China Aluminium Industry Picture

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Focus Points

I. Overview of China aluminium industry

II. What holds up the future
The development of aluminum industry is mainly driven by economy/demand.
For every 10,000 CNY increase in GDP, the corresponding increase in aluminium consumption is more than 550,000 tons.
Overview...

Domestic Consumption of Primary Aluminium

China
American
Japan
Germany
India
Brazil
# Overview

## Trend of supply

<table>
<thead>
<tr>
<th></th>
<th>Alumina</th>
<th>Primary aluminium</th>
<th>Semis</th>
<th>Secondary Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output of 2018, mlt</td>
<td>72.5</td>
<td>36.5</td>
<td>45.5</td>
<td>6.95</td>
</tr>
<tr>
<td>2018/2017, %</td>
<td>9.9</td>
<td>-0.2</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Production Change</td>
<td>Increasing...</td>
<td>Decreasing...</td>
<td>Growth rate decreasing...</td>
<td>Up-trend of output sustain steady...</td>
</tr>
<tr>
<td>Supply</td>
<td>Net imp</td>
<td>Net imp</td>
<td>Domestic consumption accounted for more than 90% of output</td>
<td>Net imp</td>
</tr>
<tr>
<td>Generally Trend</td>
<td>Supply focuses on domestic demand</td>
<td></td>
<td></td>
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</tbody>
</table>
Overview…

- Adjustment - Primary aluminium

Implement of supply-side structural reform;

Setting upper limit of total capacity;

Capacity transfer by replacing…
Overview…

- Adjustment-Alumina supply

Import volume of bauxite is increasing, mainly from Guinea…

Import volume of alumina changes with price comparison at home and abroad…

Two resources complement each other, external dependence is likely to remains.
Overview…

● Adjustment-Semis supply

Distribution: Liquid aluminum, of either primary or secondary origin, that can be directly consumed by downstream…

Structure: The share of extrusion doubled to more than 60%.
Overview…

- Adjustment-Secondary aluminium supply

Secondary aluminum accounts for less than 20% of primary aluminum;

Domestic recycling keeps on increasing, with CAGR more than 20%.
Overview...

- Equipment & Technology

Facility upgrade

- ≥600kA
- ≥500kA
- ≥400kA
- ≥300kA

Smelter cells

Energy consumption come down

- Comprehensive AC consumption of Aluminum Ingot (kW.h/t.Al)
- Comprehensive energy consumption of alumina (kgce/t.Al2O3)
Overview...

- Environmental protection actions on clean production

SO2 emission of smelters (unit volume):
- Previous: 200mg;
- Most of: 100mg
- Part of: 35mg

Smelters and refineries should reduce production unless reaching Ultra-high air pollutant emission standard

Strengthen pollutant emission management + Output reduction during heat seasons +...

» Work Plan for Air Pollution Prevention and Control in Beijing-Tianjin-Hebei and the Surrounding Areas (2+26), since 2017
Consumption

apparent consumption of primary al/0000tons

GDP per capita

Traditional Consumption

Emerging consumption

34@163.com
Consumption

Structure of aluminum End Use is adjusting of China

- Construction still to be the largest segment;
- Transportation increased most significant;
- Packing consumption is moving up on the trend …
Consumption

- Year of 2012-aluminium alloy trailers and oil tank trucks

Aluminium consumption: 3-3.5t/unit
Consumption

- Year of 2013-aluminium alloy conductor

Aluminium accumulative consumption: >60000 tons
Consumption

- Year of 2014-aluminium alloy formwork

Aluminium consumption: 25kg/m$^2$
Consumption

- Year of 2015-aluminium alloy envelop (roofing, wall…)

Aluminium consumption: 3-5 kg/m$^2$
Consumption

- Year of 2016-aluminium alloy body new energy bus

  Aluminium consumption: 1-2t/unit
Consumption

- Year of 2016-aluminium alloy overpass

  Aluminium consumption: around 1t/meter
Consumption

- Year of 2017-aluminium alloy furniture
  Healthy (formaldehyde-free)+recycling +corrosion prevention +…
Consumption

- Up to the end of 2018, accumulated aluminium consumption of new applications was more than 3.5 million tons. (Aluminium alloy formwork is the fastest)

Next steps? A Green city…
Consumption

Growth is mainly in three respects

Mature markets

Widely used abroad, fewer in China

Emerging markets
Consumption

Building integrated photovoltaics (roof, curtain wall, solar power generation, furniture…)

Constructing and building waste > 40%
Consumption

Electric vehicle (body, curtain wall, solar power generation, furniture…)

Chery eQ1-majority could afford

ES8-96.4% is made of aluminium (335kg)

Rapid growth of new energy automobile demand > 60%
Consumption

Refrigerated truck (body, al-air battery…)

Cold-chain logistics industry in China skyrocket.
(The transaction amount of 2018>$40 billion)
Consumption

More applications...

- 0.5kg-Al/3kg-case
- 13 billion plastic dish/year
- 5kg/5 steps-ladder
- Street lamp Inventory exceed 40 million

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A gold-idea is invaluable…

Best choice—Aluminium has significant potential among light materials due to cost competitiveness, social benefit......,and design.
Thank you!

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