**NPI Evolution & Influence on Nickel Price**

**A Presentation for INSG**

Oct, 2013

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**Agenda**

1. NPI Evolution Drives Down Nickel Price
2. Latest Trend of NPI Investment
3. About SMM
Nickel price has fallen by more than 50% since 2011

LME Nickel Price Trend

Data source: LME, SMM

− LME Nickel price has fallen from $29,065/ton in Feb, 2011 to only $13,310 in Jul, 2013, dropping by more than 50%.

Slowdown of demand growth, oversupply of Ni and lower cost of NPI push the price down

1. Slowdown of Demand Growth
   • China stainless steel, as the major downstream of Nickel, has driven the global Ni consumption slow down

2. Oversupply of Nickel (Including NPI)
   • China NPI has contributed the global Ni supply increase and replaced other Ni materials in SST production
   • Global Nickel market has show supply surplus since 2011

3. Lower Cost of NPI
   • RKEF technology in China is booming
   • Smelters with RKEF are mainly distributed in coastal provinces
   • RKEF has cost advantage compared with BF and EF

Growth slowdown of demand, oversupply of Nickel and lower cost of NPI push the price down
China stainless steel has driven the global Ni consumption slow down

- China stainless steel production accounted for more than 45% of total world in 2012 and has played the role as engine in last few years.
- With China stainless steel output growth slowing down, global stainless steel production growth rate has decreased from about 25% in 2010 to only 5% in 2012.

Stainless steel is the largest Nickel downstream sector in China and the world as well.
- Compared to 67% of Nickel consumption in the world, China stainless steel companies consumed more than 80% of the total.

Nickel Consumption Structure

Data source: SMM, Brook Hunt

1. Slowdown of Demand Growth
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- RKEF technology in China is booming
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Growth slowdown of demand, oversupply of Nickel and lower cost of NPI push the price down

Data source: ISSF, SMM

Slowdown of Demand Growth, oversupply of Ni and lower cost of NPI push the price down

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China NPI has contributed the global Ni supply increase and largely replaced other Ni materials in SST production.

In recent years, due to the cost and accessibility advantage in China, NPI has replaced other nickel sources such as refined nickel, Cuban nickel oxide, imported ferronickel, etc., and is estimated to share more than 50% of nickel supply in SST production in 2013.

Due to the fast increase of NPI production, China has been the largest contributor to global primary nickel output growth since 2009, with proportion from only about 5% in 2008 to more than 20% in 2013.

Global Nickel market has shown supply surplus since 2011.

Due to the decelerating demand growth and fast supply increase driven by China NPI production, global nickel market has shown supply surplus since 2011, resulting in the nickel price down.
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Growth slowdown of demand, oversupply of Nickel and lower cost of NPI push the price down

RKEF process, as a new NPI production technology, boomed in recent years

Supply Proportion of Different Types of NPI, 2009-2013E

- As SMM estimated, RKEF process produced more than 20% of NPI in China in 2012 and will increase to about 50% in 2013.
**Smelters with RKEF are mainly distributed in costal provinces**

- Smelters with RKEF are mainly distributed in costal provinces of East and South China with low logistics cost for imported laterite ore.

![RKEF Plant Distribution and Typical Process](image)

**RKEF has cost advantage compared with BF/EF**

- Benefitting from the saving of power (3,500-4,000KWH/ton for RKEF VS 6,000-7,000KWH/ton for EF), logistics (close to the port), etc., RKEF process has cost advantage, which is usually over RMB2,000/ton comparing to BF and EF process.
Nickel Price is expected to be between 13,600-15,000 $/ton in Q4, 2013

LME Nickel Price Expectation

2013 Q4 price range: 13,600-15,000 $/ton

Data source: LME, SMM

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Gaining control of Laterite ore is the prime focus for NPI producers

As Laterite ore is the most important raw material for NPI and accounts for more than 40% of total cost, gaining control of Laterite resources to secure stable supply and low ore cost, has become the prime focus for NPI producers.
Indonesia’s banning export policy makes NPI producers rush to smelting in Indonesia

China’s Monthly Laterite Imports

Data source: China Customs, SMM

- Indonesia and Philippines are the two dominate sources of laterite ore to China, sharing more than 99% of total ore imported.
- As Indonesia government is restricting laterite ore export, China NPI producers are rushing to smelting in Indonesia to secure the laterite ore supply.

Strength of smelting in Indonesia

1. Rich Resources
   - Indonesia is one of the largest laterite ore resource countries in the world
2. Low Cost
   - No sea freight charges and cheaper coal lead to low NPI production cost.
3. Legal Avoidance Policy
   - The Indonesian government plans to ban the export of unprocessed minerals from 2014.
4. Less Competition
   - Only a few producers in Indonesia which is much less competition compared with hyper-competitive market in China.
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About SMM

Company Evolution

- 1999: Company established
- 2004: China No. 1 website in non-ferrous metal industry
- 2006: China Zinc & Lead price benchmark
- 2009: Start to compile China Steel PMI
- 2010: China Copper RMB price benchmark
- 2011: Strategic Metal price starts to influence global market
- 2012: China Strategic Metals price benchmark
- 2012: Start to compile non-ferrous metal PMI
- 2012: Start cooperation with third party data platform (Bloomberg, Thompson Reuters, etc.)

Service Portfolio

- Daily Online Information
- Market Intelligence
- Industry Statistics
- Analysis Reports
- Research & Consulting
- Business Opportunity
Analytic process methods are based on our experience in market research and management consulting, using an iterative process to carry out the analytical work. Each component has been designed to sequentially develop information and understandings in order to inform and enable the next step, as illustrated:

Foreign-related Investigation License
Why SMM?

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<td>Highly experienced people at all levels</td>
<td>Experienced partners, inexperienced consultants</td>
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We have a preeminent position in syndicated research across many nonferrous metals markets—Examples include:

- Online intelligence & database
  - News
  - Historical price

- Weekly report
  - China Nickel Briefing
  - China Lead Weekly
  - China Zinc Weekly
  - China Aluminum Market Briefing
  - China Aluminum Alloy Weekly
  - China Copper Scrap Weekly

- Monthly report
  - China Nickel Monthly
  - China Aluminum Monthly
  - China Copper Monthly

- Annual report
  - China Nickel Industry Chain Report
SMM is a leading domestic consulting and research firm dedicated to providing the kind of insight and knowledge that helps companies find a clear path to success. The firm has served the management consulting and market research needs of organizations in the non-ferrous metal industries for over 10 years. For more information, visit www.metal.com or en.smm.cn.

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