Raw material market review

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Aluminium: huge stocks, overproduction, low prices

Oversupply within aluminium market exceeds 3 months of consumption (~5 million tonnes on LME and ~5 million tonnes in stock at production facilities);

Reasons for accumulated stocks are:

- pushing Al into warehouses during 2008-2009 to pull back excess aluminium from the market;
- continuing Al stockpiling under financial deals instead of tying production cuts to decelerating demand;
- further production capacity expansion (especially in China and Middle East)

Producer discipline is needed to balance aluminium supply and demand

Source: Brook Hunt – A Wood Mackenzie Company, RUSAL research
China: rocketing aluminium capacity expansion

- Development of domestic Al industry in China resulted in a rapid increase in aluminium facility construction and primary aluminium production;
- Commissioning of greater capacity still goes on: in 2013-2014 China is expected to add 11.8 million tonnes of new capacity (73% of which lies in the north-western provinces);
- State programme to replace out-dated unprofitable smelters with greenfield low cost ones works slowly and new capacity commissioning outpaces closure of old smelters;
- Continuing growth of aluminium output puts pressure on aluminium prices on SHFE are going to remain low until producers shut down enough unprofitable smelters.

Al production growth in China frustrate ROW efforts to stabilize Al market by production cuts

Source: Goldman Sachs Global Investment Research, Brook Hunt – A Wood Mackenzie Company, RUSAL research
Raw material and energy price escalation in 2002-2013

- Raw material basket price almost doubled (from 40% in 2002 to 55% in aluminium LME price in 2013);

- World electrical power cost increased by 2.6 times (from 19 $/MWh in 2002 to 51 $/MWh in 2013);

- Coal price also doubled from 25-30 $/t in 2002 to 68-77 $/t in 2013.
Current crisis is going to be even worse for the aluminium industry than the 2008-2009 crisis

Aluminium price vs. cash cost, $/t

- In 2008-2009 aluminium cash cost decreased along with aluminium LME price, but in 2012-2013 aluminium price and aluminium cash cost are going in opposite directions:
- Aluminium cash cost is growing due to rising energy costs and a more stable alumina price based on alumina index;
- Increased raw materials costs and bear pricing of LME have pushed aluminium margins from producers to financial speculators.

Source: Brook Hunt – A Wood Mackenzie Company, RUSAL research
Current aluminium price should be 2285 $/t

• Alumina index reflects net supply/demand balance (no financial deals and no accumulated stocks);

• Current alumina based on index is quite high – 17-18% of aluminium. Historically alumina - 14% of aluminium. So at current alumina price of 320 $/t – a real aluminium price at 2 285 $/t, this price is near to market price with premia.

• Aluminium LME price is groundlessly low and does not show real aluminium price.

Source: CRU Ltd., J. King, RUSAL research
Margin: from Al producers to speculators, from alumina to bauxite

- Index kept alumina market profitable. This resulted in capacity expansion while demand from smelters decelerated. Since 2011, alumina surplus accumulated in the market.

- In 2012 Indonesia changed the rules regarding the export of bauxite. This decreased the availability of bauxite and led to an increase in prices;

- Margin from the alumina sector has shifted once again to the upstream bauxite market as this is seen as more interesting to investors;

- Investment in bauxite mining is several times lower than refining or smelting, the payback period is shorter while prices for bauxite are forecast to keep rising.

Source: CRU Ltd., Brook Hunt – A Wood Mackenzie Company, RUSAL research
Australia is the largest bauxite producer accounting for 29% of global production in 2013.

China is the second largest producer after Australia. In 2013 its share in global production is expected to increase to 24% from the 20% seen in 2011.
China is the largest world bauxite consumer (~ 126 Mt in 2013). Import bauxite consumption – 40-42%.

Indonesia is the world’s third largest bauxite producer and a main supplier to China (99% of Indonesian exports goes to China);

Changes to Indonesia’s export policy caused reduction of Indonesian bauxite flow to China while other suppliers increased export volumes. For the first time bauxite from the Atlantic region was exported to China.

Source: Ministry of Land and Resources, China Non-ferrous Metals Association, Aladdiny, SMM, China Customs, RUSAL research
Indonesia – uncertainty still goes on 
export or ban from January 2014?

Bauxite shortage in China

- Bauxite price increase
- Available bauxite sources for China: domestic, Australia, India and some Atlantic
- Substitution of Indonesian bauxite with additional 4-5 Mt from available sources
- Alumina production cuts in China (Shandong province) and increase of alumina import
- Increase of export taxation in Indonesia
- Intensification of bauxite project realization worldwide and domestic exploration and mining in China

Reduction of bauxite import to China

- Negative pressure on alumina from oversupplied bauxite market
- Decrease of bauxite prices due to high bauxite stocks in China
- Increase of export taxation in Indonesia
- Easing demand for Atlantic and Australian greenfield bauxite
Average freight rates in 2012-2013 are at a historical minimum (since 1985) as a result of bulk fleet expansion in 2011-2012. The currently utilization rate is near 80%. Low freight rates allow bauxite exports from the Atlantic to the Pacific (China) to be profitable.

But the situation is likely to change. Economic recession led to significant reduction of new ship orders for 2014-2016 while decommissioning of old fleet goes on and sea transportation volume is rising. That is why we predict that freight rates will go up from 2014. Upward price tendency is forecast to last for 2-3 years.

Source: RS Platou, Baltic Exchange
Caustic soda: weak demand and increasing supply

Caustic demand in 2013 has been impacted by weak demand from large consuming industries (alumina and pulp & paper);

No firm recovery is expected from downstream industries in 2014 while new caustic capacities commissioning in 2013/2014 will put further pressure on an already long market (+2 Mt/y in China, +1.3 Mt/y in US, +0.25 Mt/y in Middle East);

Chlorine demand from the main PVC market remains low with weak construction activity in Europe, slower business in Asia and relatively weak demand in the US;

Even US PVC producers that have benefited from cheaper ethylene faced weak global economic growth and new additional capacity in other regions, which limited their gain;

Most industry players do not anticipate significant improvement from the weak conditions in the chlor-alkali business any time soon.
Calcined petroleum coke: new share – new challenge

• The ratio CPC/Al can increase in the coming years due to a limited supply of anode grade GPC globally (ex China);

• The majority of new GPC/CPC capacity entering the market will come from China and will be used to meet the consumption requirements of new smelters in the Middle East, India and China;

• Annual 8% growth of Al production in China, India and the Middle East is the main driver for growing consumption of green and calcined petcoke (for Al industry) and probable price increase;

• New calciners from China can take market share off the Americans (CPC for Al industry). Buyers in the Middle East are not likely to accept medium to high sulphur cokes from the USGC while they can get better cokes from China.

Source: CRU Ltd., AZ China
How long all these factors will influence aluminum industry?

Crisis of 2012 is heavier for aluminium industry than in 2008-2009 due to:

- Oversupply /overproduction;
- Stagnating aluminium price at LME;
- Rising cash costs per aluminium tonne (mostly energy costs).

Aluminium production expansion in China and Middle East frustrates ROW efforts to reach aluminium market balance;

Aluminium pricing at LME redistributes margin from aluminum producers to financial speculators. Low aluminum prices do not reflect a real aluminium cost;

Primary aluminium market is also under pressure due to growing secondary aluminium production;

Bauxite market in the next year is likely to be the main factor of uncertainty due to new Indonesian export policy and expected recovery of freight market. Availability of Indonesian bauxite for China may be reduced while Atlantic bauxite may became expensive due to higher freight rates.

**Today, the global aluminium production system is a “push” system, while we should work in a “pull” system – only produce as mush as customers need. This approach will lead to a reduced aluminium surplus and in turn will decrease energy prices**
Thank you for your attention!