The European Emission Trading and the Aluminium sector

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Aluminium and ETS

- Is the European ETS achieving its goals??
- Is it impacting sectors not included in the Directive??
- What is the best way of including other sectors??
Aluminium Offers...

Innovative products

Innovative processes

While contributing to a sustainable progress!
How aluminium is made

First Bauxite extraction (Guinea Boké)
Mining and reforestation
How aluminium is made

Bauxite

4 kg

4 kg

Alumina

2 kg

2 kg

1 kg

1 kg
How aluminium is made

Second, Alumina production (San Ciprián)
How aluminium is made

Bauxite

4 kg

Alumina

2 kg

mud

1 kg

water

1 kg

Aluminium

1 kg

CO₂

1 kg
How aluminium is made

Third, Aluminium smelting (Porto Vesme)
How aluminium is made

- Electrolytical process, Hall Hérault (early ‘900):

Anodes

Bath

Cathode
GHG Emission Sources

**PFC Generation**
0.3 - 10.8 t of CO2eq

**Alumina Production**
1.0 - 1.5 t of CO2eq

**Electrolyte**

**Molten Aluminium**

**Anode**

**Cathode Block**

**Gases**

**Fluoride Hopper**

**Alumina Hopper**

**Feeder**

**Anode Carbon**
2.7 - 3.1 t of CO2eq

**Fabrication**
0.6 - 1.3 t of CO2eq

**Electricity Production**
0 - 20.8 t of CO2eq

**Total**
4.3 - 37.5 t of CO2eq
Aluminium and ETS

• As all non-ferrous metals, Alu currently not included in European ETS, but affected by indirect cost

• Can be considered a good “leading indicator”

• Aluminium smelting is the most electricity intensive industrial process; 15 kW/hrs needed per kilo of aluminium; 5 kW/hrs for zinc

• Electricity represents up to 40% of production costs

• Global commodity submitted to strong competitive pressure — no passing on of costs
CO₂ certificate trade increases power price, despite free of charge allocation
**Very Strong Correlation - 95%**

Regression analysis between EEX Cal 2006 and ETS

\[ y = 0.5686x + 29.297 \]

\[ R^2 = 0.9466 \]

![Graph showing the regression analysis between EEX Cal 2006 and ETS with a strong correlation line and data points.]
The Aluminium Industry has identified 3 main paths to reduce its Climate Change Impact

1. Reducing emissions per ton of primary metal produced through:
   a) investment in modern technology;
   b) attention to good operating practices.

2. Maximising the potential for aluminium recycling.

3. Encouraging applications of aluminium in transport which reduce weight and GHG emissions from transport, a sector responsible for a third of GHG emissions globally.
1) Significant Reduction of Electricity Consumption for Smelters

Reduced electricity consumption at the electrolysis stage
2) Aluminium Recycling

Recycling only needs 5% of the energy

Recycling emits 95% less greenhouse gases
World aluminium usage and recycling 1950-2002

Number of Million tonnes

- Primary Production
- Used Scrap Recovery
- Total Usage

Global Aluminium Supply Mix

Modeling indicates that the industry’s average metal supply from old & new scrap:

- has increased from 17% in 1960 to over 33% today;
- is predicted to increase to 39% by 2020.
Global Product Inventory by Market

000 Metric Tons


- Other (ex destructive Uses)
- Consumer Durables
- Electrical - Other
- Electrical - Cable
- Machinery & Equipment
- Packaging - Other (Foil)
- Packaging - Cans
- Trans - Other
- Trans - Aerospace
- Trans - Auto & Lt Truck
- Bldg & Const
3 – Aluminium in Transport
A380 – New Solutions for a Super-sized Aircraft

New alloys and solutions for very large parts
Europe’s New Generation of Mass Transport
Moving towards the all-alu car

The Audi A8 Spaceframe
Innovative breakthrough to support dieselization
Light Weighting for Performance and Energy Saving
Aluminium Light-weighting: Impact on CO2 Emissions

1 Tonne of Aluminum

20 Tonnes of CO₂ Emissions
Light duty commercial delivery vehicles show highest relative savings.
Total CO₂ Savings Potential by Transport Market

Global – Million Metric tons of CO₂

Road vehicles

Rail vehicles

Air

Ships

Passenger Cars

Light-duty vehicles

Medium trucks

Heavy trucks

Buses

Short-distance passenger trains

Long-distance passenger trains

Long-distance freight trains

Aircraft

Internal Navigation

International Marine Bunkers

North America

Europe

OEDC

non-OEDC

Pacific
In summary

Despite emission reductions, total emissions would still increase due to growth in production.
Aluminum Production
Movement to “Today’s Best Practice”

Full Industry Adoption of “Today’s Best Practice” Could Stabilize Growth of Global Production GHG Emissions
Potential Magnitude of Transport Savings

Potential Emissions Savings From Transport Growing Faster than Al Production Emissions

Potential for Al Industry to be “Climate Neutral” By 2020
Best Practice and Transport Savings

Potential for Al Industry to be “Climate Neutral” By 2015 by accelerating movement toward today’s best practice

In the business of being the best.
The Aluminium Industry may be able to demonstrate, on the basis of GHGs, that the net impact on society of the use of aluminum as a material is a positive contribution to the challenge of Global Climate Change.
The Aluminium Industry and the European ETS

1. Climate Change can only be resolved globally:
   a) Not by delocalising industry away from Europe;
   b) Global sector approach.

2. Maximising the recovery for aluminium recycling.

3. Encouraging the use of aluminium in transport, a sector responsible for a third of GHG emissions globally.
The Aluminium Industry and the European ETS revision

1. Solve the non-functioning of the Electricity market

2. Before adding new sectors:
   a) must evaluate cost of abatement;
   b) Must evaluate capability to pass along costs.

3. Include all gases.

4. Eliminate distortions and harmonise definitions.