



# NICKEL

Nickel has three operating assets, all producing ferronickel: the world class Barro Alto mine, now in its ramp-up phase, and Codemin, both in Brazil; and Loma de Níquel in Venezuela.

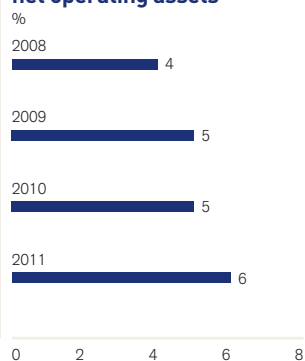
Approximately two-thirds of nickel is used in the production of stainless steel. Just over 20% is used to make other types of steel and for super-alloys, which can withstand extreme temperatures.

**Image**

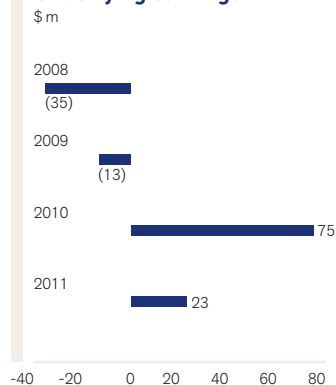
Nickel being poured at the new Barro Alto plant, which produced its first metal in March 2011.

# FINANCIAL HIGHLIGHTS

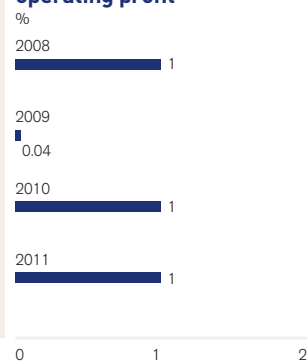
## Share of Group net operating assets



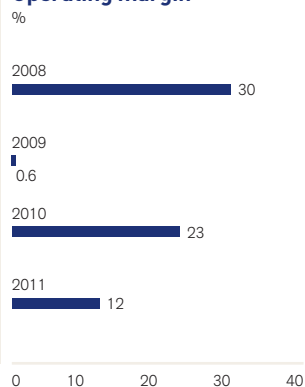
## Underlying earnings



## Share of Group operating profit



## Operating margin



## Anglo American nickel production



# FINANCIAL DATA

\$ million	2011	2010	2009	2008
<b>Turnover</b>				
Codemin	203	195	157	198
Loma de Níquel	285	231	191	210
Projects and Corporate	–	–	–	–
<b>Total turnover</b>	<b>488</b>	<b>426</b>	<b>348</b>	<b>408</b>
<b>EBITDA</b>				
Codemin	77	83	49	132
Loma de Níquel	86	82	11	48
Projects and Corporate	(79)	(43)	(32)	(30)
<b>Total EBITDA</b>	<b>84</b>	<b>122</b>	<b>28</b>	<b>150</b>
<b>Depreciation and amortisation</b>	<b>27</b>	<b>26</b>	<b>(26)</b>	<b>(27)</b>
<b>Operating profit before special items and remeasurements</b>				
Codemin	73	76	41	123
Loma de Níquel	66	65	(7)	30
Projects and Corporate	(82)	(45)	(32)	(30)
<b>Total operating profit before special items and remeasurements</b>	<b>57</b>	<b>96</b>	<b>2</b>	<b>123</b>
Operating special items and remeasurements	(72)	(51)	(88)	(130)
<b>Operating profit after special items and remeasurements</b>	<b>(15)</b>	<b>45</b>	<b>(86)</b>	<b>(7)</b>
<b>Net interest, tax and non-controlling interests</b>	<b>(34)</b>	<b>(21)</b>	<b>(15)</b>	<b>(158)</b>
<b>Underlying earnings</b>				
Codemin	52	48	24	94
Loma de Níquel	29	55	17	(97)
Projects and Corporate	(58)	(28)	(54)	(32)
<b>Total underlying earnings</b>	<b>23</b>	<b>75</b>	<b>(13)</b>	<b>(35)</b>
<b>Net operating assets</b>	<b>2,535</b>	<b>2,334</b>	<b>1,787</b>	<b>1,401</b>
<b>Capital expenditure</b>	<b>398</b>	<b>525</b>	<b>554</b>	<b>530</b>



01 At Barro Alto, ore is heated at very high temperatures in these two 185 metre rotary kilns in a process known as calcining, which removes moisture and water crystals from the nickel bearing ore and starts the metallurgical process.



# BUSINESS OVERVIEW

## OPERATING PROFIT

(2010: \$96 m)

**\$57m**

## SHARE OF GROUP OPERATING PROFIT

(2010: 1%)

**1%**

## EBITDA

(2010: \$122 m)

**\$84m**

## Financial highlights

\$ million (unless otherwise stated)	2011	2010
Operating profit	<b>57</b>	96
EBITDA	<b>84</b>	122
Net operating assets	<b>2,535</b>	2,334
Capital expenditure	<b>398</b>	525
Share of Group operating profit	<b>1%</b>	1%
Share of Group net operating assets	<b>6%</b>	5%

## BUSINESS OVERVIEW

Nickel has three ferronickel operations: Codemin and Barro Alto in Brazil and Loma de Níquel in Venezuela. Within the business unit's portfolio there are also two promising unapproved projects, Jacaré and Morro Sem Boné, both in Brazil, and exploration projects in Finland, Canada and Australia.



01 Ladles awaiting installation in the refinery at Barro Alto, which in its first nine months of operation since being commissioned at the end of March 2011 produced 6,200 tonnes of nickel.

# INDUSTRY OVERVIEW

## INDUSTRY OVERVIEW

Nickel's main use is as an alloying metal, along with chromium and other metals, in the production of stainless and heat resistant steel. Approximately two-thirds of nickel is used to manufacture stainless steel and just over 20% in other steel and non-ferrous alloys. Ferronickel's main use is in the manufacturing of stainless steel, with more than 95% used for this purpose.

There are two main types of nickel deposits: sulphides and laterites. Sulphide ore contains a significant number of by-products such as gold, silver, copper and platinum group metals, which generate processing credits, but the cost of mining this type of ore tends to be higher as underground mining is necessary. Laterites can be mined by open pit methods, with resultant lower mining costs, however, processing costs are higher. Sulphide nickel production has been decreasing in the last two decades; in 2011 almost 50% of global production came from sulphides, down from 70% in 1993. We consider the future of the nickel industry to lie mainly in the economic exploitation of laterite deposits.

In the first half of 2011, the nickel market was in deficit by approximately 33,000 tonnes as demand increased on the back of restocking by the stainless steel industry, while supply remained constrained owing to a series of unexpected mine disruptions and continued delays to new projects. The situation reversed in the second half of the year as supply increased following the ramping-up of several greenfield projects and the reactivation and expansion of existing operations. Uncertainty around the European economic situation and a slowdown in Chinese stainless steel production negatively impacted demand, and the market was broadly in balance for the full year.

Global ferronickel production increased to 378,000 tonnes in 2011 from 336,000 tonnes in 2010 – a 13% increase. Once again, China dominated global nickel demand, accounting for approximately 42%, a 14% increase when compared with the previous year.

Nickel prices fell sufficiently to have a real impact on costly nickel pig iron (NPI) run rates, encouraging stainless steel producers in China to switch back to refined metal and ferronickel. Chinese importers have pushed nickel ore stocks to new historical highs as demand from NPI producers wanes.

## Nickel stocks and prices



## Markets

Average nickel price (c/lb)	2011	2010
Average market price (LME, cash)	1,035	989
Average realised price (c/lb)	1,015	986

The average market nickel price was 5% higher than in 2010. During the first half of the year the nickel price was supported by demand growth from the stainless steel industry and a supply gap owing to mine disruptions and delays to a number of projects. The price peaked in February above 1,310c/lb. However, prices softened considerably in the second half, reflecting ongoing concern around uncertainty over the near term outlook for the global economy, softer summer demand in the northern hemisphere, higher supply from new projects (including Barro Alto) and higher NPI production. As a consequence, the nickel price fell to a low of under 770c/lb in November, before closing the year at 829c/lb.

The market was broadly in balance in 2011; global nickel consumption increased by around 7%, while supply increased by around 12%.

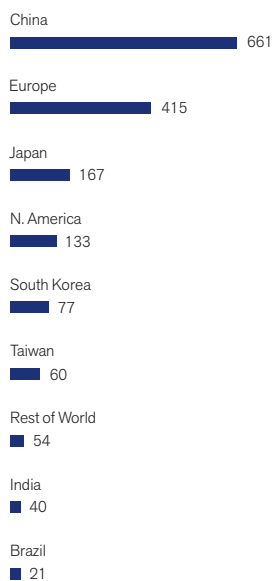
China continued to be a key consumer of nickel in 2011, contributing more than 40% of global stainless steel production in the year. Nickel consumption growth in China is expected to outpace other markets in 2012, although the North American market may surprise on the upside, while demand in Europe and the rest of Asia is expected to decrease.

# MARKET INFORMATION

## Leading nickel consumers

(2011 refined nickel consumption)

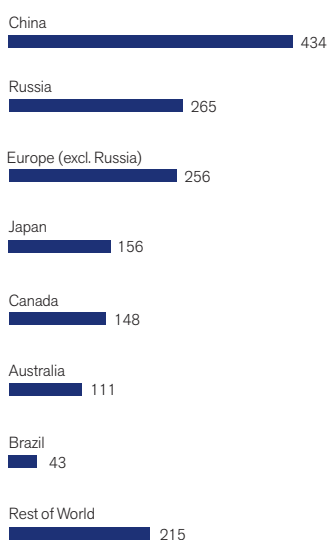
2011 World total: 1,629 kt  
kt contained Ni



Source: Brook Hunt – a Wood Mackenzie company

## Leading nickel refinery production by country

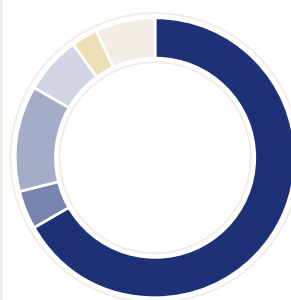
2011 World total 1,628 kt  
kt



Source: Brook Hunt – a Wood Mackenzie company

## Global nickel consumption by first use

%



Source: Brook Hunt – a Wood Mackenzie company

## Global stainless steel product consumption by end use

%



Source: Brook Hunt – a Wood Mackenzie company

# STRATEGY AND GROWTH

## STRATEGY AND GROWTH

Nickel's core strategy is to be a major, low cost ferronickel producer by the effective management of existing assets, continued focus on asset optimisation delivery and value maximisation through the development of world class deposits and evaluation of acquisition opportunities.

First metal from the Barro Alto ferronickel operation was produced on schedule in March 2011. Barro Alto has the potential to be one of the top five ferronickel operations in the world and its continued successful ramp-up is a key strategic goal. The new nickel plant will have a competitive cost position and a new marketing strategy has been implemented to leverage Group expertise and take advantage of the increased production.

Nickel's commitment to increasing competitiveness is demonstrated by investment in a research project called ARNi. The project is developing a hydrometallurgical process to treat laterite deposits economically.

A pilot plant was commissioned in January 2011, and two leach pilot campaigns were run using ore from the nickel laterite deposit at Jacaré. These campaigns showed that the leach technology worked better than anticipated, and successfully produced a nickel and cobalt intermediate product with very good recoveries. The pilot also produced high quality design data which will enable us to scale up to demonstration and commercial plants.

The technical success during 2011 has laid the foundation for ARNi as a technically and environmentally viable competitor for nickel laterite leaching. The financial viability of the process will be evaluated during the course of 2012.



01 Production operator Edineia Liberato Pereira at Barro Alto's ore preparation plant.

# PROJECT PIPELINE – KEY PROJECTS

## Barro Alto

Overall capex: \$1,900m

### Country

Brazil

### Ownership

100%

### Incremental production

36,000 tonnes per annum of nickel<sup>(1)</sup>

### Full project capex

\$1,900m

### Full production

Q1 2013

The Barro Alto project is located in the state of Goiás, Brazil, approximately 170 km from Anglo American's existing Codemin nickel operation. The project was approved in December 2006 and first metal was produced on schedule in March 2011 at a capital cost of \$1.9 billion. Average production will be 36 ktpa<sup>(1)</sup> of nickel (41 ktpa over the first five years), more than doubling production from our Nickel business. Once at full production, the operation is expected to be in the lower half of the cash cost curve. Conventional smelter-refinery technology will be used to process the saprolite ore to produce ferro-nickel, which is a technology already used by Anglo American at its existing nickel operations.



## Jacaré (unapproved)

Overall capex: TBD

### Country

Brazil

### Ownership

100%

### Incremental production

more than 35,000 tonnes per annum of nickel

### Full project capex

TBD

### First production date

TBD

The Jacaré project is located in Brazil and, at full production, is expected to operate in the lower half of the cost curve. Phase 1 of the project could potentially deliver 35 ktpa of nickel, with Phase 2 potentially delivering a further 50 ktpa with cobalt by-products.



## Morro Sem Boné (unapproved)

Overall capex: TBD

### Country

Brazil

### Ownership

100%

### Incremental production

~30,000 tonnes per annum of nickel

### Full project capex

TBD

### First production

TBD

Morro Sem Boné is located in Brazil and is expected to operate in the lower half of the cost curve.



<sup>(1)</sup> Average production of 36 ktpa over the full production years; a new mine plan will extend the life of Barro Alto with lower production in the additional years.



# PRODUCTION DATA

Production (tonnes)	2011	2010	2009	2008	2007
<b>Codemin</b>					
Ore mined <sup>(1)</sup>	549,900	493,900	547,700	498,400	539,300
Ore processed	562,900	488,300	512,000	475,900	522,600
Ore grade processed (% Ni)	1.9	1.9	2.1	2.1	2.1
<b>Production</b>	<b>9,500</b>	<b>8,500</b>	<b>9,500</b>	<b>9,100</b>	<b>9,900</b>
<b>Loma de Níquel</b>					
Ore mined	1,302,600	714,200	822,700	811,000	1,183,200
Ore processed	1,014,200	798,000	641,800	676,800	1,096,100
Ore grade processed (% Ni)	1.5	1.6	1.6	1.6	1.6
<b>Production</b>	<b>13,400</b>	<b>11,700</b>	<b>10,400</b>	<b>10,900</b>	<b>15,700</b>
<b>Barro Alto<sup>(2)</sup></b>					
Ore mined	978,000	723,600	–	–	–
Ore processed	456,500	–	–	–	–
Ore grade processed (% Ni)	2.0	–	–	–	–
<b>Production</b>	<b>6,200</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Total Nickel segment nickel production</b>	<b>29,100</b>	<b>20,200</b>	<b>19,900</b>	<b>20,000</b>	<b>25,600</b>
<b>Platinum nickel production<sup>(3)</sup></b>	<b>20,300</b>	<b>18,500</b>	<b>19,500</b>	<b>15,500</b>	<b>19,200</b>
<b>Total attributable nickel production</b>	<b>49,400</b>	<b>38,700</b>	<b>39,400</b>	<b>35,500</b>	<b>44,800</b>

<sup>(1)</sup> Represents ore mined at Barro Alto for processing at Codemin.

<sup>(2)</sup> Barro Alto is not currently in commercial production and therefore all revenue and related costs associated with 6,200 tonnes (2010: nil) of production have been capitalised.

<sup>(3)</sup> Northam Platinum Limited was transferred to a disposal group in September 2007. Production information excludes Northam Platinum Limited. Northam Platinum Limited was sold on 20 August 2008.



01 (Left to right) Production technicians Valério Vieira de Souza and Eliel de Castro in the control room at Barro Alto.

# NICKEL

## Ore Reserve and Mineral Resource estimates as at 31 December 2011

### NICKEL

The Ore Reserve and Mineral Resource estimates were compiled in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2004) as a minimum standard. The figures reported represent 100% of the Ore Reserves and Mineral Resources, the percentage attributable to Anglo American plc is stated separately. Rounding of figures may cause computational discrepancies.

Nickel – Operations			Tonnes			Grade		Contained metal	
ORE RESERVES			Classification	2011	2010	2011	2010	2011	2010
Attributable %	Mine Life	Mt		Mt	%Ni	%Ni	kt	kt	
Barro Alto (OP) <sup>(1)</sup>	100	32							
Laterite			Proved	21.2	16.0	1.66	1.75	352	279
			Probable	31.0	31.6	1.55	1.65	481	520
			Total	52.2	47.5	1.60	1.68	833	798
Loma de Níquel (OP) <sup>(2)</sup>	91.4	4				%Ni	%Ni		
Laterite			Proved	2.1	3.9	1.53	1.54	32	60
			Probable	2.5	5.8	1.44	1.44	36	83
			Total	4.6	9.7	1.48	1.48	68	143
Niquelândia (OP) <sup>(3)</sup>	100	25				%Ni	%Ni		
Laterite			Proved	3.7	5.8	1.35	1.29	50	74
			Probable	0.9	1.9	1.33	1.24	12	24
			Total	4.6	7.7	1.35	1.28	63	98

Nickel – Operations			Tonnes		Grade		Contained metal	
MINERAL RESOURCES	Attributable %	Classification	2011	2010	2011	2010	2011	2010
Barro Alto (OP) <sup>(1)</sup>	100		Mt	Mt	%Ni	%Ni	kt	kt
Laterite		Measured	7.8	9.1	1.42	1.50	111	137
		Indicated	5.3	9.8	1.12	1.22	59	119
		Measured and Indicated	13.2	18.9	1.30	1.35	171	256
		Inferred (in LOMP)	45.4	45.5	1.51	1.51	686	685
		Inferred (ex. LOMP)	16.2	17.1	1.20	1.18	194	202
		Total Inferred	61.6	62.6	1.43	1.42	880	887
Loma de Níquel (OP) <sup>(2)</sup>	91.4				%Ni	%Ni		
Laterite		Measured	1.8	0.5	1.37	1.43	24	7
		Indicated	3.9	1.5	1.30	1.37	51	21
		Measured and Indicated	5.7	2.0	1.32	1.39	75	28
		Inferred (in LOMP)	0.1	0.1	1.38	1.78	2	2
		Inferred (ex. LOMP)	1.5	1.1	1.38	1.59	21	18
		Total Inferred	1.7	1.3	1.38	1.61	23	20
Niquelândia (OP) <sup>(3)</sup>	100				%Ni	%Ni		
Laterite		Measured	2.9	1.0	1.26	1.25	37	12
		Indicated	3.1	2.2	1.24	1.24	39	27
		Measured and Indicated	6.0	3.2	1.25	1.24	75	40
		Inferred (in LOMP)	–	–	–	–	–	–
		Inferred (ex. LOMP)	–	–	–	–	–	–
		Total Inferred	–	–	–	–	–	–

THE MINERAL RESOURCES ARE REPORTED AS ADDITIONAL TO ORE RESERVES.

Nickel – Projects			Tonnes		Grade		Contained metal	
MINERAL RESOURCES	Attributable %	Classification	2011	2010	2011	2010	2011	2010
Jacaré <sup>(4)</sup>	100		Mt	Mt	%Ni	%Ni	kt	kt
Ferruginous Laterite		Measured	6.3	0.5	1.15	1.19	72	6
		Indicated	53.8	96.8	1.21	1.18	653	1,144
		Measured and Indicated	60.1	97.3	1.21	1.18	726	1,149
		Inferred	125.0	73.9	1.17	1.15	1,468	850
Saprolite		Measured	–	–	–	–	–	–
		Indicated	39.6	33.9	1.49	1.52	589	517
		Measured and Indicated	39.6	33.9	1.49	1.52	589	517
		Inferred	81.9	83.7	1.39	1.37	1,138	1,149

Mining method: OP = Open Pit. Mine Life = The extraction period in years for scheduled Ore Reserves comprising Proved and Probable Reserves only.

Due to the uncertainty that may be attached to some Inferred Mineral Resources, it cannot be assumed that all or part of an Inferred Mineral Resource will necessarily be upgraded to an Indicated or Measured Resource after continued exploration.

<sup>(1)</sup> **Barro Alto:** The increase in Ore Reserves is as a result of the application of a higher metal price resulting in updated mining factors allowing the inclusion of lower grade blocks. The increased high-grade production, higher mining rate and therefore higher dilution also contributed to the decrease in overall grade. The decrease in Mineral Resources is as a result of conversion to Ore Reserves due to infill drilling leading to an updated geological model. Mineral Resources are quoted above a 0.9% Ni cut-off and below an iron content of 30% Fe. The Mineral Resources include 7.2 Mt of Ferruginous Laterite at an average grade of 1.18% Ni.

<sup>(2)</sup> **Loma de Níquel:** The decrease in Ore Reserves is primarily due to re-allocation of Ore Reserves to Mineral Resources as a result of the final pit being redesigned and constrained within the concession areas covered by the relevant permits. Production accounts for 1.6 Mt of the decrease in Ore Reserves. The Mineral Resources increased solely as a result of re-allocation of Ore Reserves to Mineral Resources. Refer to note 5 in the Financial statements. The mining concessions are due for renewal in November 2012. Mineral Resources include all mineralisation inside a saprolite envelope defined by Nickel and Iron grade boundaries (>0.80% Ni and <35% Fe).

<sup>(3)</sup> **Niquelândia:** The decrease in Ore Reserves is a result of increased mining and processing costs within the latest mine plan developed for Niquelândia and the re-allocation of Ore Reserves to Mineral Resources, increasing the Mineral Resources. Mineral Resources are quoted above a 0.9% Ni cut-off and below an Iron content of 30% Fe. Codemin is the Ferro-Nickel smelter adjacent to the Niquelândia Mine.

<sup>(4)</sup> **Jacaré:** The overall increase in the Ferruginous Laterite and Saprolite Mineral Resources is due to the completion of a drilling campaign, the results of which have been included in the current Mineral Resource model with a new classification methodology applied. In addition to the Resource pit shell developed for the Concept Study and use of a cut-off of 1.3% Ni, a minimum mineralised width of 1m must be present to allow material to be categorised as higher-grade Saprolite Mineral Resource. The Plano de Aproveitamento Econômico (PAE) is currently under consideration by Brazil's Departamento Nacional de Produção Mineral (DNPM). The Saprolite Resources tabulated are a combination of higher-grade resources (>1.3% Ni) that are expected to feed a pyrometallurgical treatment facility and lower-grade resources (1.3% – 0.9% Ni) that could be used to neutralise the acid in the proposed hydrometallurgical treatment of the Ferruginous Laterite material while still recovering Nickel in the process.



01



02

- 01** Inside the dispatch area at Barro Alto.
- 02** Digger driver Eralde Belo Macedo at the primary crusher in Barro Alto plant.