

# Perspectives on the Aluminium industry

**Jerry Marks**

International Aluminium Institute

[www.world-aluminium.org](http://www.world-aluminium.org)

marks@world-aluminium.org



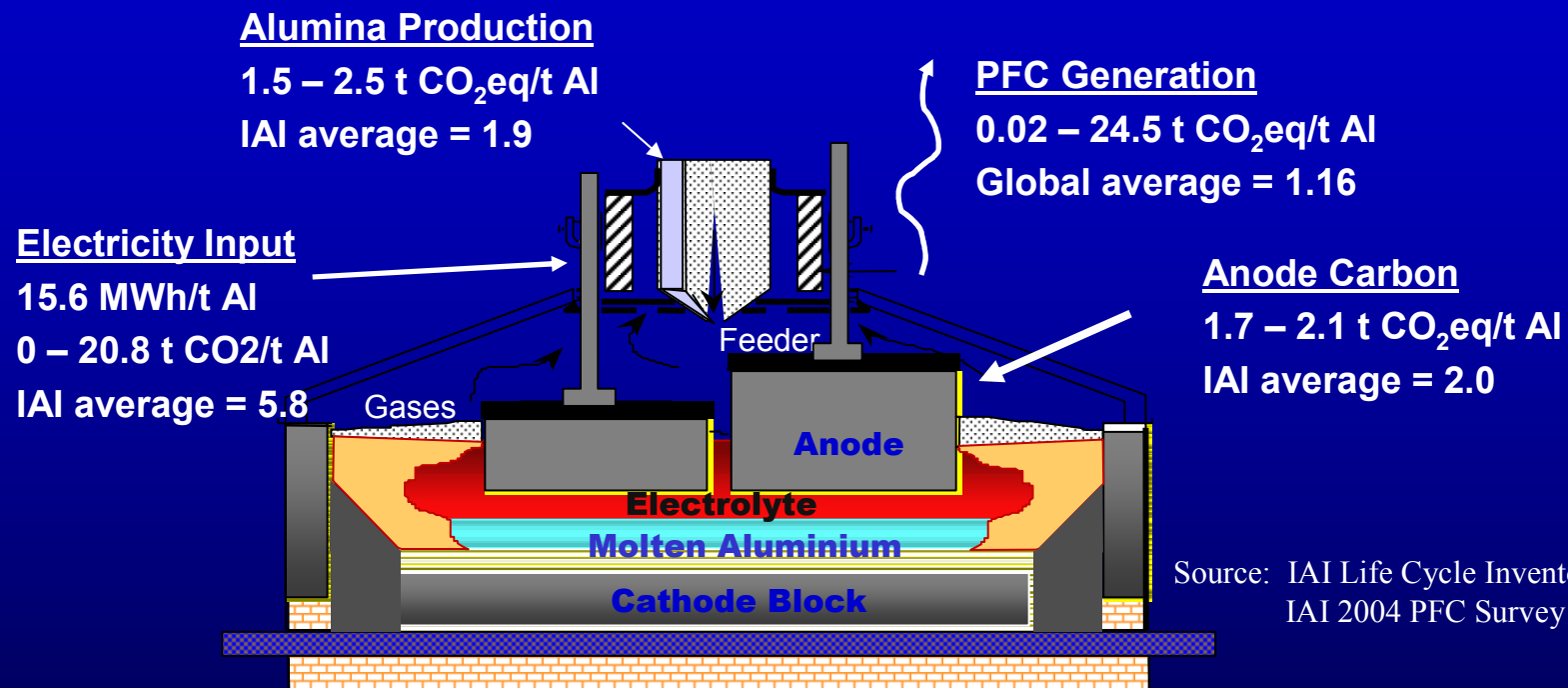
# Talking Points

- **GHGs from aluminum production - adding perspective**
- **Sources of GHGs from aluminium production**
- **IAI global sustainability initiative – GHG emissions reduction**
- **Baseline Issues**
- **CDM and aluminium industry**
- **Sum up**

## What fraction of total Global GHG Emissions is Global Primary Aluminium Production responsible?

<u>Worldwide CO2-eq Emissions excluding LU and forestry</u>	millions Gg
Total Annex 1 countries, yr 2002	14.95
China, yr 1994	3.65
Brazil, yr 1994	1.03
India, yr 1994	1.23
Other non-Annex 1, yr 1994	0.57
<b>Total worldwide GHG Emissions (CO2-eq) =</b>	<b>21.43</b>
<u>Aluminium Industry Emissions, 2003</u>	
Direct PFCs	0.0352
Direct CO2	0.0454
<b>Total PFCs and CO2 (CO2-eq)</b>	<b>0.0806</b>
<b>Electricity Contribution (@ 5.8 t CO2-eq/t Al)</b>	<b>0.1624</b>
<u>Percent Contribution (Excluding electricity)</u>	<b>0.4%</b>
<u>Percent Contribution (Including electricity)</u>	<b>1.1%</b>

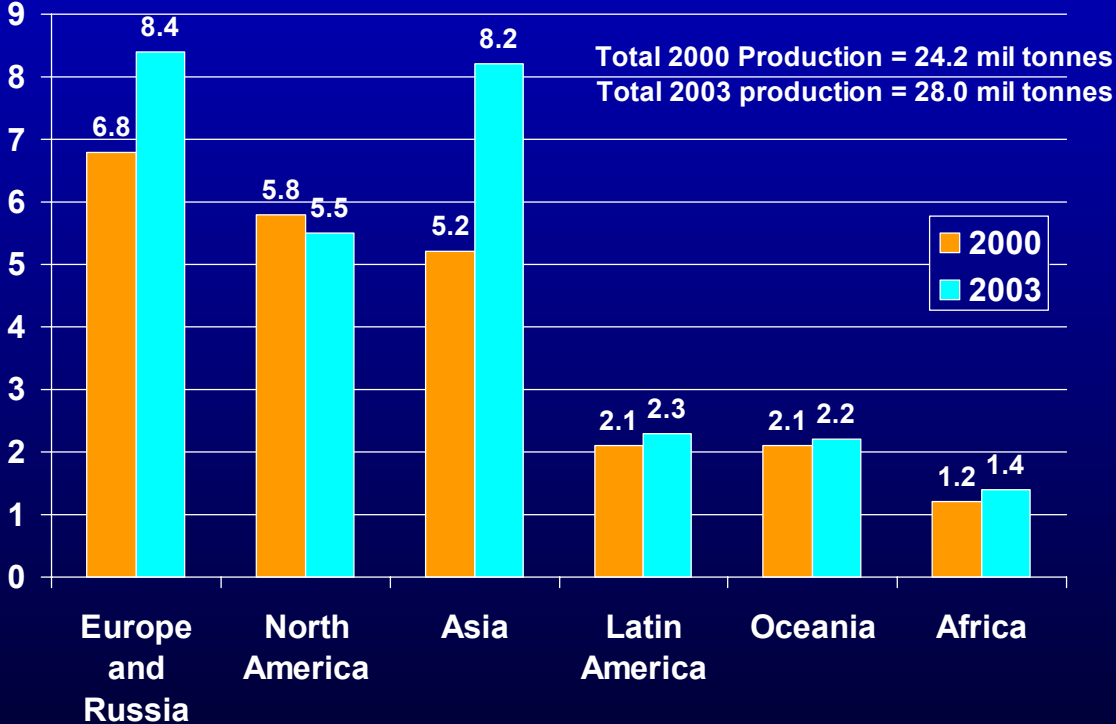
# GHGs from Primary Aluminium Production



- Two PFC (perfluorocarbon compounds - CF<sub>4</sub> and C<sub>2</sub>F<sub>6</sub>) contribute about 40% of direct primary aluminium GHG emissions
- Limits on GHG emissions performance set by genre of installed production technology

# Primary Aluminium Production is Globally Based

Worldwide Primary Aluminum Production by Region  
(Millions of Tonnes)



# IAI Global Sustainability Initiative

## 12 Voluntary objectives covering key environmental, social, and economic indicators

- **Voluntary Objective 1**

An 80% reduction in Perfluorocarbon (PFC) greenhouse gas emissions per tonne of aluminium produced for the industry as a whole by 2010 versus 1990 levels.

- **Voluntary Objective 3**

A 10% reduction in average smelting energy usage by IAI Member Companies per tonne of aluminium produced by 2010 versus 1990.

- **Voluntary Objective 7**

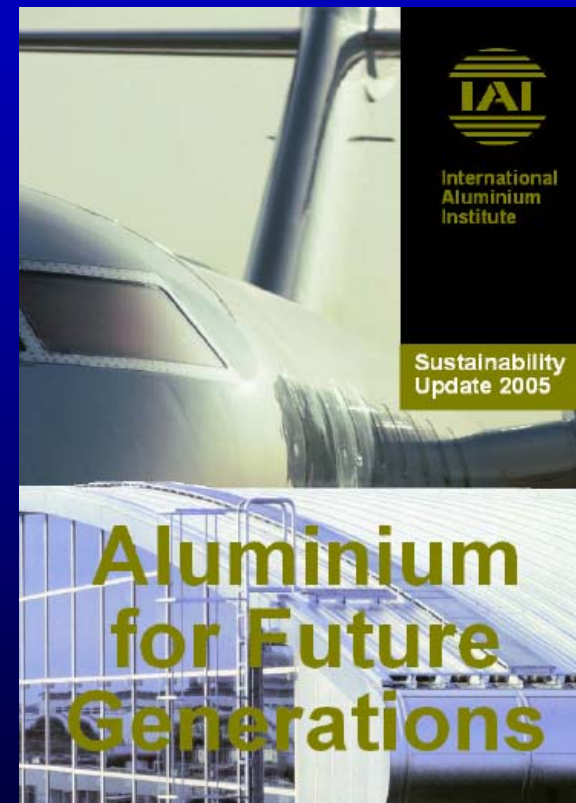
The industry will monitor annually aluminium shipments for use in transport in order to track aluminium's contribution through light-weighting to reducing greenhouse gas (GHG) emissions from road, rail and sea transport.

- **Voluntary Objective 8**

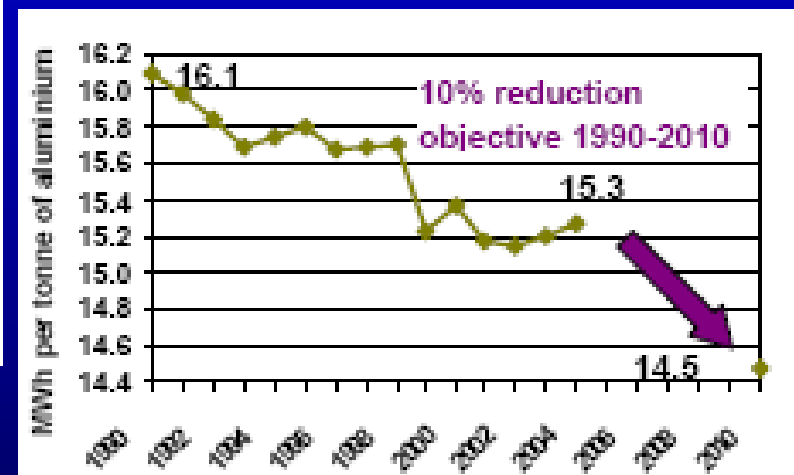
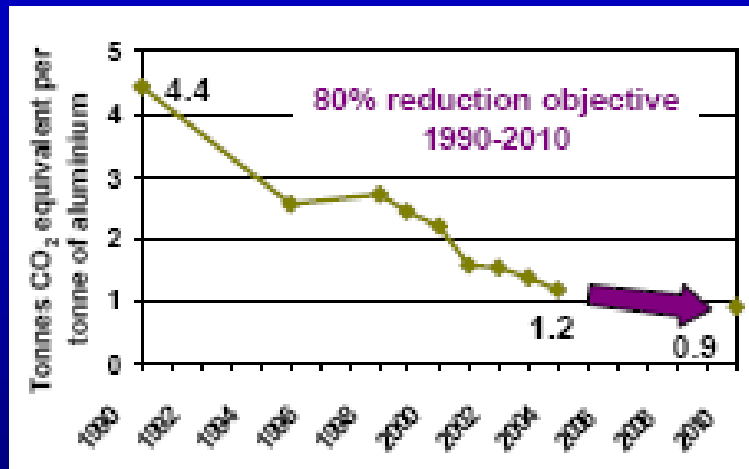
The IAI has developed a mass flow model to identify future recycling flows. The industry will report annually on its global recycling performance.

- **Voluntary Objective 11** *New*

The IAI Member Companies will seek to reduce GHG emissions from the production of alumina per tonne of alumina produced.



# Progress Toward Goals Monitored Annually

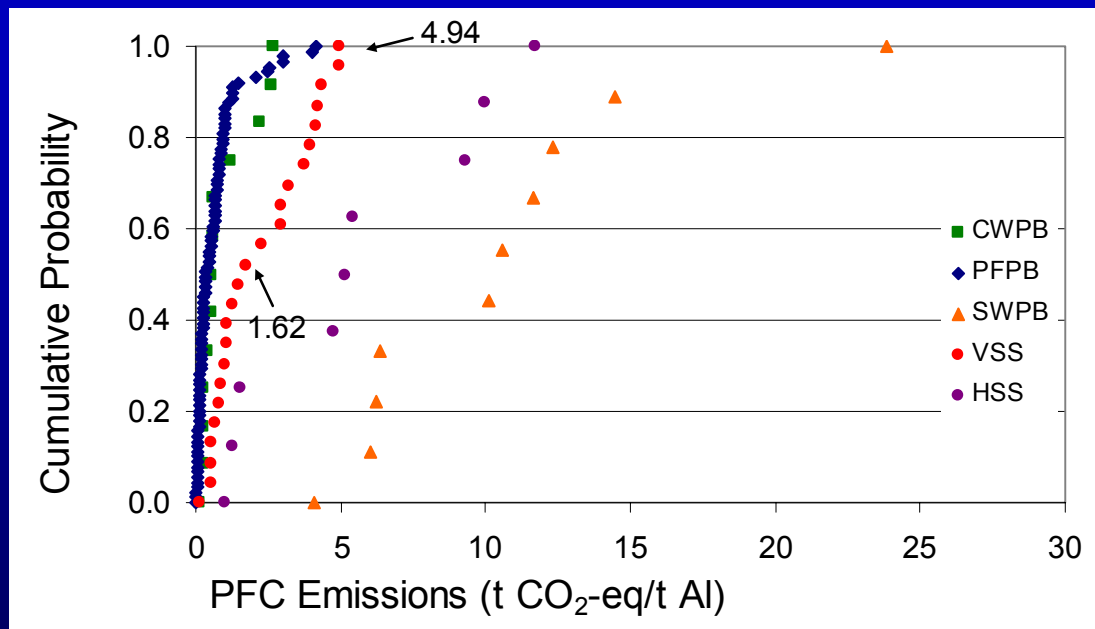


- Member companies surveyed annually
- Data are analyzed and summary reports developed
- Coded facility specific benchmark data provided to participants to aid in setting improvement objectives
- Directors meet two times each year to evaluate progress toward objectives

# Baseline Issues

- **What gases would be included?**
- **What parts of the production processes would be included?**
  - Mining
  - Refining
  - Smelting
  - Fabrication
  - Recycling
- **Indirect emissions from electricity production**
- **Direct emissions from smelting process**
  - CO<sub>2</sub>
  - PFCs
- **Installed technology mix will result in different baseline emissions among countries.**
  - Older Søderberg technology is higher emitting than center fed prebaked anode facilities
  - Side fed prebaked anode facilities have the highest emissions per unit time on anode effect

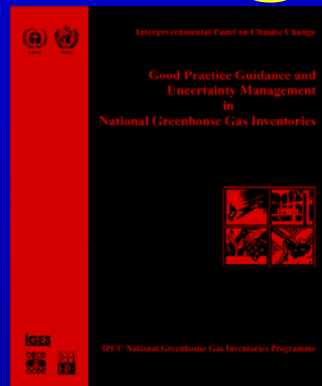
# PFC Emissions by Production Technology Type



- Large ranges in PFC performance both within technology type and among different technologies
- PFC emissions from SWPB>HSS>VSS>CWPB>PFPB
- Range of performance within technology groups results from different work practices and process control software

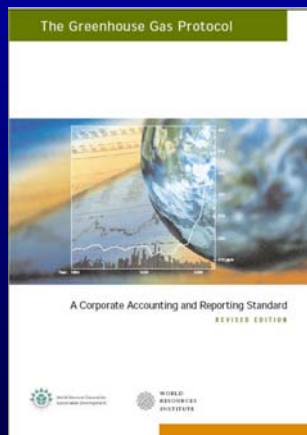
# GHG Accounting Standards

IPCC Good Practice  
Guidance



<http://www.ipcc-nggip.iges.or.jp>

WRI/WBCSD Corporate  
Good Practice Standards



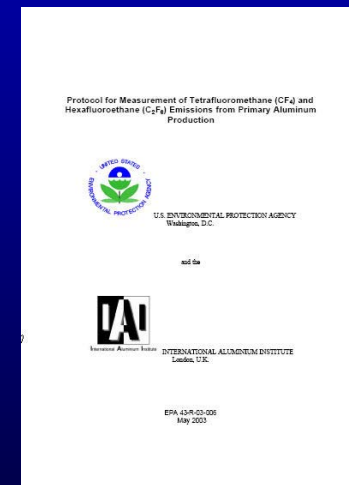
<http://www.ghgprotocol.org/>

IAI Industry GHG Protocol



[http://www.world-aluminium.org/environment/climate/ghg\\_protocol.pdf](http://www.world-aluminium.org/environment/climate/ghg_protocol.pdf)

USEPA/IAI PFC Measurement  
Protocol



[http://www.world-aluminium.org/environment/climate/pfc\\_measurement.pdf](http://www.world-aluminium.org/environment/climate/pfc_measurement.pdf)

*Annex I Expert Group Seminar in Conjunction with the OECD Global Forum on Sustainable Development – Paris 27 March, 2006*

# IAI Initiatives to Reduce GHG Emissions

- Benchmarking on industry performance on key performance criteria (Anode effects for PFCs, Energy utilization, carbon consumption)
- Annual published progress reports and briefings of all IAI Directors/CEOs;
- Coded Benchmarking Graphs;
- Scientific papers on anode effects and PFC emissions;
- Greenhouse Gas Protocol to ensure common methodology;
- Sharing best operating practices;
- IAI Consultant and equipment to carry out measurements and provide training;
- Cooperation with international bodies – OECD, IPCC; UNFCCC and WBCSD – and national regulatory agencies.

# CDM and Primary Aluminium

- **Some member companies developing CDM projects**
- **First methodology approved for PFC emissions reduction project in February 2006**
- **IAI working to establish CDM template for member use for emissions reduction projects**

# Summing Up

- **Aluminium industry is global in scope**
- **The industry has a strong sustainability initiative with quantitative goals and a monitoring system in place**
- **Strong track record of progress in emissions reductions has been established and industry has strategy in place to achieve its 80% reduction goal**
- **IAI historical survey data may be useful in establishing baseline emissions levels**
- **National baselines for GHGs from primary aluminium production must recognize the country specific technology mix**
- **Some IAI member companies have initiated CDM projects and one methodology has been approved**

**Thank you for your attention:**

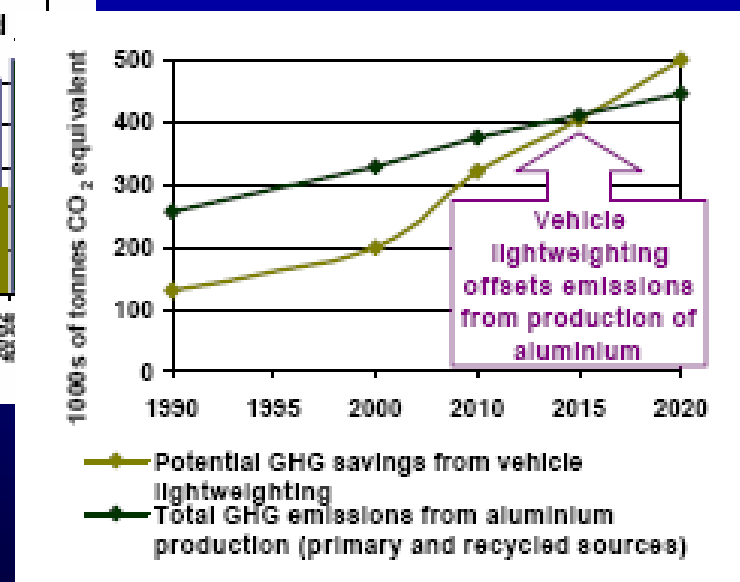
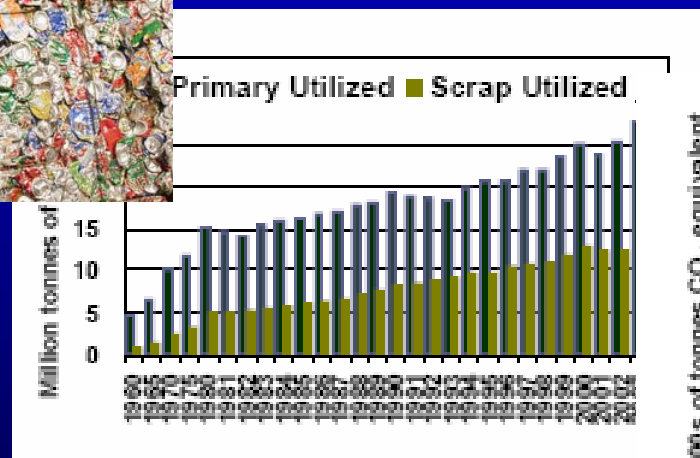
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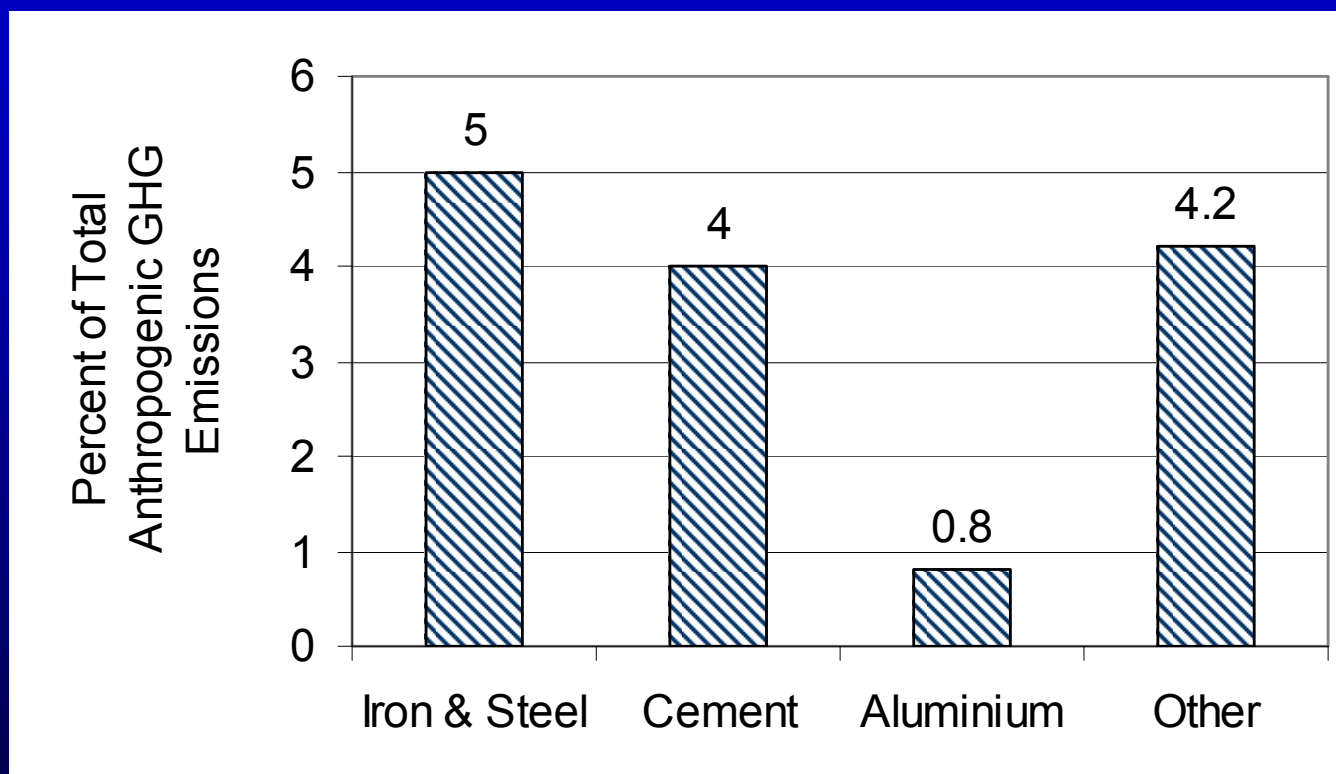
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# Recycling Saves Energy and Reduces GHGs

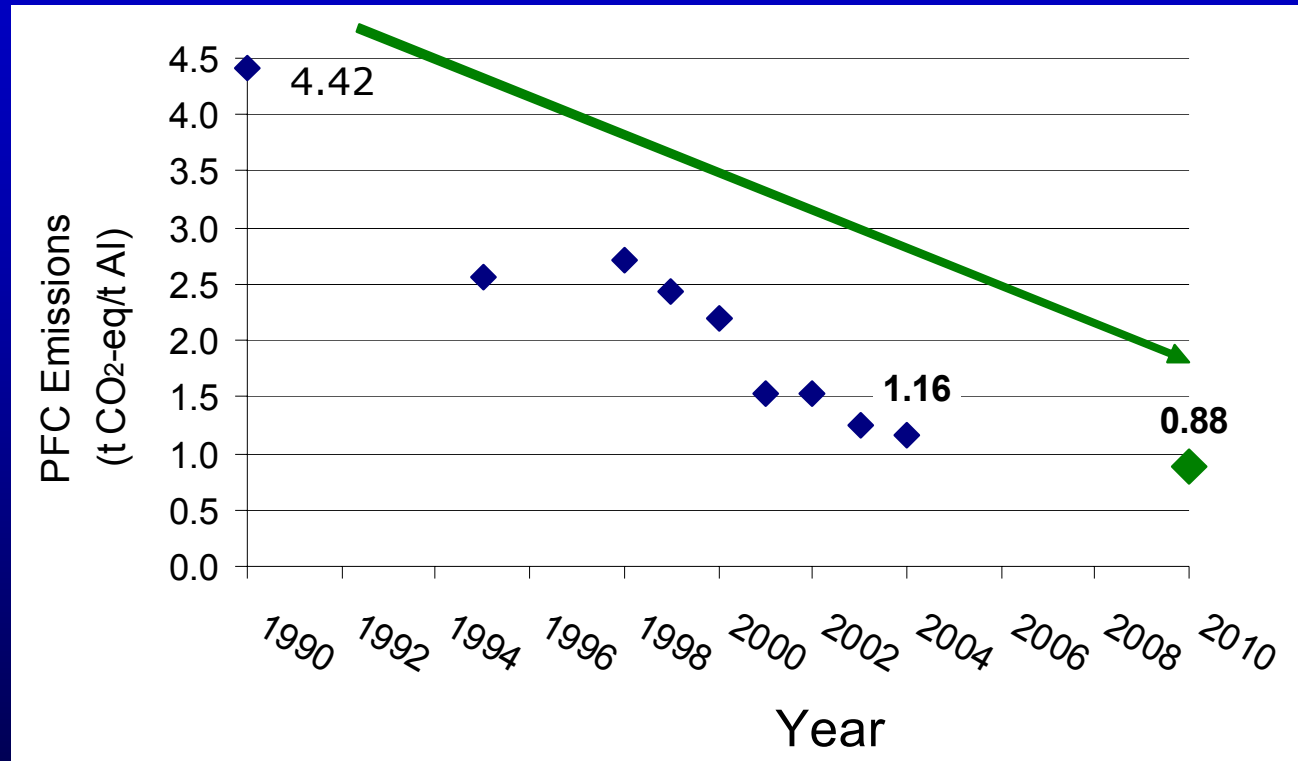


# Comparisons of AI with Other Industry



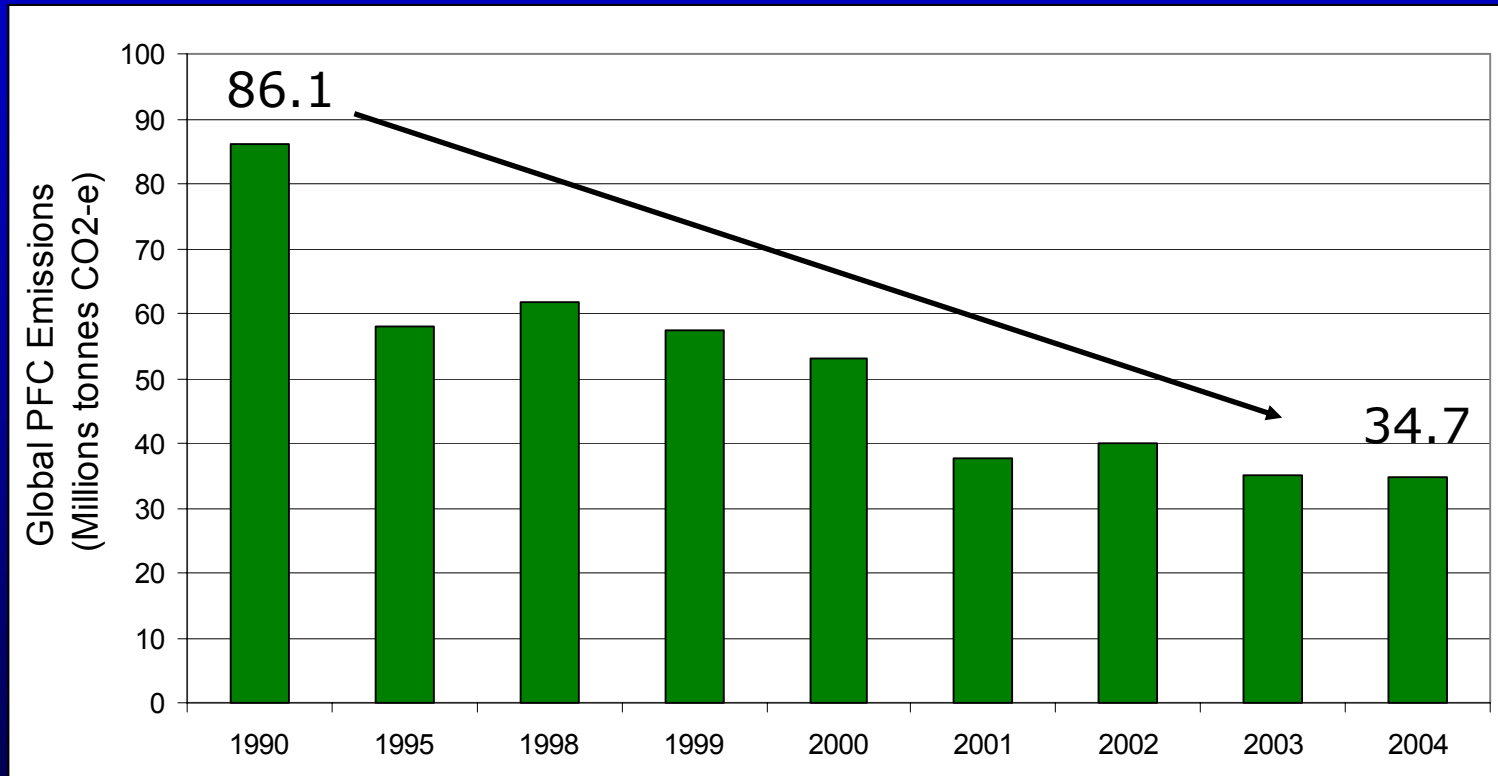
Source: Boumert, Herzog and Pershing, "Climate Data: A Sectoral Perspective, August, 2005. available at [www.pewclimate.org](http://www.pewclimate.org)

# Progress in Reducing PFC Emissions per Tonne Primary Aluminium Produced



- ✓ **74% reduction in PFC emissions per tonne aluminium from 1990 baseline**
- ✓ **2010 goal is a 80% reduction in PFC emissions per tonne aluminium**

# Total PFC Emissions from Primary Aluminium Production



✓ **60% reduction in total PFC emissions through 2004 from 1990 baseline**

Source: 2004 IAI Anode Effect Survey

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