Canada’s aluminium industry: A world perspective

BC Presentation

Jean Simard, President and CEO
1. Canada’s aluminium industry footprint
2. Canada’s markets
3. China
4. Trade issues
5. Conclusion
CANADA’S ALUMINUM INDUSTRY FOOTPRINT
CANADA’S 10 ALUMINIUM SMELTERS

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• In 1954, Alcan’s investment in Kitimat was the single largest private sector investment in Canada history.
• In 2014, Rio Tinto’s $4.8 billion investment in modernization of Kitimat made it again one of the largest private investments in BC.
• Increasing production capacity by 48%, reducing overall emissions by 50%.
• Rio Tinto’s BC Operations directly contributed a total of $412 million to the BC economy in 2013.
• $189.6 million spent on goods and services including between 2003-2014.
Direct and Indirect Emissions (t CO$_2$ e/t Al)

Carbon Footprint—Emissions Intensity 2015

Ref. : AAC et IAI 2017
CHARTING THE COURSE OF THE INDUSTRY

THROUGH A SUSTAINABLE WORLD

Material optimization = durability
Carbon reduction = lightweighting
Circular economy = recyclability
ADVOCACY
OUR MARKETS
OUR MARKETS

• Canada exports 75% of its production mostly to the US, including Kitimat, as its Asian market is now taken over progressively by Chinese exports and new Asia ex China capacity.

• Canada is the US largest source of primary metal imports, representing over two thirds of the total metal entering the US.

• Russia and the Middle East sharing the balance, and China is growing its share of semis.
PRACTICALLY ALL US P1020 PRODUCTION AND 80% OF CANADA’S STAYS IN THE REGION

MAJOR TRADE FLOWS OF DOMESTICALLY PRODUCED P1020
(thousand tons; 2014 volumes)

STAYS IN CANADA

CANADA TO USA

CANADA TO EU

US & CANADA TO MEXICO

CANADA TO ASIA

16

200

907

247

26

Source: HARBOR Aluminum
ON THE VAPS SIDE THE US ABSORBS 85% OF CANADIAN EXPORTS...

MAJOR TRADE FLOWS OF DOMESTICALLY PRODUCED VAP
(thousand tons; 2014 volumes)

STAYS IN CANADA

CANADA TO USA

1,086

CANADA TO EU

16

CANADA TO ASIA

98

US & CANADA TO MEXICO

352*

US TO CANADA

122

Source: HARBOR Aluminum
* 295 kt tons originated in US, 57 kt tons originated in Canada

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...While Middle East and Russia are main foreign exporters to NA

NORTH AMERICA 2014 VAP IMPORTS
(thousand tons)

Source: HARBOR Aluminum
Others add up 70 kmton
CHINA’S NUMBERS SET THE TREND

• China is now producing 33 million tpy of primary metal, representing +50% of the world’s production

• Its domestic market is shifting from massive infrastructure manufacturing to services industry

• Its relative weight on world markets is such that the price of metal on the LME is directly correlated to the Chinese GDP growth

• Chinese negative demographics and WAP are pulling GDP down and aluminium consumption down
CHINA'S DEMOGRAPHIC AND ECONOMIC BOOM IN 2002-2007 WAS A MAJOR GLOBAL BULLISH FACTOR

CHINA ECONOMIC & DEMOGRAPHIC GROWTH VS LME 3M ALUMINUM PRICES
(annual % change vs $/mton)

Source: HARBOR Aluminum with LME, NBS, and UN data
HOWEVER, CHINA’S LABOR FORCE ENTERED IN 2014 INTO A LONG TERM PERIOD OF IMPLOSION

CHINA’s WORKING AGE POPULATION (WAP) VS GDP GROWTH
(annual % change, annual data)

Source: HARBOR Aluminum with NBS and UN data
AT THE SAME TIME, CHINA’S SMELTERS HAVE BECOME MUCH MORE COMPETITIVE

PRIMARY ALUMINUM CASH COST OF PRODUCTION*
(monthly average data: $/mton)

Source: HARBOR Aluminum
*Before casting (molten metal). Does not include depreciation, interest payments or working capital; Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services.
CHINA NOW BUILDS LOW-COST, STATE-OF-THE-ART MEGA SMelters…

CHINESE PRIMARY ALUMINUM SMELTER PRODUCTION CASH COST* AND CAPACITY
($/mton and thousand mtpy)

* On cash cost basis before casting (molten metal). Does not include depreciation, interest payments, sustained capital expenses or working capital; excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services.

Source: HARBOR Aluminum
CHINA'S PRIMARY ALUMINUM SMELTING INDUSTRY CASH COST CURVE POSITION*
(Q1 of every year; percentile)

*Cash cost before casting (molten metal). Does not include depreciation, interest payments, sustained capital expenses or working capital; excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services.

Source: HARBOR Aluminum
CHINA’S ECONOMIC SLOWDOWN IS PUSHING DOWN GLOBAL SMELTING COSTS...

CHINA’s GDP* VS ALUMINUM CASH COST OF PRODUCING MOLTEN METAL**
($/mt vs annual % change; monthly data)

Source: HARBOR Aluminum
*As a leading indicator, GDP growth has been moved 6 quarters forward.
**Cash cost of molten metal, does not include interest payments, depreciation, and working capital.

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...PULLING WORLD’S PRODUCTION CASH COSTS DOWN TO YEAR 2000 LEVELS WITH A FLATTER CURVE

GLOBAL ALUMINUM PRODUCTION CASH COST CURVE BEFORE CASTING BY SMELTER*

(in $/mton)

1ST QUARTILE
2ND QUARTILE
3RD QUARTILE
4TH QUARTILE

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*Does not include depreciation, sustained capital expenses, working capital or amortization. Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services. Source: HARBOR Aluminum
PLANT CLOSURES AND CURTAILMENTS

c = capacity curtailment
ac = alumina curtailment

Source: © HARBOR Aluminum Intelligence Unit | December 2016
MOREOVER, DECLINING COAL PRICES HAVE REDUCED CHINA’S ELECTRICITY PRICE BY 20%…

CHINA COAL PRICE AND PRIMARY ALUMINUM INDUSTRY ELECTRICITY PRICE
(weekly data;)

*Domestic price excluding 17% VAT. Source: HARBOR Aluminum
...AND HAVE PUSHED CHINA’S ELECTRICITY COST DOWN TO ROW’S LEVELS

PRIMARY ALUMINUM ELECTRICITY PRICE BY SELECTED COUNTRIES/REGIONS* ($/MWh)

- China Average
- China New Capacity
- ROW
- USA
- Middle East
- Canada

* Excludes 17% VAT for China. Source: HARBOR Aluminum
EXPANSIONS ENTERING THE MARKET WILL PRODUCE METAL AT A $1,133-1,400 PER MTON COST

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>LOCATION</th>
<th>CASH COST* ($/mton)</th>
<th>CAPACITY (’000 mtpy)</th>
<th>FIRST METAL</th>
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</thead>
<tbody>
<tr>
<td>Xinjiang Qiya</td>
<td>Xinjiang</td>
<td>$1,140</td>
<td>400</td>
<td>2015</td>
</tr>
<tr>
<td>Yunnan Aluminum</td>
<td>Yunnan</td>
<td>$1,298</td>
<td>300</td>
<td>2015</td>
</tr>
<tr>
<td>Gansu Dongxing</td>
<td>Gansu</td>
<td>$1,259</td>
<td>450</td>
<td>2015</td>
</tr>
<tr>
<td>Qinghai Xinheing</td>
<td>Qinghai</td>
<td>$1,506</td>
<td>120</td>
<td>2015</td>
</tr>
<tr>
<td>Shandong Innovation Group</td>
<td>Inner Mongolia</td>
<td>$1,153</td>
<td>800</td>
<td>H2 2015</td>
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<tr>
<td>Baise Baikuang Phase I</td>
<td>Guangxi</td>
<td>$1,198</td>
<td>300</td>
<td>End 2015</td>
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<td>Shaanxi Meixin</td>
<td>Shaanxi</td>
<td>$1,295</td>
<td>300</td>
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<td>Chongqing Jinghangyuan Phase II</td>
<td>Chongqing</td>
<td>$1,229</td>
<td>150</td>
<td>2016</td>
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<td>Xinjiang Jiuran</td>
<td>Xinjiang</td>
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<td>150</td>
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<td>Xinjiang</td>
<td>$1,135</td>
<td>200</td>
<td>2016-?</td>
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<tr>
<td>Chinalco Baotou</td>
<td>Inner Mongolia</td>
<td>$1,192</td>
<td>500</td>
<td>2017</td>
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<tr>
<td>Ningxia Qinyi Industry</td>
<td>Ningxia</td>
<td>$1,364</td>
<td>105</td>
<td>2017-?</td>
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<tr>
<td>Yunnan Metallurgical Group</td>
<td>Yunnan</td>
<td>$1,298</td>
<td>700</td>
<td>2017-2020</td>
</tr>
<tr>
<td>Guangyuan Aluminum</td>
<td>Sichuan</td>
<td>$1,413</td>
<td>380</td>
<td>2018-?</td>
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<td>Chalco Pingguo Aluminum</td>
<td>Guangxi</td>
<td>$1,167</td>
<td>400</td>
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<td>Jinjiang Group Phase I</td>
<td>Ghizou</td>
<td>$1,422</td>
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<td>NA</td>
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<tr>
<td>Jinjiang Group Phase II</td>
<td>Ghizou</td>
<td>$1,422</td>
<td>1,500</td>
<td>NA</td>
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<tr>
<td>Others</td>
<td>Others</td>
<td>$1,300</td>
<td>1,930</td>
<td>2016-2017</td>
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</tbody>
</table>

*On cash cost basis before casting (molten metal). Does not include depreciation, interest payments; sustained capital expenses or working capital; excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services.
Source: HARBOR Aluminum
NEW CHINESE SMELTING PROJECTS ARE MORE COMPETITIVE THAN ROW’S IF CAPEX IS CONSIDERED
WORLD’S DEMAND GROWTH RATES AND PROFIT MARGINS EXPECTED TO BE HALF IN THE NEXT 5 YEARS

WORLD PRIMARY ALUMINUM DEMAND GROWTH VS ROW’s PROFIT MARGINS*
(average annual growth rates; %)

Source: HARBOR Aluminum
* (LME + ingot premium) – (operating cost to produce ingot) – (interest payments, depreciation, and working capital costs). Scale not shown.

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GLOBAL ALUMINUM STOCKS
AT A RECORD HIGH OF 16 MILLION MTON

WORLD PRIMARY ALUMINUM INVENTORIES
($/mton vs million mton; monthly data)

Source: HARBOR Aluminum, CME, IAI, LME, Marubeni, SHFE, and SMM data
AT THIS POINT, WE EXPECT MARKET SURPLUSES TO WIDEN AND DEPRESSED PRICES TO REMAIN AHEAD
TRADE ISSUES
Canada | United States
North America remains in deficit of metal

Market equilibrium
(metric tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>CANADA</th>
<th>USA</th>
<th>MEXICO</th>
<th>North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>-0.44</td>
<td>-1.08</td>
<td>-1.13</td>
<td>-0.44</td>
</tr>
<tr>
<td>2010</td>
<td>-1.08</td>
<td>-1.13</td>
<td>-1.58</td>
<td>-1.08</td>
</tr>
<tr>
<td>2011</td>
<td>-1.13</td>
<td>-1.58</td>
<td>-1.68</td>
<td>-1.13</td>
</tr>
<tr>
<td>2012</td>
<td>-1.58</td>
<td>-1.68</td>
<td>-2.45</td>
<td>-1.58</td>
</tr>
<tr>
<td>2013</td>
<td>-1.68</td>
<td>-2.45</td>
<td>-2.52</td>
<td>-1.68</td>
</tr>
<tr>
<td>2014</td>
<td>-2.45</td>
<td>-2.52</td>
<td>-2.79</td>
<td>-2.45</td>
</tr>
<tr>
<td>2015f</td>
<td>-2.52</td>
<td>-2.79</td>
<td>-3.02</td>
<td>-2.52</td>
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<tr>
<td>2016f</td>
<td>-2.79</td>
<td>-3.02</td>
<td>-</td>
<td>-2.79</td>
</tr>
<tr>
<td>2017f</td>
<td>-3.02</td>
<td>-</td>
<td>-</td>
<td>-3.02</td>
</tr>
</tbody>
</table>

Source: HARBOR Aluminum
The business environment is currently disrupted by a series of recourses aimed at the sources and effects of overcapacity on world prices. These in turn affect the predictability and certainty required for industry to prosper and markets to behave with fluidity.

- NAFTA re-opening
- Buy America Hire America
- Change in corporate tax
- BTA
- Multiple recourses on imports

- Section 201
- Executive Order 13786
- Section 232
- Section 332
- Foil anti dumping
A new Free-Trade Corridor
From NAFTA to CETA:
The new China...

1 billion consumers
TRADE ISSUES

CANADA | CHINA
• The key production regions of the world hope for an honourable and diplomatic outcome, through a *negotiated settlement*, which can only happen with China being brought to the table through constant pressure, by all ways and means available, covering each and every angle where China does’nt respect its commitments and or market rules.

• The goal being to reach a Level Playing Field where Free and Fair Trade can take place.

• This containment approach is supported by the US, Canada and the European Union.
Threats

• Overcapacity
• New capacity
• Product misclassification
• Inventories
• Subsidies
• Carbon footprint
• Market Economy Status
CONCLUSION

• By 2018, the LME price will have been at a historical low for ten consecutive years.

• With China’s growing impact on the world market, there is no foreseeable change in the near future.

• In such a competitive and constrained commodity business environment there is no resilience left to absorb extra costs.
<table>
<thead>
<tr>
<th><strong>In perspective</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.5 millions tons</strong></td>
</tr>
<tr>
<td>China’s yearly output going for export (10%)</td>
</tr>
<tr>
<td><strong>6,000,000 tCO₂eq</strong></td>
</tr>
<tr>
<td>Canada’s yearly emissions</td>
</tr>
<tr>
<td><strong>+180 smelters</strong></td>
</tr>
<tr>
<td>Number of smelters in China in 2016</td>
</tr>
<tr>
<td><strong>Europe &amp; Canada</strong></td>
</tr>
<tr>
<td>2 jurisdictions with lowest carbon footprint</td>
</tr>
</tbody>
</table>

In perspective

February 2016
Thank you.