

# The Aluminium Industry's Global Voluntary Approach to Climate Change: *Theory, Method & Practice*

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# Key Elements of the Aluminium Industry's Voluntary Sectoral Approach



## Global coverage

- IAI membership 80% of world production
- Data from around 70% of primary production
- Lifecycle approach to climate change mitigation

## Common methodologies

- Alu Sector GHG Protocol (2006)
- IPCC National GHG Inventories Guidance (2006)
- IAI / USEPA PFC Measurement Methodology (update due in 2008)
- ISO14064 GHG M'ment (2006)
- ISO14044 LCA (2006)

## Voluntary objectives

- Common global quantitative goals
- PFCs per tonne aluminium reduction of 80% by 2010 compared to 1990
- Energy efficiency improvement of 10% by 2010 compared to 1990

**87% reduction in PFCs (as CO<sub>2</sub>eq) per tonne of aluminium produced between 1990 & 2007**

**75% reduction in TOTAL PFC emissions between 1990 & 2007 despite 80% growth in production**

## Reporting and Verification

PFC data from 1990 to 2007

- Life Cycle Inventories in 2000 and 2005
- Database of **ALL** GHG emissions from AI production
- Data published annually
- Atmospheric measurement and verification
- External verification

## Performance drivers

- Benchmarking within technologies and over time
- Best practice sharing
- Expertise & equipment to conduct GHG measurements for accurate Tier 3 accounting

# “Aluminium for Future Generations” Global Sustainability Initiative



*13 voluntary objectives covering key indicators, including:*

## **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 smelter electrical energy usage by IAI member and reporting companies per tonne of aluminium produced by 2010 versus 1990

## **Voluntary Objective 7**

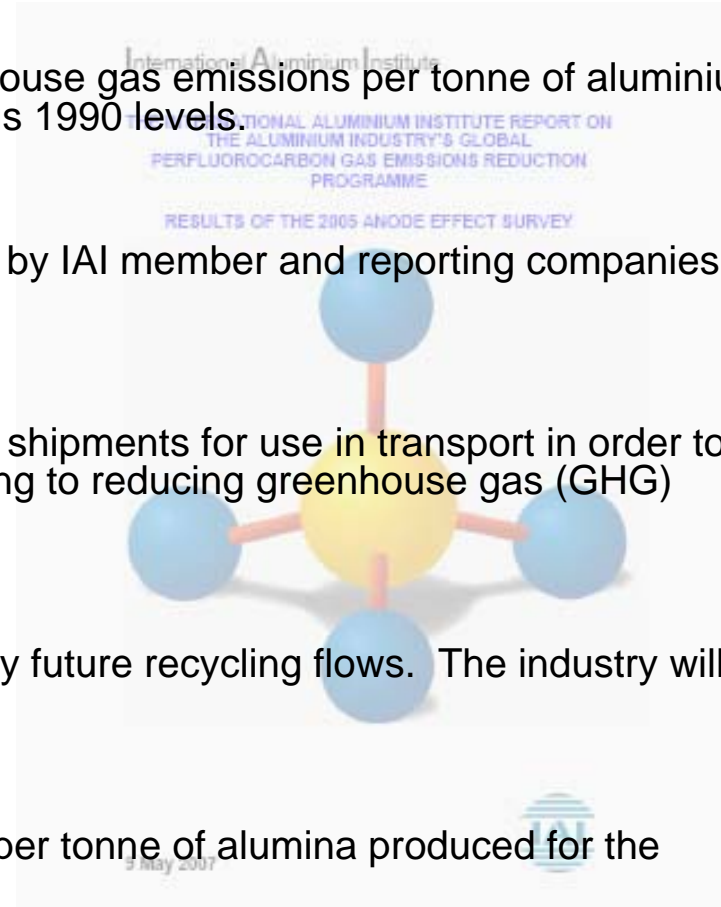
- The industry will monitor annually aluminium semis shipments for use in transport in order to track aluminium's contribution through light-weighting to reducing greenhouse gas (GHG) emissions from road, rail, air and sea transport.

## **Voluntary Objective 8**

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

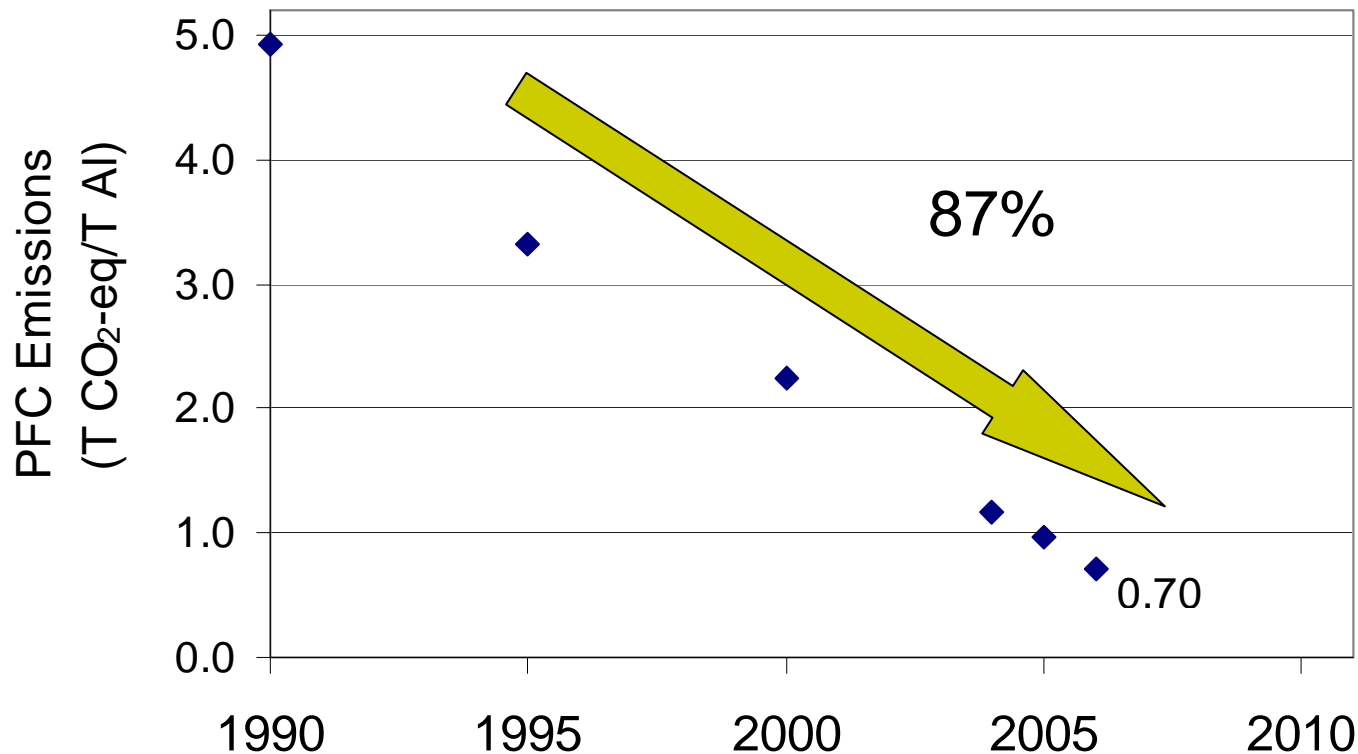
## **Voluntary Objective 11**

- A 10% reduction in alumina refinery energy usage per tonne of alumina produced for the industry as a whole by 2020 versus 2006



# ANNUAL DATA REPORTING & BENCHMARKING

While primary aluminium production increased by 80% between 1990 and 2007, from 20 to 36 million tonnes pa Total direct greenhouse gas emissions from the global aluminium industry were reduced by over 30%



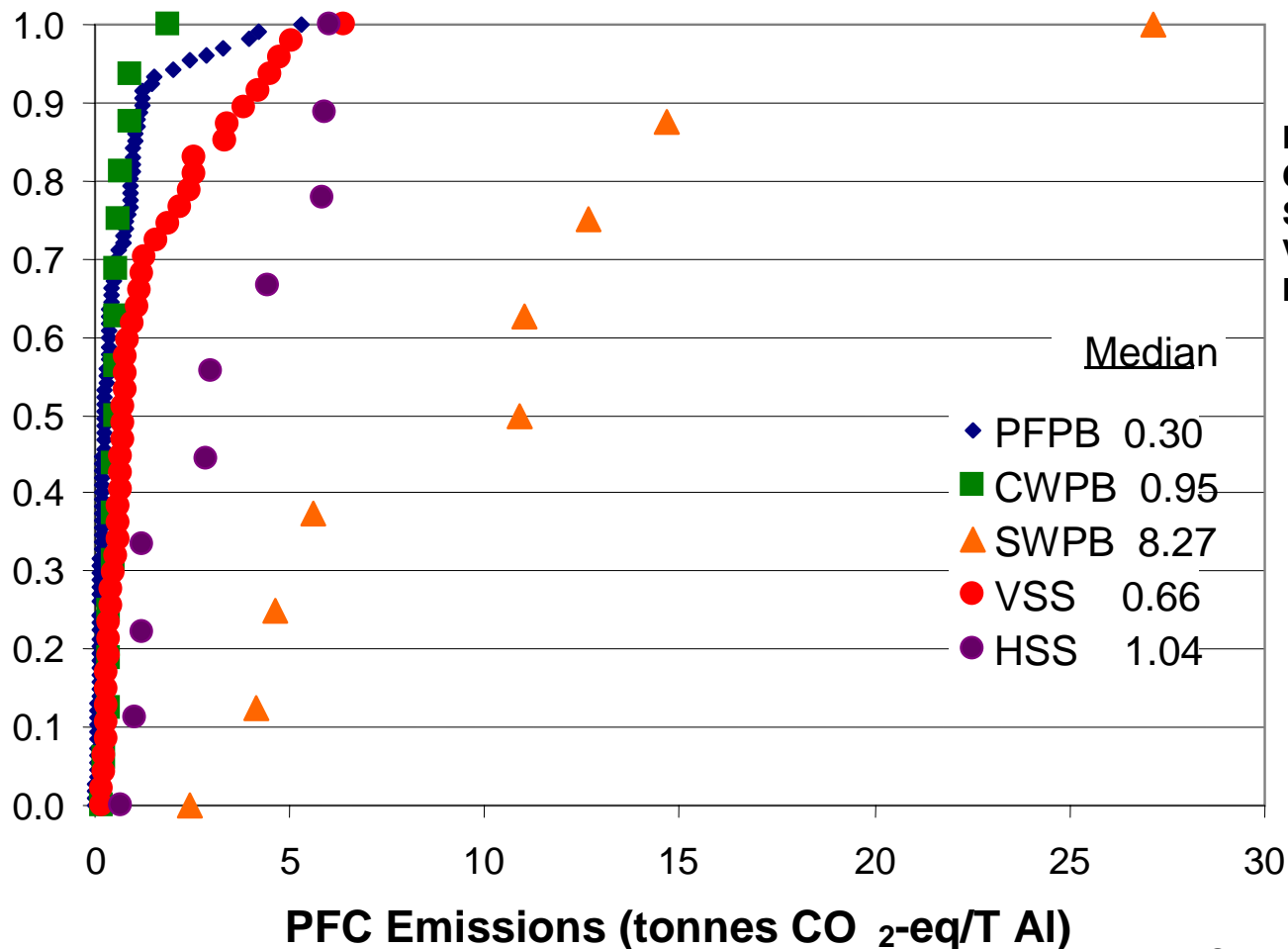
- Perfluorocarbon (PFC) emissions were reduced by 86% per tonne of aluminium between 1990 and 2007.
- This equates to a reduction in total PFC emissions of 75%, despite increasing demand for aluminium.



# Benchmark Data on PFC Emissions per tonne of Aluminium Production

## *An Opportunity for Improved Performance*

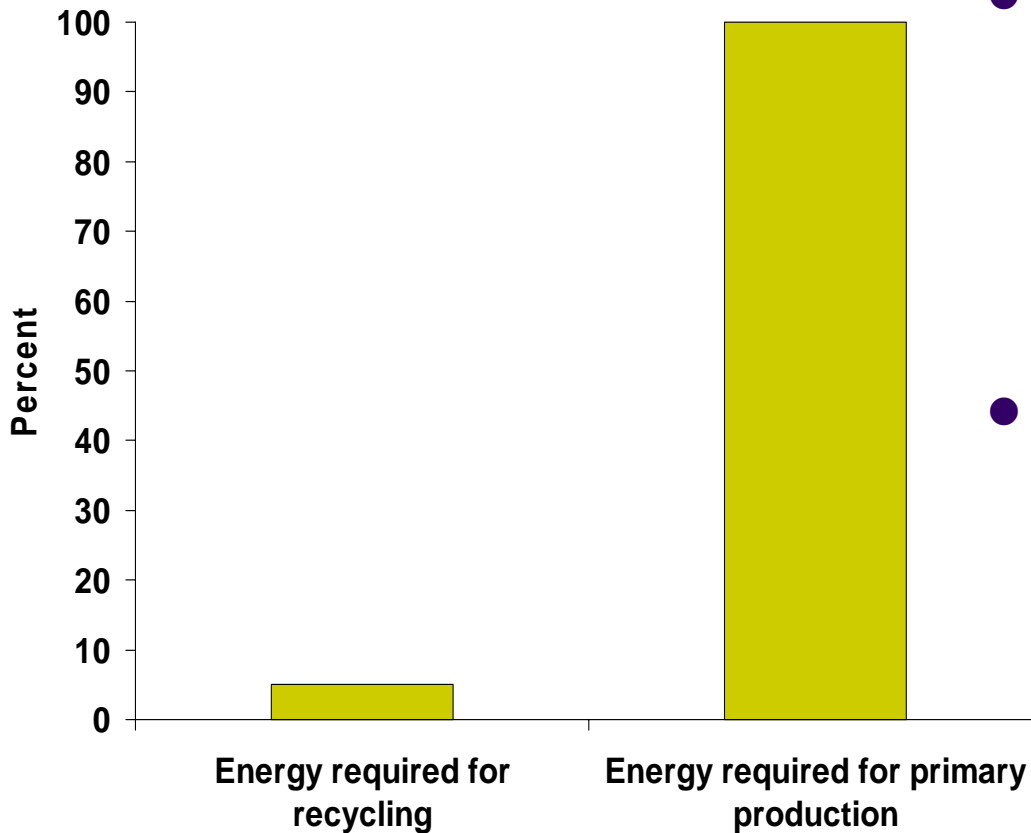
Cumulative Fraction of Reporting Facilities



**PFPB** – Point Fed Prebake  
**CWPB** – Centre Work Prebake  
**SWPB** – Side Work Prebake  
**VSS** – Vertical Stud Søderberg  
**HSS** – Horizontal Stud Søderberg

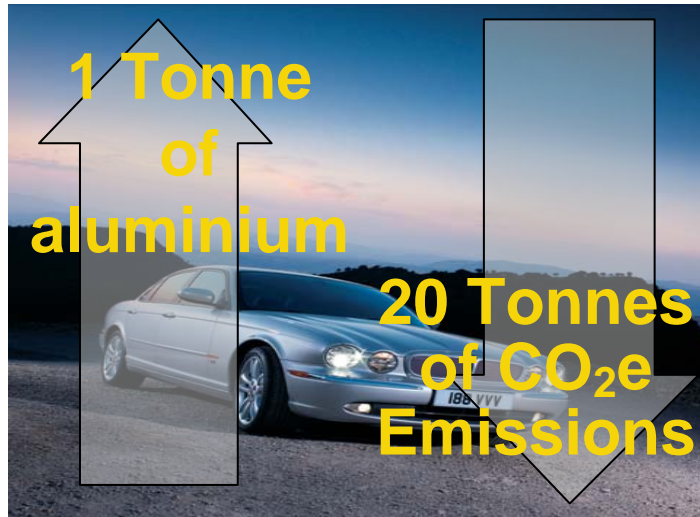
Source: IAI 2007 Anode Effect Survey

# Recycling aluminium conserves energy



- The recycling of aluminium requires up to 95% less energy than that required for primary aluminium production.
- Recycling aluminium from used products saves an estimated 84 million tonnes of greenhouse gas emissions per year.

# Serving our customers in a carbon- constrained world



**Cars for today & tomorrow**



**Sustainable trains**

Globally, the use of aluminium in cars & light trucks produced in 2006 will lead to potential savings, over the lifecycle of the vehicles of:

- around 140 million tonnes of CO<sub>2</sub> equivalent greenhouse gases;
- primary energy equivalent to over 50 billion litres of crude oil.

# Realisation of the Aluminium Industry's Voluntary Global Approach to Climate Change



- Clear criteria for the sector and outside stakeholders to evaluate the performance of the global industry, individual corporations and facilities
- Transparent objectives, clearly defined performance indicators and annual reporting by majority of industry (64% of world production)
- Equally applicable to operations in developed, emerging and developing economies. Data indicates comparable performance between OECD and non-OECD country-based primary aluminium production facilities
- The IAI Directors – CEOs of Member Companies – exert pressure on their peers on the Board to improve performance towards VOLUNTARY objectives
- Facility benchmarking stimulates improved performance and raises awareness among management and operators
- Efficient spread of good practice and raised awareness of possible technological and operational improvement
- Data enables IAI to model direct & indirect GHG emissions associated with aluminium production in the future and savings from recycling and use of aluminium in energy-saving applications
- Most significantly it works. 75% reduction in total PFC emissions achieved between 1990 and 2007 despite an 80% growth in aluminium production.