Tato Miraza
Development Director PT ANTAM (Persero) Tbk

The Indonesian Alumina Project Development
Agenda

- Bauxite Mining & Resource in Indonesia
- Alumina Project Development in Indonesia:
  - ANTAM’s Bauxite Development Plant (Creating Added Value by Producing Down Stream Bauxite Based Product)
  - Chemical Grade Alumina Project Development
  - Smelter Grade Alumina Project Development
- Conclusion
Bauxite Mining &
Resource in Indonesia
At Glance, Bauxite Producer & Trades Flow Around The Globe

Annual Global Bauxite Global Production Reached 205 Mt in 2010

Source: internal research, 2010
Bauxite Mining & Resources in Indonesia

Fact & Fact about Indonesian Bauxite Mine & Resource:

- Vast bauxite resources, particularly on the western part of the archipelago (western part of Borneo, eastern coast of Sumatera).
- High quality & relatively easy to process bauxite, lead to low direct production cost.
- 100% of bauxite exploitation are exported, mainly to China.
- Mostly of bauxite mines are operated by small to medium size private enterprise.
- Obligation to conduct domestic refinery/smelter (Law of the Republic of Indonesia No. 4 Year 2009 article 103)

In 2010, we do believe numbers have doubled, as ANTAM (consolidated with its subsidiaries) announced to have 387.05 millions tons of bauxite. (excluding Tayan Bauxite Resource Area)

Bauxite resources areas are mainly located on West Borneo and Riau Province through out the magmatic arc belt, as shown by blue strips and green spots on the left side picture.
### Indonesian Mineral Resources Production vs Domestic Processing Plant Capacity (ore balance)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Ore Production 2010 (ton)</th>
<th>Domestic Processing Plant</th>
<th>Balance (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>ANTAM</td>
<td>2,950,000</td>
<td>Weda Bay Nickel</td>
</tr>
<tr>
<td></td>
<td>(Pomalaa Smelter)</td>
<td></td>
<td>Abuki Jaya Stainless</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FeNi Halmahera</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gag Nickel</td>
</tr>
<tr>
<td></td>
<td>INCO</td>
<td>6,080,000</td>
<td>Indoferro</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26,380,000</td>
<td>9,030,000</td>
<td>16,950,000</td>
</tr>
<tr>
<td>Bauxite</td>
<td>n/a</td>
<td>-</td>
<td>ANTAM (SGA Product)</td>
</tr>
<tr>
<td>(crude bx)</td>
<td></td>
<td></td>
<td>Indonesia Chemical Alumina</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(CGA Product)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Harita Prima Abadi</td>
</tr>
<tr>
<td></td>
<td>27,410,400</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>Smelting Gresik</td>
<td>1,000,000</td>
<td>Nusantara Smelting</td>
</tr>
<tr>
<td>(concentrate)</td>
<td></td>
<td></td>
<td>Global Investindo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PT Indosmelting</td>
</tr>
<tr>
<td></td>
<td>3,466,771</td>
<td>1,000,000</td>
<td>2,400,000</td>
</tr>
</tbody>
</table>

Source: internal research, 2010

October 2011
Bauxite mining and export business achieved a significant value to USD 479 million in 2010, brings the average five years export value to USD 221.7 million.

The main stream of the achievement were immense demand from china alumina refineries.

In terms of price, Indonesia’s bauxite is more attractive than Australian’s and India’s to China import market.

**Will This Trend/Condition Continue ??**

- Yet yes, prior to the implementation of Law No. 4 2009 article 103.
- Then, enterprises shall established domestic Alumina Refineries and Aluminum Smelters, as ore export are restricted.
- GoI has prepared for any up coming and existing investors by making conducive and attractive policies, such as recent tax holiday facility, infrastructure development master plan, etc.
Alumina Project Development in Indonesia:

- ANTAM’s Bauxite Development Plant
  (Creating Added Value, Producing Down Stream Bauxite Based Product)
- Chemical Grade Alumina Project Development
- Smelter Grade Alumina Project Development
Our Company, PT ANTAM (Persero) Tbk, is a vertically integrated, export-oriented, diversified mining and metals company.

We undertake all activities from exploration, through to marketing of nickel ferronickel, gold, silver and bauxite.

Bauxite commodity has become one of Our Main Foundations to conduct excellent growth.

Our portfolio of bauxite consist of bauxite concession areas, bauxite mines and bauxite base subsidiaries (shown by the brown box on the right side structure).

note: the structure has not included Antam’s minority ownership subsidiaries.
Left side map shows an immense bauxite resources of ANTAM in 2010. Note: Including bauxite resources owned by ANTAM’s subsidiaries.

Meanwhile, in 2010, bauxite sales only contribute less than 1% of the total corporate sales in which dominated by nickel (69%) and gold (27%), due to low bauxite production.

Process Plant Development has been commenced to utilize and maximizing the abundant bauxite resource, such as the CGA & SGA Project.
Corporate Development Plant

**South Kalimantan Sponge Iron Project (MJIS)**
- **Ironmaking smelter**
  - **Capacity**: 315,000 tonnes product pa
  - **Completion**: 2011
  - **Project Cost**: US$150 million
  - **ANTAM Share**: 34%

**CGA Tayan Project**
- **Bauxite processing into CGA**
  - **Capacity**: 300,000 tonnes of CGA pa
  - **Completion**: 2014
  - **Project Cost**: US$450 million
  - **ANTAM Share**: 80%
  - **Partner**: Showadenkko KK (JPN)

**Nickel Mandiodo Project**
- **Capacity**: 12,000 ton Ni pa (10% Ni in product)
  - **Completion**: 2014
  - **Cost**: US$398 million (incl. 4x25 MW CFPP)
  - **ANTAM Share**: 100%
  - Processing plant through PT AJSI

**Nickel Halmahera Project**
- **Ferronickel**
  - **Capacity**: 27,000 tonnes Ni pa
  - **Completion**: 2014
  - **Project Cost**: US$1.6 billion
  - **ANTAM Share**: 100%

**Moderzation & Optimization Pomalaa (MOP-PP)**
- **Nickel**
  - **Capacity**: 10,000 tonnes Ni pa
  - **Completion**: 2014
  - **Cost**: US$500 million
  - **ANTAM Share**: 100%

**SGA Mempawah Project**
- **Bauxite processing into SGA**
  - **Cap. (1st Stage)**: 1.2 mmt of SGA pa
  - **Completion**: 2016
  - **Project Cost**: US$1.0 billion
  - **ANTAM Share**: 100%
  - **Partner**: -
  - **Current Status**: BFS until Q3 2012

**Notes**
- Nickel
- Bauxite
- Iron
## Chemical Grade Alumina (CGA) Project Development

**Location**: Tayan, West Kalimantan/Borneo

**Production Capacity**: 300,000 tons of CGA per annum; Target market: Japan & International

**Capital Expenditure**: US$ 450 million

### Milestones
- **2007**: JVCo, PT Indonesia Chemical Alumina was established
- **Construction**: 1Q2011
- **Commissioning**: 3Q2013
- **Commercial Production**: 2014

### Shareholder
- Showadenko KK (20%), Antam (80%)

### Progress
- EPC Contractor: consortium of PT Wijaya Karya (Persero) Tbk, Tsukishima Kikai Co. Ltd. and PT Nusantara Energi Abadi (Nusea)
- Financier: JBIC and Mizuho

---

**Inaugural of ICA Ground breaking (April 2011)**

Right to left: Alwinsyah Lubis (ANTAM CEO), MS Hidayat (Minister of Industry), Hendra Santika (PT ICA CEO), G.Wirdjawan (Head of BKPM)
… CGA Project Development

Project Progress Plan Vs Actual

Figure-6. Land leveling & Construction Works: Plant Site

Figure-7. Land leveling & Construction Works: Jetty
**Project Summary**

- **Project Location**: Mempawah, West Kalimantan/Borneo
- **Product & Production Capacity**:
  
  Capacity = 1,200,000 SGA tpa, integrated with 57 MW power plant and Jetty for 5,000 DWT. (1st Stage)
- **Raw Material Consumption**:
  
  Bauxite = apprx. 4,000,000 ton of crude bauxite (originated from Landak, Munggu Pasir, Meliau, etc)
- **Project Owner**: Antam (100%)
- **Project Lifetime**: 30 years
- **Target Market**: PT Inalum Consumption (500k to 1000k p.a.) and export market

**Key Information**

<table>
<thead>
<tr>
<th>Capital Expenditure</th>
<th>USD 1 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Including IDC, Power Plant, Port)</td>
<td>USD 1 billion</td>
</tr>
<tr>
<td>Construction</td>
<td>1Q 2013 – 1Q 2016</td>
</tr>
<tr>
<td>Commissioning</td>
<td>2Q 2016</td>
</tr>
<tr>
<td>Commercial Operation</td>
<td>4Q 2016</td>
</tr>
</tbody>
</table>

**Current**:

- AMDAL (environment impact study), related licenses, geotechnical study, bathymetry, social/community study, Mine Study, Mine Planning, Detail Engineering Design, etc
- Land Preparation & Bankable Feasibility Study
- Selection of JV Partner
Added Value In Bauxite – Alumina - Aluminum Industry*

1. **Bauxite Mining**
   - 8 Ton BAUXITE (5,4 TON WASHED BAUXITE)*

2. **Alumina (SGA) Refinery**
   - 2 Ton SGA

3. **Aluminum Smelting**
   - 1 Ton ALUMINIUM

4. **Aluminum Alloying**
   - Alloying aluminum metal with rare earth minerals, such as vanadium, titanium, cobalt, tungsten, etc in advance material making process to create definitive characteristic of alloyed material is alleged to created numerous economic added value

**ADDED VALUE:**
(Compared to bauxite selling)

- **2.2 X**
- **7.4 X**

*internal calculation and assumption
*bauxite ore characteristic: 40% Al₂O₃, 4% R-SiO₂, and 11%Fe₂O₃
SGA Processing Flow

Bauxite → Grinding & Desilication → Digestion → Evaporation → “Bayer Process” → Precipitation → Hydrate product (α– Al(OH)3) → Calcination (~1100°C) → Alumina (α– Al2O3)

2NaOH + Al2O3.3H2O $\rightarrow$ 2NaAlO2 + 4H2O
2NaOH + Al2O3.H2O $\rightarrow$ 2NaAlO2 + 2H2O

Red Mud
(Al2O3 ~20%)
(Fe2O3 ~42%)

Red Mud Washing
Conclusion

The key advantages of Indonesia bauxite/alumina industry to compete with other world's bauxite/alumina companies, are Indonesia’s:

1. Huge and good quality resources - low temperature process
2. Energy Resources
3. Strategic Location
4. Available of Human Resources with strong technical and engineering background to support of project development
5. Domestic Market potential to grow, bigger and larger at the up coming years
6. Potential to expand capacity up to 5 MT Alumina and 2 MT Al Smelter
Conclusion

- Anticipating the implementation of Law No. 4 years 2009, Indonesian companies have prepared to established downstream industry, such as alumina industry, meanwhile foreign investors are welcomed to jointly develop an abundant resources within the country.

  *eg. on September 2011, GoI released regulation No. 130/PMK.011/2011 (PMK-130) regarding to talk about CIT Holiday.*

  Eligible taxpayers may be granted the following tax facilities:

  a) CIT exemption for the period of five to ten years from the start of commercial production.

  b) 50% reduction of the CIT due for the period of two years after the end of the CIT exemption period.

- ANTAM as a SOE in Mining and Mineral processing has pioneered the nation’s alumina industry by performing the construction of CGA plant and conducting BFS on SGA.
Thank you

This presentation and/or other documents have been written and presented by Antam. The materials and information in the presentation and other documents are for informational purposes only, and are not an offer or solicitation for the purchase or sale of any securities or financial instruments or to provide any investment service or investment advice.

This presentation is for discussion purposes only and is incomplete without reference to, and should be viewed solely in conjunction with, the oral briefing provided by Antam. Neither this presentation nor any of its contents may be disclosed or used for any other purpose without the prior written consent of Antam.

The information in this presentation is based upon forecasts and reflects prevailing conditions and our views as of this date, all of which are accordingly subject to change. Actual results could differ materially from forecasts. Antam’s opinions and estimates constitute Antam’s judgment and should be regarded as indicative, preliminary and for illustrative purposes only.