Executive Summary

In the 2000s, the rapid economic development of China and other countries led to fears of nickel scarcity, peak nickel prices and the undertaking of new mine development.

The 2008 crisis, 2010 rebound and subsequent economic weaknesses reversed these gains. By 2013 the industry was forecasting years of production surplus and low nickel prices.

In January 2014 the situation changed dramatically when Indonesia implemented, against industry expectations, an unprocessed ore export ban. If maintained, which is likely, this ban should lead to a drawing down of existing stocks of ore and metal and by year end 2014 to a supply shortage for at least a couple years.

Future nickel prices will be determined by how the Indonesian ban is resolved, by when the new mines committed to in the 2000s start producing at capacity and at what cost, and by how nickel users react to upward price pressures (extent of substitutions).

The balance of factors though point to firm or firmer nickel prices for the next 3-5 years, with a possible supply shortage situation throughout the period.

Beyond this, the highly correlation of nickel demand with economic growth will drive demand growth. However, the technical difficulties and large cost overruns recently encountered building new capacity will probably mean that before new developments are committed to, the price of nickel will have to be firmly established at a higher level. This will benefit existing producers.

Why nickel?

Our long-standing interest in nickel, a base metal indispensable to modern economies, comes from our intermittent involvement with Sherritt International, one of a very few mining companies exclusively involved in nickel extraction and refining (if you make abstraction of their oil production in Cuba). As such, Sherritt's share price tends to be strongly correlated to the price of nickel:

This extended issue of Reflections will look at the fundamental factors affecting nickel prices, starting with demand and then looking at how that demand is satisfied: where is the metal coming from, how this impacts its extraction, processing and refining, and how recent political and industry developments will likely influence its future price.

Limitation

Publicly available nickel market data is not necessarily consistent or complete. All figures given should therefore be regarded as best possible approximations rather than absolute truths. This limitation does not affect our conclusions.
Factors affecting nickel prices
The factors that may affect the price of nickel can be divided into two sets:
- **Fundamental factors**: related to the production and physical demand for the metal by commercial participants;
- **Non-fundamental factors**: related to the involvement of non-commercial interests (principally financial interests).

**FUNDAMENTAL FACTORS:**
- Supply
- Demand
- Inventories
- Macro-economics

**NON-FUNDAMENTAL FACTORS:**
- Financial interests (investors, speculators)
- Relative value (versus other investments)
- Investor sentiment (may add momentum to trends)
- Market liquidity

As fundamental investors, we are more interested in the fundamental factors which, as the main drivers of nickel prices over the long-term, will be the subject of this letter.

The non-fundamental factors mentioned above typically tend to impact prices over the short term only, but with the power to distort the physical market. Financial investors and speculators add to market liquidity, a positive influence, but may amplify underlying physical trends (leading to excessively high or low prices) to the point of having a negative impact on commercial participants. Their actions may also distort the physical market signals that are indispensable for the decision-making processes of commercial participants, and dilute the legitimate impact on prices of real demand related metal transactions.

Recent history of nickel prices
Nickel is currently worth about $7.25/lb, up from a low of $6/lb in 2013, but still well below its 2007 all-time high of $23.5/lb or even its (lower) 2011 high of $13/lb.

Price volatility is not unusual for a commodity. Supply (driven by long-term investments in costly mines and processing facilities) seldom perfectly matches demand (dependent on volatile final consumer demand). As a result, periods of abundance and scarcity alternate – the commodity cycle.

In 2003, after having fluctuated between $2 and $4/lb for more than 10 years, the price of nickel started to climb. It soon stabilized above $6 before resuming its ascent, fed by strong demand especially from China.
optimism led to a 2011 high of $13, and the return to production of some of the mothballed capacity.

Then hopes for a quick and lasting recovery quickly waned; global demand weakened, and with it the demand for nickel.

However nickel production did not slow down accordingly. China kept on stimulating its economy which encouraged further increases in nickel pig iron production (with a concurrent increase in Indonesian ore exports to China). This displaced further purer / better refined nickel in the manufacturing of stainless steel. At the same time, the new mines built following the 2000s wave of investment were starting to be commissioned, increasing further the nickel supply. With a surplus of product, the nickel price declined to reach a low of $6/lb in 2013 – a price estimated to be below the actual cost of production of many producers.

All changed in early 2014, when Indonesia, against industry expectations, started to enforce a 2009 law banning the export of unprocessed ore from 2014 onward. Given the importance of Indonesian ore in the manufacturing of nickel pig iron, the ban had the effect of withdrawing in one stroke about 30% of world supplies (about 650,000 tonnes of nickel content). Despite large stocks of metal and ore worldwide, the prospect of a future production deficit for at least a couple of years immediately caused the price of nickel to move up.

As always, the future balance between supply and demand will determine nickel prices. How will the Indonesian export ban be resolved - through resumption of exports or increased local refining? Will other developing countries follow the Indonesian example? How fast will final demand increase? When will the global economy finally pick up real steam? How successful will current mine developments be? How much nickel will they produce and at what cost?

We will now look at some of these factors.

**Nickel demand**

Nickel qualities include its slow rate of oxidation at normal temperatures, its hardness, ductility and strength at high and low temperatures plus some magnetic and electronic properties.

Nickel is mostly used in alloys to impart ductility, strength and anti-corrosion properties. 65% of total nickel consumption goes into the production of stainless steel, 24% into the manufacture of other steel alloys (including some very fancy super alloys<sup>1</sup>) and 8% as a plating agent. The 3% left is used for chemical compounds, batteries, electronics, etc.

In many of these applications there is no substitute for nickel without reducing performance or increasing costs.

**Stainless steel.** As the main source of nickel consumption, stainless steel demand is the main driver of nickel demand. While stainless steel can be made without nickel (using chromium or chromium-manganese alloys),

---

<sup>1</sup> Such as alloys that get stronger as temperature rises, that remember their previous shape, or that can preserve data for 1000 years without degrading.
about 65%-75% of stainless steel production has consistently been based on chromium-nickel alloys.

Stainless steel is primarily used in the food, construction and chemical industries. Its demand is highly correlated to economic growth, with especially high demand in developing economies going through a process of urbanization, as is now the case in China and to a lesser extent in India and other developing countries.

From 1950 to 2013 consumption grew at about 5.5% per annum and as can be seen below China, with its huge population, still has a low consumption per capita. Estimates of future consumption growth range around 4%-6% per annum – which will ensure a steady growth of demand for nickel, albeit with ups and downs related to slowing or accelerating economic growth.

From 1950 to 2013 China, with its huge population, still has a low consumption per capita. Estimates of future consumption growth range around 4%-6% per annum – which will ensure a steady growth of demand for nickel, albeit with ups and downs related to slowing or accelerating economic growth.

In the last 10-15 years, the rapid development of Asian countries and especially China has resulted in a major shift in where stainless steel is produced and consumed.

China now produces half of the world’s stainless steel (from 13% in 2005) and has become a net exporter.

Chinese stainless steel production and needs drive Chinese demand for nickel. From 2002 to 2012 Chinese share of nickel demand has grown from 8% to 44% of total world demand. Asia as a whole accounts for 65% of total demand.

Demand for stainless steel does not translate fully into demand for “new” nickel (“first use” nickel in industry parlance) as nickel is one of the most heavily recycled metals. A third of the global nickel supply comes from recycling, and 40%-50% of the nickel used to produce stainless steel is recycled nickel. Recycled nickel is more easily available in Europe and North America than in China, where locally produced nickel pig iron is taking its place.

As nickel prices rise substitutions occur that reduce final demand. However, the properties of nickel are such that substitution possibilities are somewhat limited. As regards stainless steel, it can be replaced by nickel-less stainless steels or stainless steels with 1-2% nickel instead of 8% or more, but quality may suffer. When nickel prices peaked in 2007, the proportion of nickel-based stainless steel to total production came down from 76% to 68% but within 5 years had rebounded to its previous level.

Over the last 10-15 years nickel demand has grown by about 4% per annum to the current 1.9 million tonnes (2013). Demand is expected to keep growing at 3-4% per annum. This is of course unsustainable in the very long run; known and accessible world reserves are estimated to be around 200 million tonnes.

Nickel extraction: mining - where nickel comes from

Nickel is one of the most abundant metals on Earth but most of it is inaccessible, being locked in the Earth’s core which is made of iron with 8-10% nickel. In ancient times, a ready source of nickel was meteorites, which are made of a similar iron-nickel alloy. These meteorites were sought after as a superior source of iron – the metal in some ancient tools and swords is similar to modern stainless steel.

Today, the nickel we use comes from two types of ore deposits that are mined, concentrated and then refined
into either pure metal or intermediary nickel based compounds: sulphide and lateritic deposits.

**Sulphide deposits.** The ore bodies easiest to mine and process originate in the up-swelling of magmas called *ultramafic* from the earth mantle (the molten area above the core) into the earth crust. If such magma, which has a low nickel content, contains or encounters sulfur while moving up and cooling down, a segregation process will occur that will concentrate metals like iron, nickel, copper and platinum group metals into a *sulphide solution*. Being heavy, this solution will move down to form sulphide concentrations which cooled down will become the *sulphide ore deposits* we can mine today, with a nickel tenor typically between 0.2 and 0.7%.

Sulphide deposits have historically been the focus of exploration and the source of most nickel since the discovery of the Sudbury Basin deposit. Today, sulphide ores account for ~60% of world production. The ore bodies may be deep within the earth and expensive to extract but their metallurgical treatment is well known (nickel is easily concentrated) and relatively cheap (smelting). However, nickel sulphide reserves account for only 30-40% of known land-based nickel reserves and there have been few new discoveries. Increasingly, new developments focus on the other type of commercial nickel ore, lateritic ores.

**Lateritic deposits.** The second type of commercial nickel deposit occurs when ultramafic rocks /sulfide ores are moved by geological processes to the Earth’s surface. In tropical climates or in the arid regions of southern Africa or central Western Australia, the rocks can then be slowly eroded and weathered into powdery soils called *laterites*.

While the base rock usually contains little nickel (0.3-0.5%) the weathering involves chemical processes that transform the nickel (and other metals like iron, cobalt and copper) into metal oxides and dissolve and wash away other elements like silica. Laterites usually have a large iron oxide content (“rust”) hence their reddish colour. The metal oxides will also segregate vertically, with iron concentrating at the top and nickel at the bottom. The end result is *lateritic deposits* covering large areas but whose thickness seldom exceeds 15-20 meters.
Nickel extraction: processing nickel ores.
The following two slides summarize the different routes taken to mine and process nickel:

**Summary of nickel ores and their pros and cons**

---

**Nickel ore**

- **Sulphides**
  - High mining costs
  - Underground mining
  - Low processing costs
  - Prone technology
  - Often associated with valuable by-products
- **Laterites**
  - Low mining costs
  - Surface mining
  - Low processing costs
  - Proven technology
  - Large-scale operations
- **Sulphide ores**
  - High processing costs
  - Expensive materials of construction
  - High acid consumption
  - Vulnerable to energy costs
- **Saprolites**
  - Falling processing costs
  - Proven technology

---

**Note:**
- **Class 1:** 99% and higher nickel. **Class 2:** less than 99% nickel.
- **Ferronickel:** ~15-76% nickel.
- **NPI (nickel pig iron):** ~2-15% nickel.
- **Nickel oxide:** chemical compound for chemistry and metallurgy.

**Sulphide ores.** The process for concentrating and refining the nickel contained in sulphide ores is well known and mastered, which is why the industry preference has been to focus on these deposits.

The ore is processed into a concentrate which is then smelted (pyrometallurgy) to produce an intermediate sulfide product called matte that is then refined through chemical reactions in a liquid environment (hydrometallurgy).

One issue with this process is its environmental cost as smelting produces sulfur and carbon dioxide gas that escape to the atmosphere. A new hydrometallurgical process is being developed that bypasses completely the smelting stage (Vale – Voisey Bay, Newfoundland).

**Lateritic ores.** Laterites ores are easily mined by scraping ground surface but difficult to refine. Their chemical composition varies greatly vertically and at times across deposits. Succinctly, the top layer of a lateritic ore deposit, called **limonite**, has more iron and less nickel than the bottom layer, called **saprolite**.

The saprolitic layer is the easiest layer to process (using pyrometallurgy) often to produce ferronickel. Ferronickel from laterites has traditionally provided about 15-20% of total nickel output. Today, Indonesian saprolitic ores are also used in China to produce nickel pig iron.

However, saprolites are only about half as abundant as limonites\(^3\) and, compared to saprolites and sulphides, limonites are more chemically complex, energy intensive and in the end costly to refine.

Amongst the processes used to refine limonitic ores, the PAL (pressure acid leaching) process is dominant. This is the process used by Sherritt at Moa Bay in Cuba and at Ambatovy, Madagascar, a process in which they have great expertise. This process involves leaching the metal in an acidic environment (sulphuric acid) at high pressure and high temperature. Beyond environmental considerations, it requires high quality materials to resist corrosion and a complex fine-tuning of the operating conditions to maximize metal extraction given the actual composition of the ore being processed.

Some deposits like the **dry laterites\(^4\)** of Western Australia, are even more difficult to refine as their nickel mineralization is mostly found in a clay stratum whose composition complicates the refining process. Dry laterites have caused some expensive development failures (and financial write offs).

Needless to say, the trials and errors required to fine tune a new limonite processing facility easily lead to delays and cost overruns. This is exactly what has happened to recent mine developments exploiting limonitic deposits. As the two graphs below show, cost overruns and delays

---

\(^3\) Ni-Co Laterite Deposits of the World, Berger et all, United States Geological Survey, 2011.

\(^4\) Called dry laterites due to their genesis: dryer conditions have led to an incomplete flushing out of the original silica.
have been common and strikingly of the same magnitude across the developments:

While historically the industry has avoided developing these deposits, this may not be possible anymore. Without new sulphide deposit finds and given the limited availability of high-grade saprolitic ores, it is inevitable that increasing demand for nickel will force the industry to consider developing lower-grade limonitic deposits.

A game changer could be the development of new leaching processes operating at atmospheric pressure and using either chloride or nitric acid. These have not yet been proven on an industrial scale, but if successful could prove cheaper to set up and operate.

In addition to their processing difficulties, lateritic deposits, contrary to sulfide deposits, are found in the tropics often in countries with poor infrastructure, poor development, and a strong need to maximise revenues from their resources.

All this implies higher future costs for nickel extraction, and in the end higher nickel prices.

Fig 5-6 – WoodMackenzie 2014 - As can be seen, Sherritt’s Ambatovy development delay and cost overrun are far from exceptional.

This however conforms to the industry’s experience. Historically, limonite refining has been limited to a few mines that had proved difficult and expensive to set up (this includes Moa Bay in Cuba, when Freeport was operating it. Moa is now successfully operated by Sherritt).
Nickel supply: products and production

Nickel is offered in various forms and concentrations, depending on planned end use:

- **Refined nickel** (99% or more):
  - Purest form is for superalloys and nuclear industry;
  - Next is electrolytic nickel (99.9%)
- **Charge nickel** (less than 99%):
  - Utility Nickel (96%),
  - Ferronickel (15-72%),
  - Nickel Pig Iron - a low-grade ferronickel (8-15% - China)
- **Salts and chemicals** (nickel oxide (75%), nickel sulphate…)

Most of the traditional nickel production has been refined nickel and ferronickel.

When making stainless steel, iron and nickel contents are adjusted by varying the inputs. Ferronickel and scrap metals can form the base charge with pure nickel used to reach the desired nickel content. So when making specialty or general steel the various charge nickel products are somewhat interchangeable. In time of scarcity even highly refined nickel has been used for general steelmaking.

We have alluded to the changes in the nickel industry that the rapid development of China’s steel industry and demand have induced. China’s development tremendously increased its demand for stainless steel and therefore nickel:

As this demand could not be fully met by the industry’s early 2000s production capacity, the price of nickel increased to a point where it incited the development of new capacity based on the only new ore deposits then available: lateritic ores.

Two routes were taken to develop these deposits: the traditional, risky and expensive one, using the pressure acid leach (PAL) process to produce high grade nickel;
and, invented or re-invented\(^5\) in China, a new, quick, relatively cheap but ecologically dirty route with the development of nickel pig iron production in China to produce a new type of low grade ferronickel for the stainless steel industry.

By 2012-13 the rapidly increasing nickel pig iron production combined with weak demand led to a nickel over-supply that depressed prices.

Nickel pig iron production is truly a Chinese phenomenon. It cannot be exported (heavy taxes) and its production has exploded together with Chinese stainless steel production. Its success depends on cheap local coal and electricity, and a steady supply of foreign nickel ores.

For Chinese stainless steel makers, the benefit of nickel pig iron is its easy availability and relatively low cost: they pay the market price (or less) for the nickel content while getting the iron for free. As a result, pig iron is widely used in China where elsewhere, where it is not available, scrap metals are used.

The production cash cost of nickel pig iron was initially in the range of $7-9/lb of nickel (albeit at a time of much higher nickel prices). The cash cost from new electrical smelters is as low as $5.45. These 2013 figures, quoted by Macquarie, are tentative as, as they say, regarding nickel pig iron there is “very little reporting, lots of guessing”.

The tremendous increase in Chinese production was always dependent on the availability of foreign ores. Indonesia offering the most suitable ores (high nickel, low iron saprolitic ores), Indonesian production rocketed to reach 650,000 tonnes of nickel content in 2013 when world demand for nickel was about 1.9 million tonnes. By that time, nickel pig iron from Indonesian ores accounted for 57% of all Chinese nickel production (and 13% from Filipino ores)\(^6\).

Even though some of this tonnage was for stockpiling purposes given political uncertainties in Indonesia, increased ore and nickel availability pressured nickel prices all through 2013. Prices would have remained weak but for a development no one expected would actually happen: the implementation of an ore export ban by Indonesia in January 2014.

\(^5\) Although the process was known, it had not really been developed industrially until then.

\(^6\) Macquarie Research April 2014
The Indonesian ban

In 2009 Indonesia, to increase benefits received from mineral resources, passed a law that steadily increased export taxes up to January, 2014 at which time exports of unprocessed ores would be banned. The idea was to force miners to develop processing facilities in Indonesia itself, giving them 5 years to do so.

It looks like the industry grossly misread the Indonesians. The industry did not build new processing facilities in Indonesia to speak of, instead fighting the law in court, losing most of the time. The few times they won, Parliament fought them back and kept the law. Despite all this, as late as 2013 the mining analyst of Australian financial group Macquarie wrote: “Indonesian ore ban planned for end-2013. No-one thinks this will happen! Quotas and taxes more likely?”

But on January 12, 2014 Indonesia implemented its ban. Nickel prices went up immediately on speculation as suddenly 450,000 to 650,000 tonnes of nickel a year (assuming 200,000 tonnes was for stockpiling) had been removed from the market, out of an annual world consumption of 1.9 million tonnes (2013).

At early 2014 stocks of nickel were high so there was no risk of an immediate shortage. Stocks on the London Metal Exchange (LME) have remained high and it is likely their owners are waiting for higher prices before selling them, but they may not paint the whole picture as this market is not very transparent, a lot of metal being held outside of the LME.

Chinese pig iron producers have now moved into Indonesia and are planning the construction of smelters, but these will take time to build and production costs in Indonesia may end up being up to 3 times higher than in China. Furthermore, a lot of infrastructure (power plants, roads) will have to be built and local personnel found and trained.

It is worth noting there is no ready replacement available for the lost Indonesian ore. These ores are saprolites with 1.7-2.0% nickel content and 15-20% iron, good to make 8-12% nickel pig iron in electric furnaces. As per Macquarie Research, the Philippines may be able to increase production by 30-60,000 tonnes, but their ores are limonites with 0.8-1.3% nickel and 45-50% iron, better suited to blast furnaces producing low-grade 1-4% nickel pig iron. Other producing countries have little or no spare capacity, or have already committed their resources (New Caledonia).

It is however to be expected that part of the missing ore will be replaced by scrap stainless steel, and that some substitutions will occur toward lower grade stainless steels (1-2% nickel instead of 8-12% nickel) and high-chromium no-nickel steels.

In the meantime, the nickel market has moved from a production surplus position with large stocks to a position where stocks will inevitably end up being drawn down. It is thought that by end 2014 / early 2015 demand will start exceeding supply (new production plus stocks) and that a deficit situation will last until 2016 or until new nickel pig iron facilities begin to be commissioned in Indonesia.

A Filipino ban in the future? The politics of banning ore exports.

Filippino politicians have recently announced that they are planning to pass a law that will, like in Indonesia, ban the export of unprocessed ores. It will take 2 years for the law to be passed then, as in Indonesia 5 years would be given to miners to build local processing facilities.

Passing and implementing this law will take some time (if it’s really implemented) and as such we do not expect an immediate impact on nickel prices. Furthermore, the Philippines is not Indonesia – their histories are different, and their experience of past western colonisation, Indonesia by the Dutch and the Philippines by the
Spaniards then the US (a local saying is “300 years in a convent, 50 years in Hollywood”) have led them to have very different attitudes toward western influence in their countries, the Indonesian being the most adverse to interferences.

Miners having learned a lesson in Indonesia, they will be more likely to prepare for an eventual ban. Also, the Filipinos by nature may be more amenable to compromises. However, if Indonesia is successful in developing a local mining and processing industry, a lesson will have been given on how to do it. Local nationalism will be bound to add pressure to follow suit.

Furthermore, if there is a lesson that Indonesia can teach developing countries, it is that you have to be firm and stand your ground. Once the initial law is passed, do not weaken it. Then, once the ore export ban is implemented and in response the local construction of ore treatment facilities has begun, a point of no return has been reached as in most cases local production will be more expensive, at least initially, than the foreign processing it will replace. Weakening or reversing the ban would destroy the viability of the investments already committed, void any appetite for further investments, and make the government lose all credibility with foreign investors.

**Future nickel demand and supply**

Nickel is such an essential metal and so linked to economic development that demand for it is bound to keep increasing. The future rate of growth may be argued, but not that growth will occur.

Where the supply will come from is the interesting question. Sulfide ore reserves are decreasing without being replaced; maybe new geological insights will lead to untapped ore bodies but to date this has not happened. This leaves lateritic ores as the principal potential source of new supply; limonitic ores, with all their processing difficulties and the huge capital costs required to develop them, and saprolitic ores, easier to process into pig iron or ferronickels.

The slide below shows the economics of new capacity. Obviously nickel pig iron is cheap to develop but it cannot satisfy all needs. For limonites, the most common process for now remains PAL (pressure acid leaching) –

**Note:** Prices on the figure below are in $ per tonne of annual capacity. Here is the conversion into $ per pound of annual capacity:

<table>
<thead>
<tr>
<th>.Capex</th>
<th>$10,000</th>
<th>$20,000</th>
<th>$30,000</th>
<th>$40,000</th>
<th>$50,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 4.54</td>
<td>$ 9.07</td>
<td>$13.61</td>
<td>$18.14</td>
<td>$22.68</td>
<td></td>
</tr>
<tr>
<td>$ 60,000</td>
<td>$ 70,000</td>
<td>$ 80,000</td>
<td>$ 90,000</td>
<td>$100,000</td>
<td></td>
</tr>
<tr>
<td>$27.22</td>
<td>$31.75</td>
<td>$36.29</td>
<td>$40.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To make sense of these figures on a cost per pound of nickel produced, the planned life-time of the facilities has to be taken into account.

Furthermore, the nickel industry has just gone through a wave of new investment whose profitability has not yet been demonstrated, and as of today can even be questioned. This will likely give pause – or at least slow down – the appetite for new development. Lack of or late new developments will inevitably impact on supply, reducing the potential for over-capacity.
Conclusions

1) With the Indonesian ban firmly in place, there will be in all likelihood a shortfall in nickel supply that should last through 2015-16 and possibly longer depending on (2) below. Production in other countries, especially the Philippines, will increase but it is highly unlikely that the lost capacity can be replaced in full.

2) The speed at which new processing capacity will be built in Indonesia (and the cost, still unknown, of the produced nickel) will be key to return to a more balanced nickel supply.

3) Some of the upward pressure on price will be mitigated by the increased use of scrap metal and by substitutions to lower or no-nickel content stainless steels and alloys.

4) Some of this pressure will also be alleviated by the coming on stream of new processing facilities developed since the mid-2000s; however, these facilities still face development challenges which probably mean no sudden increases in production.

5) Given the disappointing record of recent investments in new capacity (outside of pig iron processing) it is unlikely that additional developments will be undertaken soon.

6) Demand being a function of economic development, current lacklustre growth rates worldwide point to more moderate increases in demand than in the 2000s; however this could change quickly. Furthermore, new stainless steel producing facilities are now coming on stream that will increase the demand for nickel feed.

Our view is that the market will experience upward pressure on nickel prices as soon as signs of stock depletion occur, pressures that should last for at least a couple of years absent any serious economic reversal that would lower demand substantially.

J-Dominique Sellier
October 1, 2014

Sources:
Antaike (China)  International Monetary Fund (IMF)  Roskill
Credit Suisse  International Nickel Study Group (INSG)  United States Geological Service
Direct Nickel  International Stainless Steel Forum (ISSF)  Vale S.A.
Hatch Ltd  London Metal Exchange (LME)  Wood Mackenzie
Infomine.com  Macquarie Research