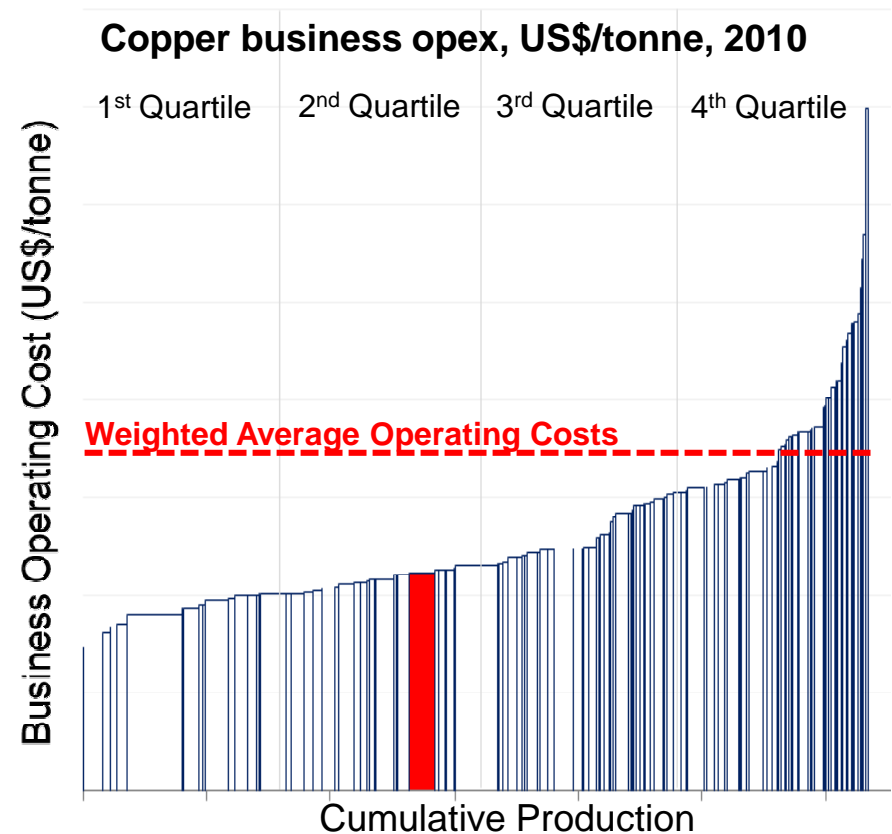
- Short term this typically constructed by analysing fundamentals, i.e. market balance...
 - Important that this price is independent;
 - low/reference case pricing models are important for financial institutions
- Longer term (+5 years) this is done through an analysis of the marginal cost of production.





... further along the project development side, a market consultant can help benchmark the project, on a cost and...

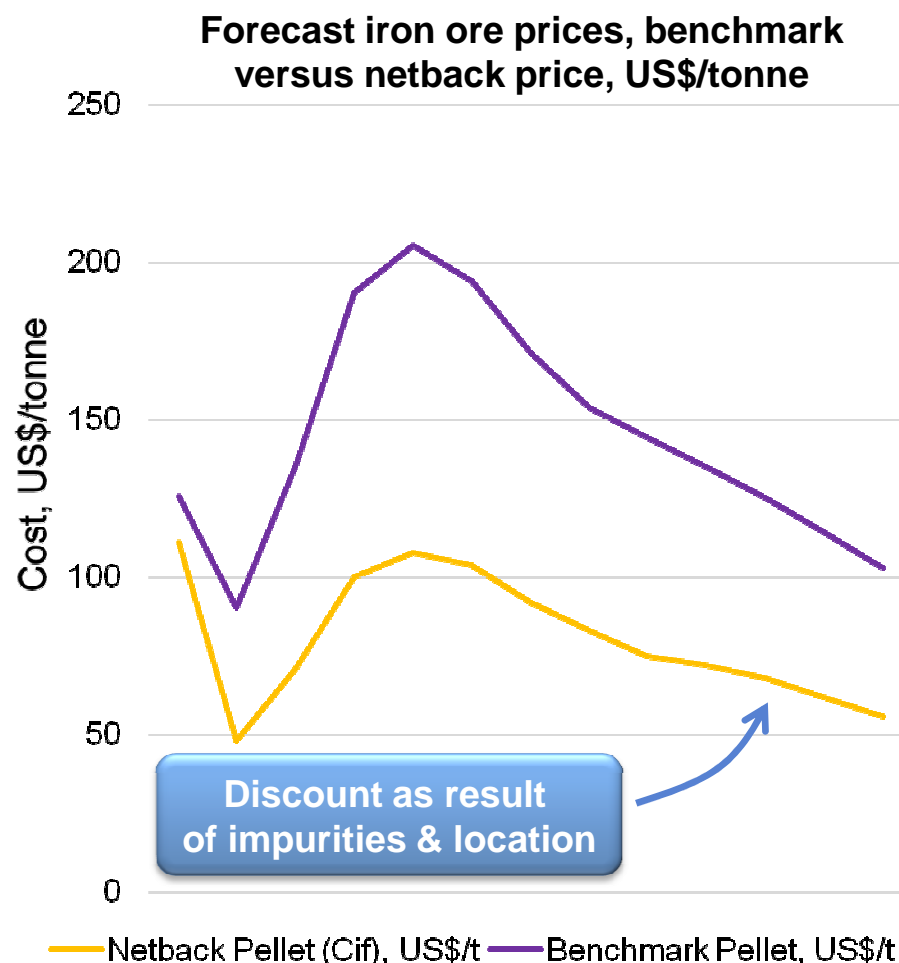
- Market consultants can help estimate opex costs:
 - at the various stages of production (i.e. concentrating, refining, smelting, etc.)
 - during ramp-up and full production
 - on a site and business cost basis
- CRU has detailed cost estimates for most ferrous and non-ferrous sectors, which allows us to plot the project on an industry cost curve...





... and price basis

- Benchmark prices are useful, but in reality a project is unlikely to earn that exact amount, due to:
 - Impurities
 - Logistics
 - etc.
- Montecarlo simulations are also useful in determining how well a price is likely to hold up during a downturn – how for this your assumption need to be well thought out...





Example of where a market consultant can add value

Situation:

A mid-tier mining company presently active in the Latin American copper markets was evaluating a greenfield project on the Asian subcontinent, and needed our help in their negotiations with the local authorities.

Methodology:

As the local authorities were new to the industry, the company wanted us to help educate them on the intricacies of the copper market. This was done through a series of workshops, in which the company presented our work which was an introduction to the market as well as an independent outlook on the economics of the project focused in an smelter/refining complex.

Our recommendation: Not to enter the smelter/refining business and to stay where the most added values is generated (mining stage).



Overview:

The client approached us to get all involved stakeholders up to speed with the copper market, and thereon assist them in the negotiation process. This involved:

- Research about the copper market. Refined and concentrate business.
- Presenting a comprehensive outlook on the market, analysing medium and long term demand, supply and price fundamentals.
- And finally also constructing a cash flow model to establish an overall feasibility for the project in question, based on an estimate of the project's likely capital expenditure and the expected rate of return.



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To wrap up, how can a market consultant assist?

- **CRU can help both:** mining companies and investors
- **Role:** provide independent view of the markets and the project.
- **Positive:**
 - enhance the knowledge and confidence
 - Aiming to narrow the gap between the mining business and financial market
- As project can take up to 20 years to develop its important to form a **objective opinion of the medium/long term fundamentals in the market...** i.e. is there still going to be a market for your product, once its being produced?



Where can you find us?



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