



Nickel Market Overview - The Supply Response

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Prepared by:

Vanessa Davidson

CRU Special Steels & Alloys Team

LONDON | BEIJING | PHILADELPHIA | WASHINGTON

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31 Mount Pleasant, London WC1X 0AD UK
Tel +44 20 7903 2000 Fax +44 20 7837 0976
www.cruanalysis.com



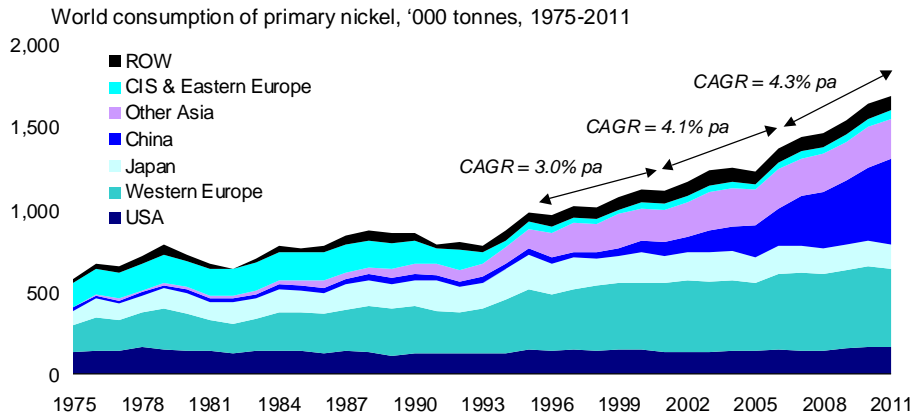
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Data: CRU Analysis



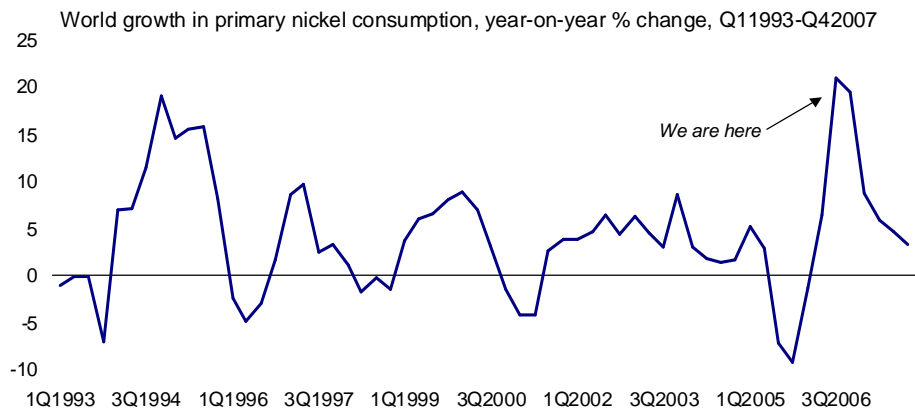
Strong growth in primary nickel consumption is expected in the next five years...



Data: CRU Analysis CAGR = compound annual growth rate



...but as usual consumption will follow a cyclical pattern



Data: CRU Analysis



Over 320,000 tonnes more primary nickel will be required by 2011 compared with 2006

	Increase / Decrease 2006-2011
Stainless production, m tonnes	+7.4
Nickel units required by the stainless industry, '000t	+355
- Of which primary units, '000t	+215
- Of which secondary units, '000t	+140
Nickel units required in non-stainless applications, '000t	+110
Total increase in consumption of primary nickel, '000t	+325

Data: CRU Analysis

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Nickel Supply: Sulphides versus Laterites

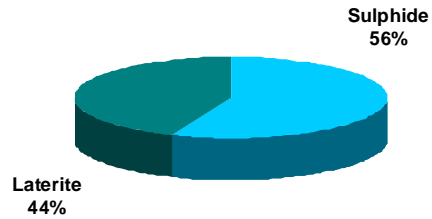
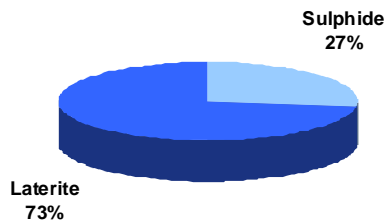
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World nickel resources are mainly laterite but today's production comes predominantly from sulphide ore bodies

1. Global nickel resources, %

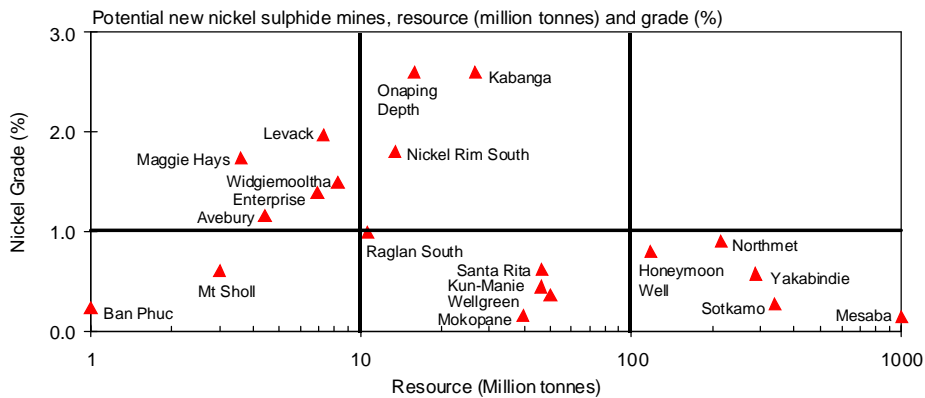
2. Global nickel production, %



Data: Inco, CRU Analysis



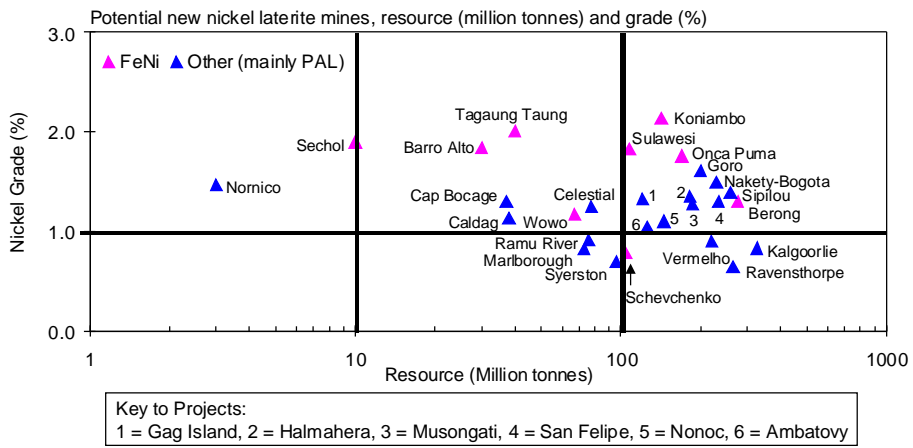
Lack of potential new sulphide projects that are both large and high grade...



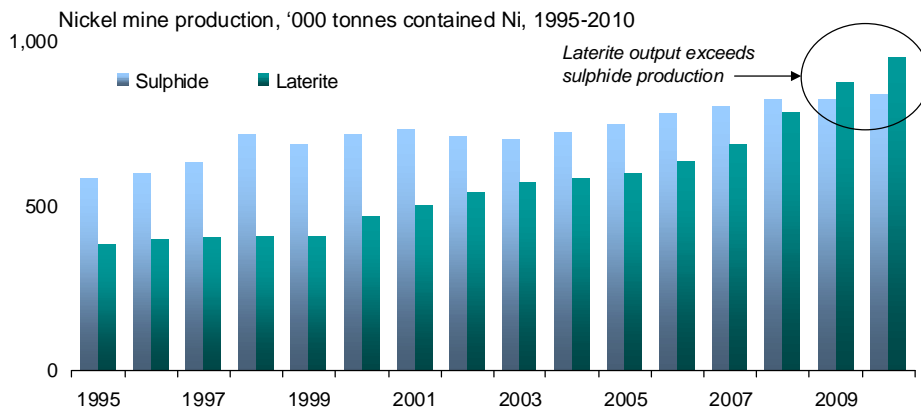
Data: CRU Analysis



...leaving the nickel industry dependent on laterite projects, especially HPAL operations...



Laterite production will overtake sulphide output before the end of the decade





Laterite Projects

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There are a number of firm plans for new laterite capacity...

	Capacity	Timing	Type
Greenfield Projects, Committed:			
Berong – Toledo Mining	+10,000tpy	2006 Q4	Ore Production
Caldag – European Nickel	+21,000tpy	2007	Heap Leach
Ferronikeli – Int. Mining/Alferon	+10,000tpy	2008/09	Smelting to FeNi
Goro - Inco	+60,000tpy	2008	HPAL
Onca-Puma - CVRD	+57,000tpy	2008	Smelting to FeNi
Ravensthorpe – BHP Billiton	+45,000tpy	2008	HPAL
Vermelho - CVRD	+46,000tpy	2009	HPAL
Total	+249,000tpy		
Brownfield Expansions, Committed:			
Moa Bay / Sherritt	+16,000tpy	2007	HPAL
PT Inco	+19,000tpy	2009	Smelting to Matte
Rio Tuba II	+10,000tpy	2009	HPAL
Total	+45,000tpy		
Grand Total	+294,000tpy		

Data: CRU Analysis, Company Reports & Presentations

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...and a number of probable/possible laterite projects on the agenda

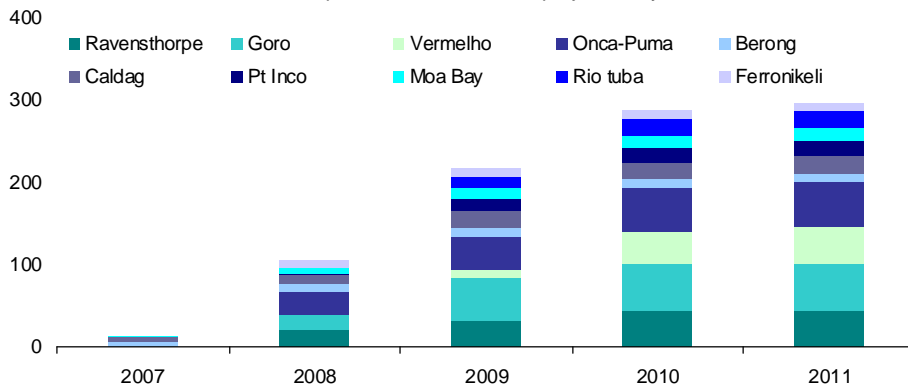
	Capacity	Timing	Type
Greenfield Projects, Probable and Possible, Selection Only:			
Ambatovy – Dynatec/Sumitomo	+60,000tpy	After 2010	HPAL
Barro Alto – Anglo American	+33,000tpy	2009/10	Smelting to FeNi
Gwangyang – SMSP/Posco	+30,000tpy	2009/10	Smelting to FeNi
Halmahera - Eramet	+60,000tpy	After 2010	HPAL
Koniambo – SMSP/Xstrata Nickel	+60,000tpy	After 2010	Smelting to FeNi
Marlborough Stage 1 – Gladstone	+36,000tpy	After 2010	HPAL
Nonoc –Philnico/Jinchuan/Baosteel	+40,000tpy	After 2010	HPAL
Ramu River – CMCC/Highlands Pacific	+33,000tpy	After 2010	HPAL
Schevchenko – Oriel Resources	+21,000tpy	2009/10	Smelting to FeNi
Syerston – Invanhoe Ni & Platinum	+18,000tpy	After 2010	HPAL
Total	+391,000tpy		

Data: CRU Analysis, Company Reports & Presentations



Most new laterite capacity will represent a net addition to world nickel supply

Net additions to world mine output, committed laterite projects only, '000 tonnes, 2007-2011

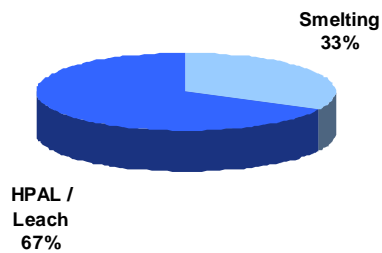


Data: CRU Analysis



More than 65% of the new laterite capacity will be based on hydrometallurgical processes

New laterite capacity (firm projects only) by type of technology:



Data: CRU Analysis

Challenges:

- The bulk of the hydromet plants will use a form of high pressure acid leach (HPAL) technology.
- HPAL plants are technically complex and operationally demanding.
- There is currently a shortage of skilled labour to work on these projects.
- Delays to the start-up of the HPAL plants are already occurring.
- Even once the HPAL projects start-up, there is a question mark over how quickly they can reach full capacity.
- The other hydromet process - heap leaching - is currently commercially unproven for nickel.



Sulphide Projects



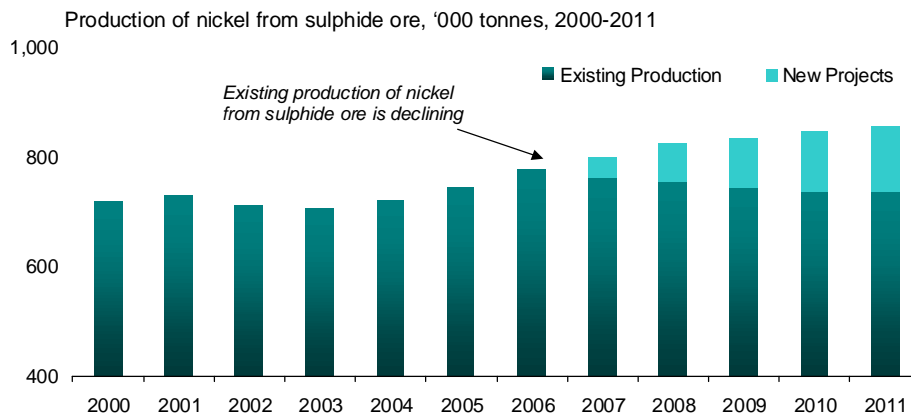
Most new sulphide mines are small-scale

Greenfield Projects, committed:	Capacity	Timing	Product
Avebury – Allegiance	+8,000tpy	2007	Concentrate
Bostwana Activox – LionOre	+23,000tpy	2009/10	Metal
Enterprise – Albidon	+8,000tpy	2008	Concentrate
Flying Fox – Western Areas	+12,000tpy	2006/07	Concentrate
Nickel Rim South – Xstrata Nickel	+12,000tpy	2009	Concentrate
Total	+63,000tpy		
Brownfield Expansions, committed:			
Black Swan - LionOre	+5,000tpy	2006 Q4	Concentrate
East Alpha – Consolidated Minerals	+5,000tpy	2007	Concentrate
Jilin – Jilin Huarong	+15,000tpy	2008/09	Matte
Jinchang – Jinchuan	+15,000tpy	2007/08	Metal
Maggie Hays – LionOre	+6,000tpy	2007	Concentrate
Mittel South – Mincor Resources	+2,000tpy	2007	Concentrate
Nkomati 1 – ARM/LionOre	+5,000tpy	2007	Concentrate
Phoenix – Tati Nickel	+2,000tpy	2006 Q4	Concentrate
Prospero – Jubilee Mines	+8,000tpy	2008	Concentrate
Raglan – Xstrata Nickel	+5,000tpy	2008	Concentrate
Taimyr & Kola – Norilsk Nickel	+15,000tpy	2010/11	Metal
Total	+83,000tpy		
Grand Total	+146,000tpy		

Data: CRU Analysis, Company Reports & Presentations



18% of the nickel from new sulphide mines will represent replacement feed

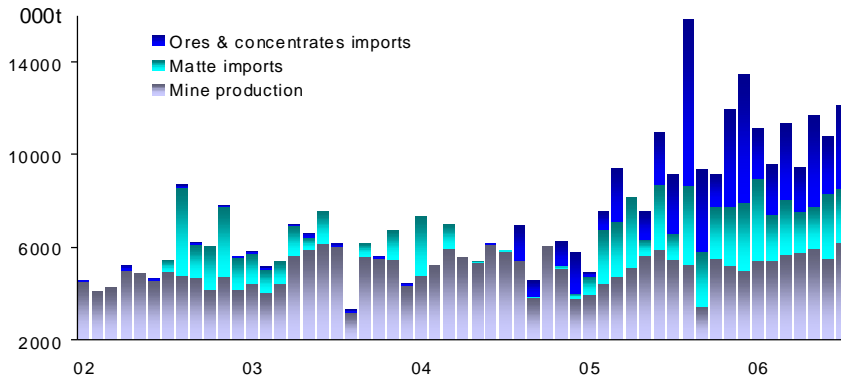


Data: CRU Analysis



The Chinese have become large buyers of sulphide intermediates...

China's sources of smelter and refinery feed, 2002-6, 000t nickel content*



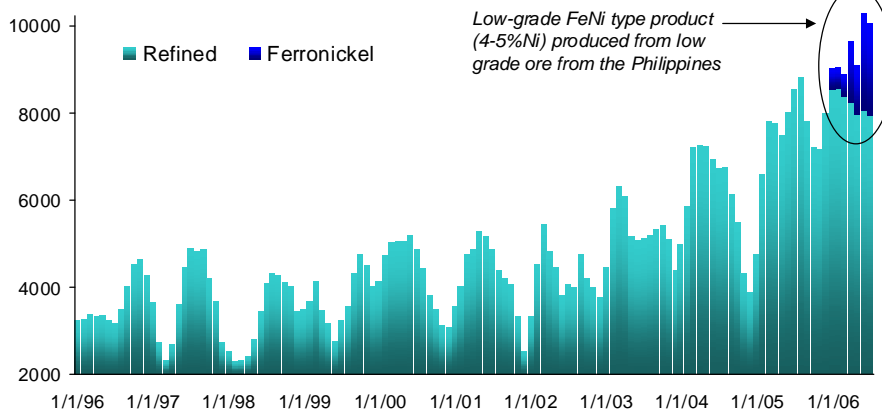
*Nickel content assumption: matte = 75% Ni; ores & concentrates = 12% 2002 to October 2005, then variable

Data: GTIS, CRU Analysis



...in order to increase refined nickel production in China

Chinese output of refined nickel (3 month moving average) and ferronickel, 1996-2006, 000t gross weight

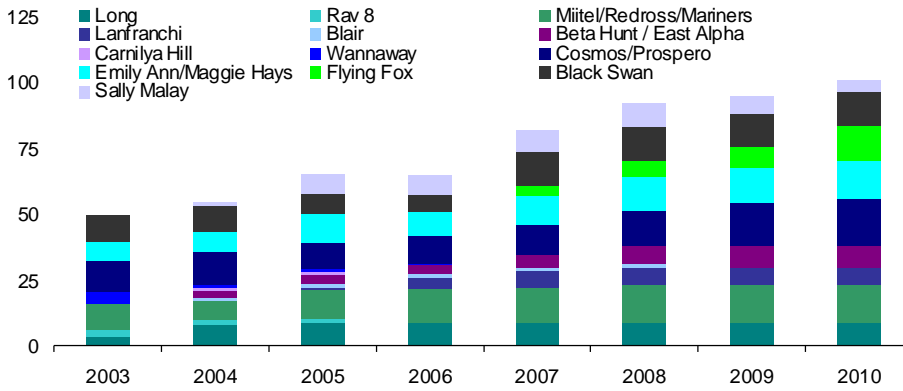


Data: INSG, GTIS



Production at small-scale Australian mines is expanding

Production of nickel-in-concentrate at small-scale Australian mines, '000t, 2003-2010



Data: CRU Analysis



If the Activox process is successful on a commercial scale at Tati, it will unlock other sulphide projects for LionOre

Project	Capacity tpy	Stage of Development	Timing 1 st Metal
Tati Activox	23,000	Approved	Q3 2009
Nkomati Activox	24,000	Feasibility	2010
Australian Activox	43,000	Feasibility	After 2010
Total	90,000		

Data: LionOre, CRU Analysis

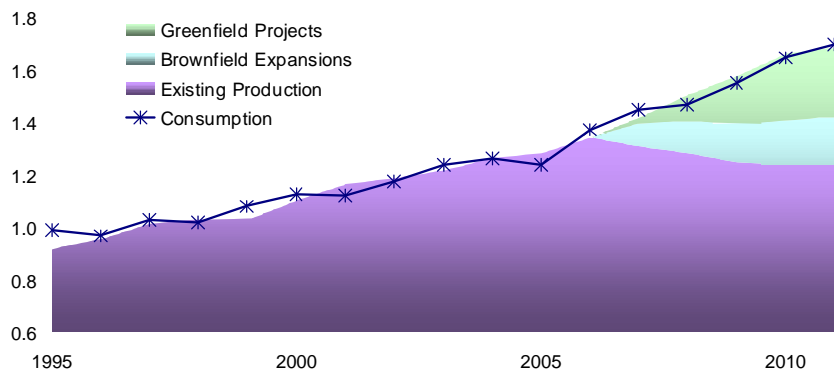


Supply and Demand



Nickel supply should keep pace with demand

World consumption and production of refined nickel, m tonnes, 1995-2011



Data: CRU Analysis



Supply and demand are evenly matched in next 5 years

	Increase / Decrease 2006-2011 Tonnes
Greenfield projects (committed)	312,000
Brownfield expansions (committed)	128,000
Closures / fall in output due to declining ore grades	-50,000
Disruption allowance*	-20,000
Total increase in supply of primary nickel	370,000
Increase in consumption of primary nickel	325,000
Stock replenishment (LME, producer, consumer)**	30,000
Total increase in demand for primary nickel	355,000
Balance	+15,000

* To account for unforeseen disruptions to production, delayed start-ups and extended ramp-ups.

** To re-build industry stocks to more comfortable levels

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Conclusions:

- Sulphide deposits are being used up at a faster rate than they are being replenished. Not only is the quantity of sulphide-bearing ore falling, but ore grades are declining too.
- Almost 20% of new sulphide production will represent replacement feed.
- To guarantee the future supply of nickel, the industry must develop laterite ore bodies, especially limonite deposits utilising HPAL technology.
- HPAL plants are technically complex and operationally demanding. The first wave of HPAL plants in Australia suffered from significant delays and operating problems.
- At first sight, there is a sufficient number of committed new nickel projects to meet demand over the next 5 years.
- But a number of these projects are based on HPAL technology implying that there is a significant risk that production targets will NOT be met.
- A major delay by just one of the large HPAL projects could leave the nickel industry supply-constrained until well into the next decade.

Data: CRU Analysis

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Thank you for your attention!

Vanessa Davidson
Research Manager, Special Steels & Alloys

CRU Analysis
31 Mount Pleasant
London
WC1X 0AD

Tel.: +44 20 7903 2207

Fax.: +44 20 7833 5634

Email:

vanessa.davidson@crugroup.com