

Sustainability – What More Should Companies Do?

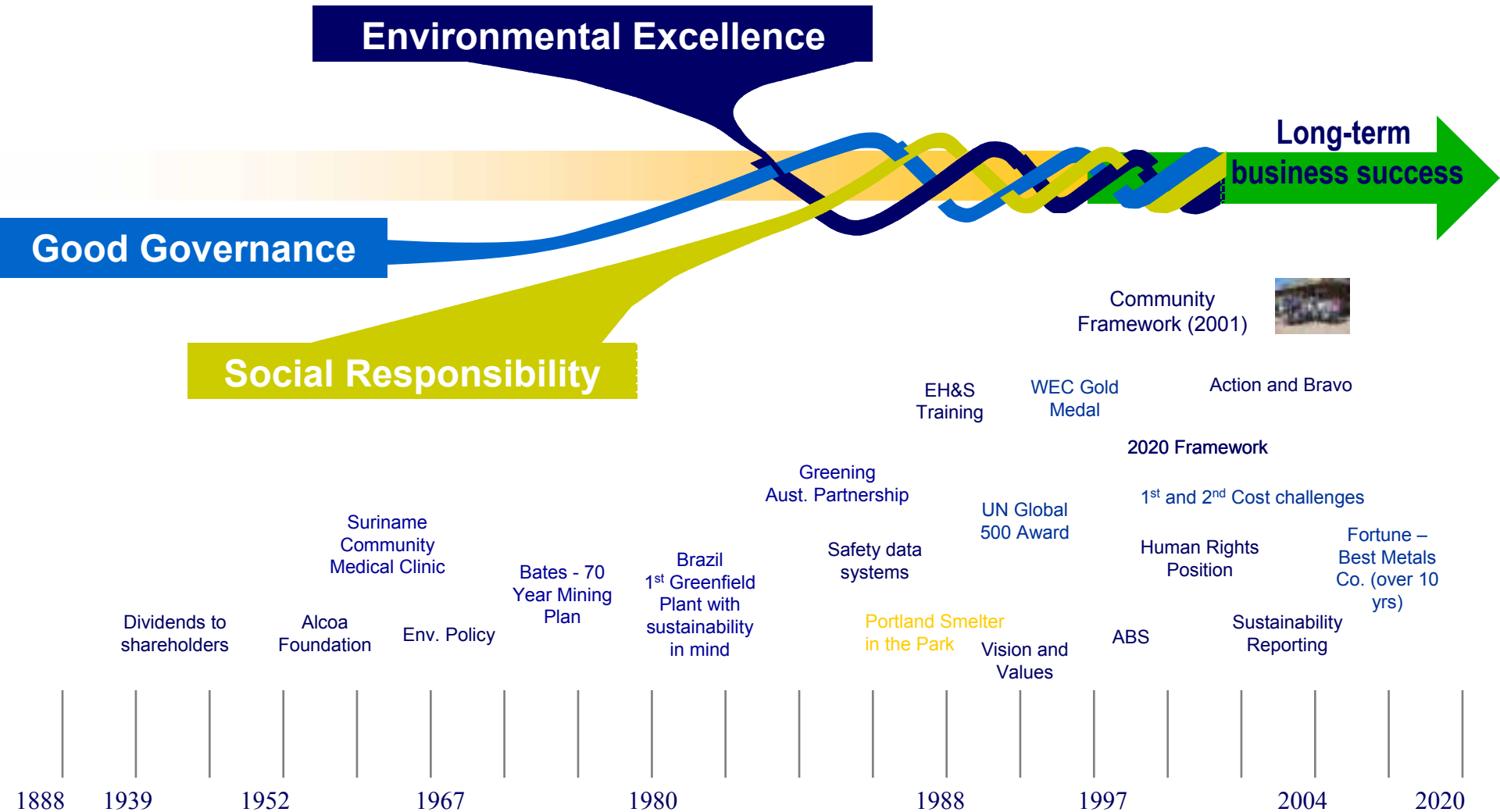
**June 2005 Conference Board
Session on Sustainability**

**A sustainable enterprise requires vision
and a broad set of values**

**Sustainable companies are just that –
sustainable in the long term**

Alcoa Accomplishments and Direction

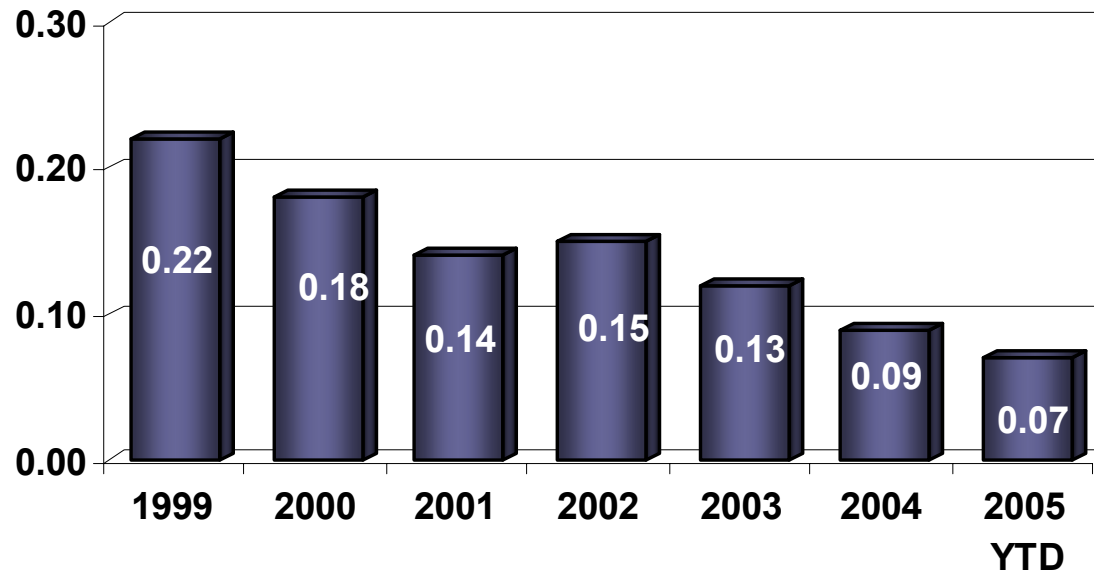
A Long History of ...



Alcoa LWD Performance



68% Reduction from 1999

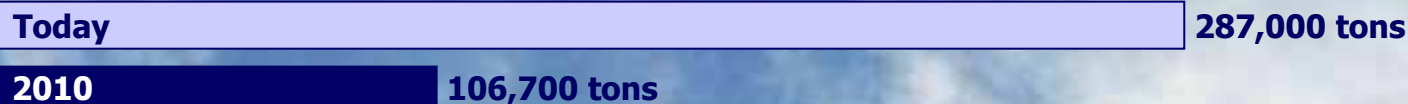


Elimination Of Wastes



60% REDUCTION

SO₂



30% REDUCTION

NO_x



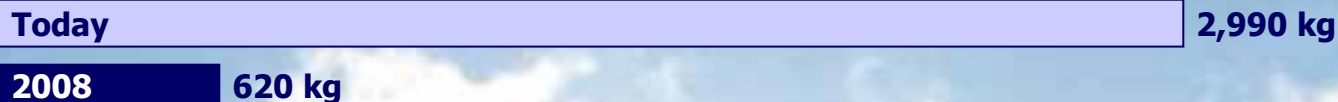
50% REDUCTION

VOCs



80% REDUCTION

MERCURY



Climate Change Strategy

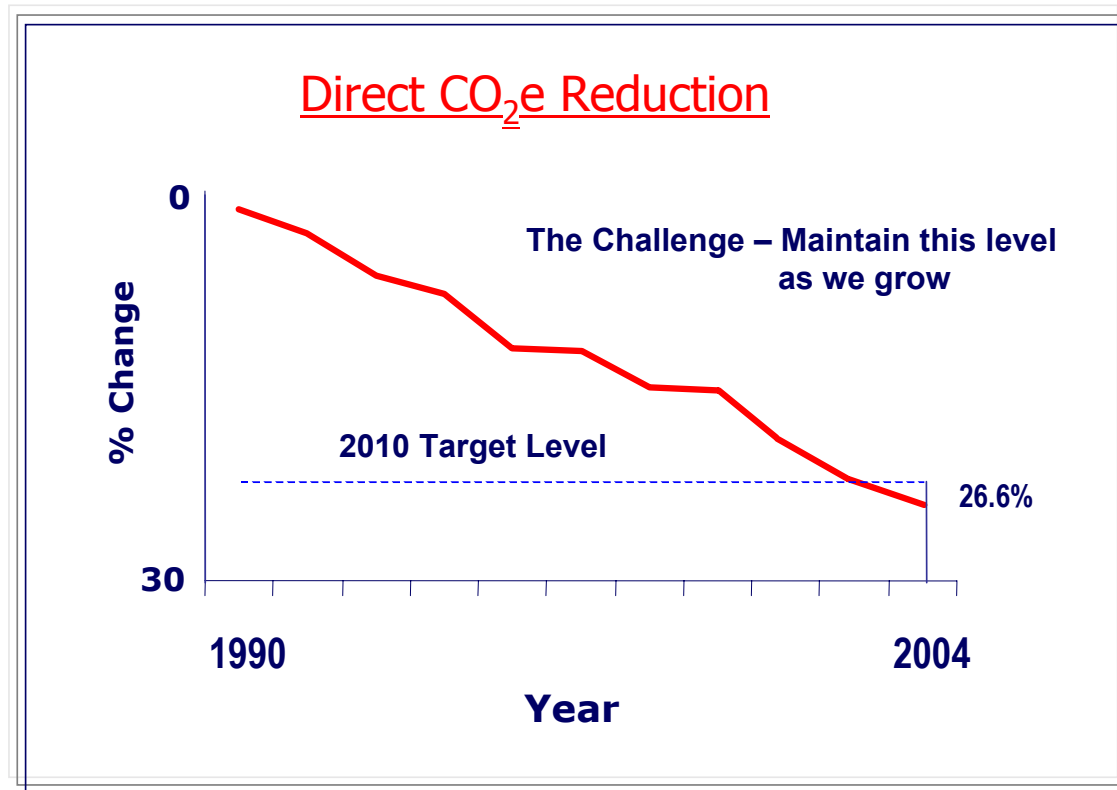


- A. We have a policy and implementation plan, and a worldwide strategy team
- B. We have expanded our public visibility
- C. We have reduced our GHG emissions by more than 25%
- D. We have an effective energy efficiency process
- E. We are a charter member of the WRI green power group
- F. We are improving our measurement and tracking

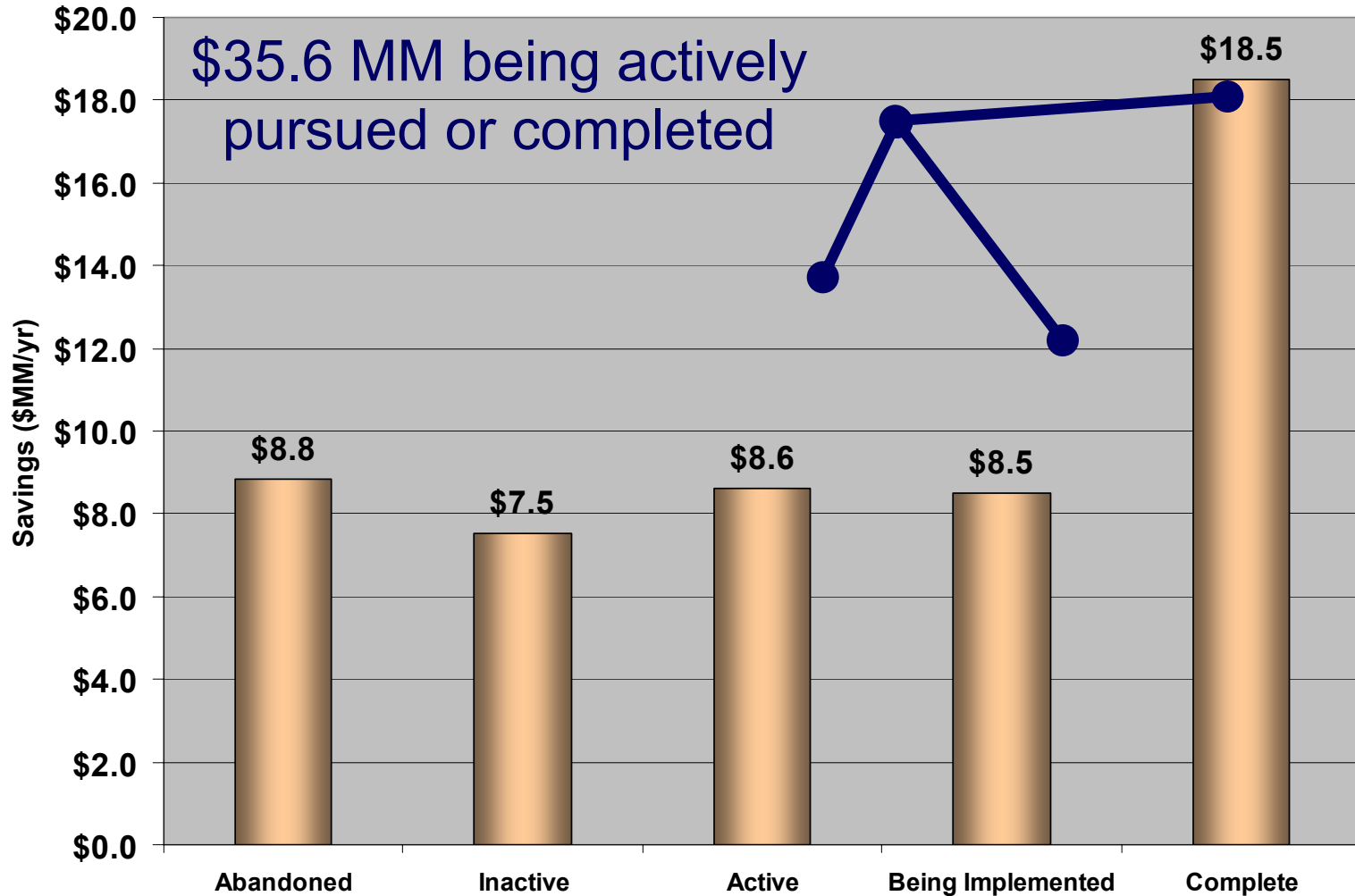
GHG Emissions



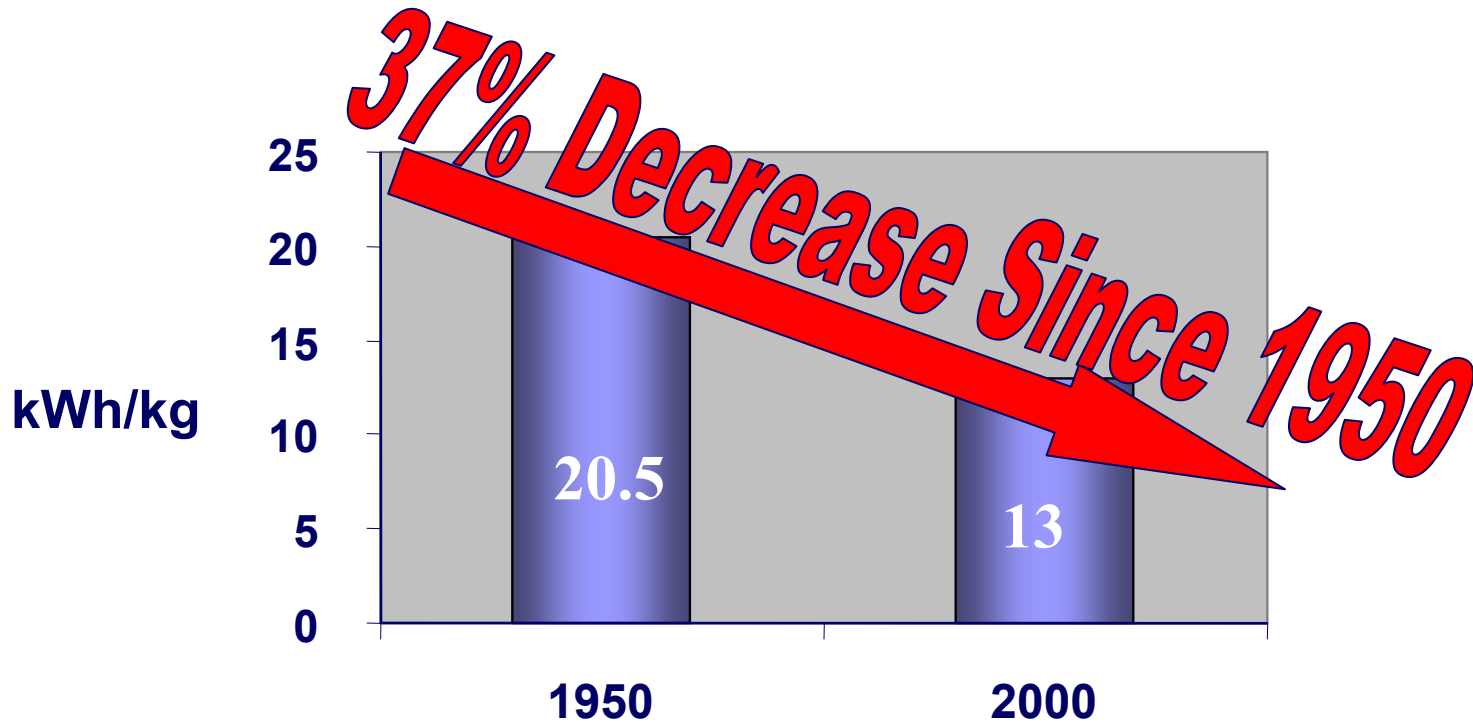
We Set a Goal of Reducing GHG by 25% by 2010



Energy Efficiency



Specific Electricity Requirements Down

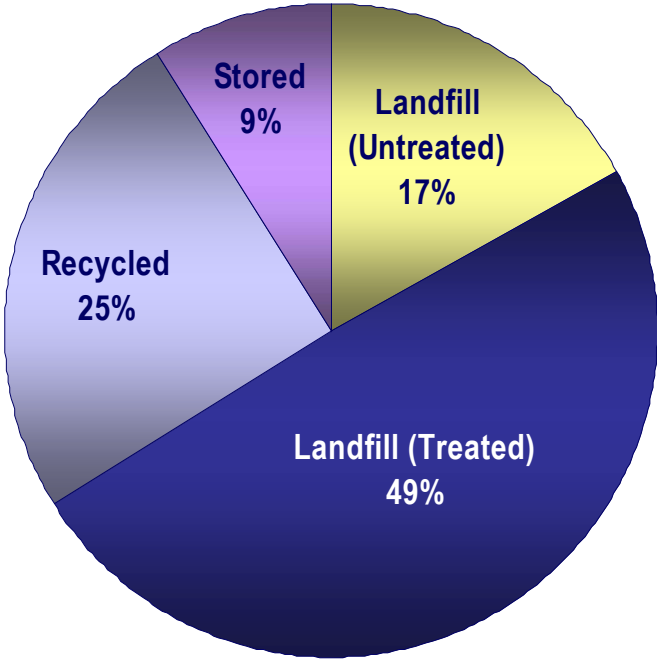


- Improved process control
- Better cell design

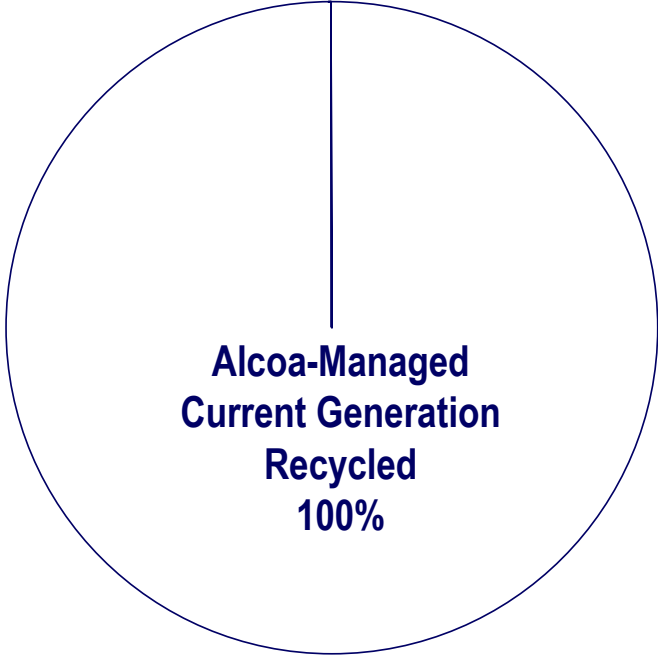
Worldwide SPL Management



2004



End of 2006

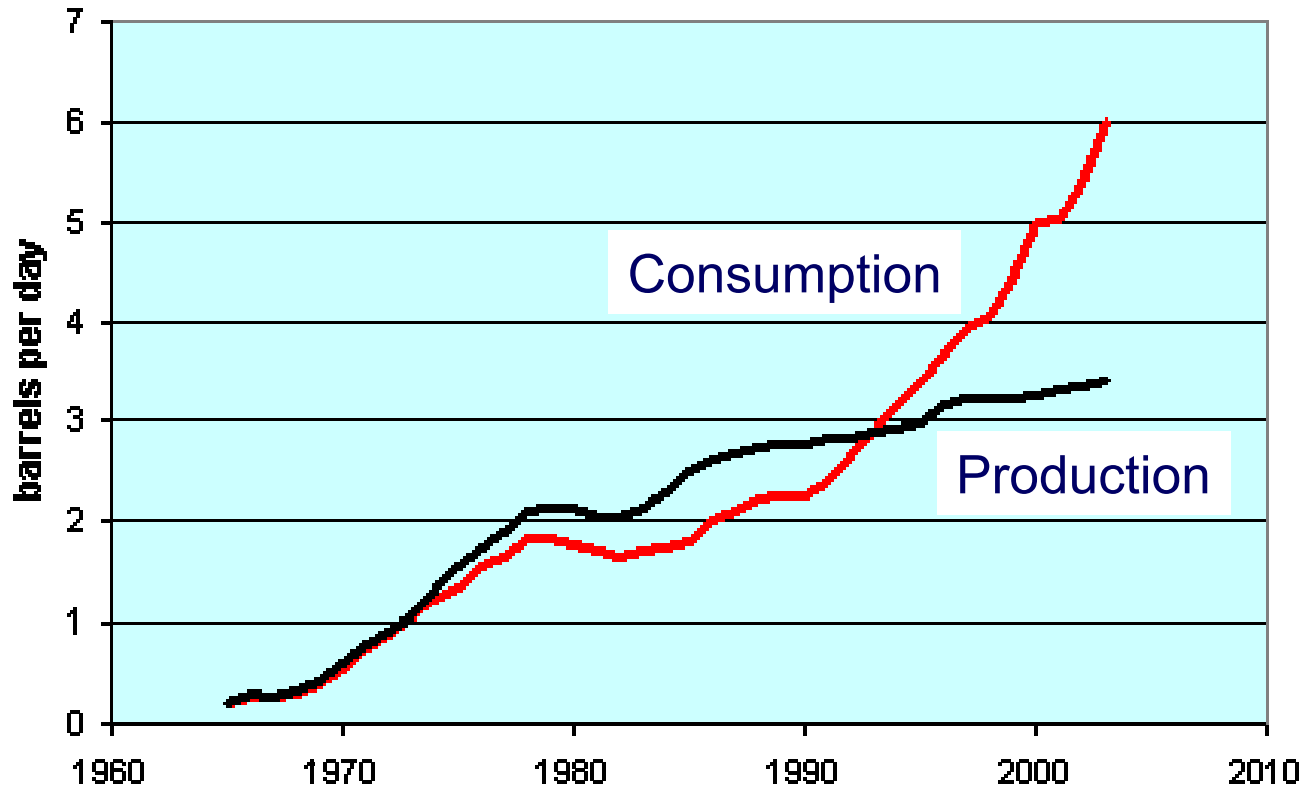


Trends Requiring Action

China Oil Consumption



China

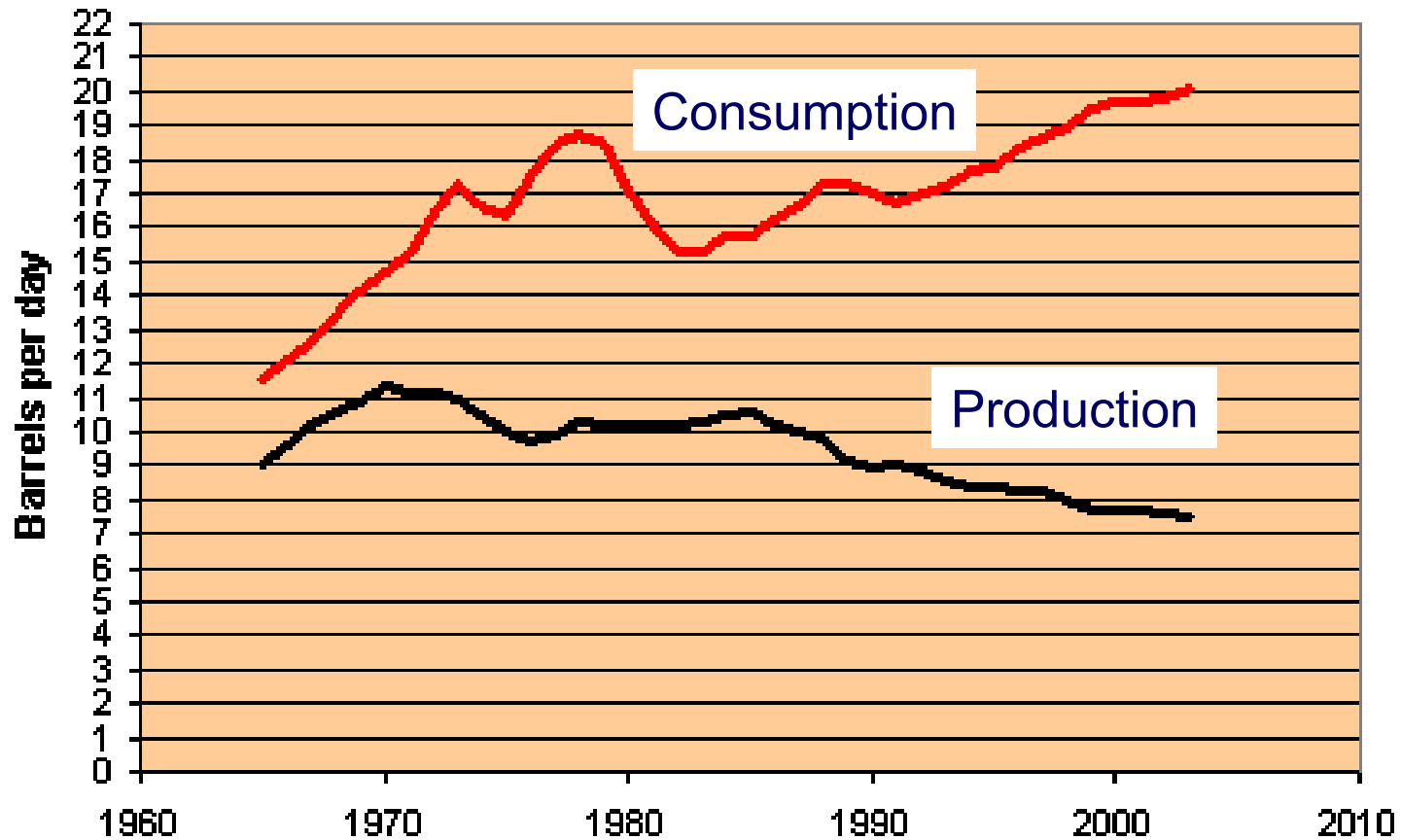


BP Statistical Review

USA Oil Consumption



USA

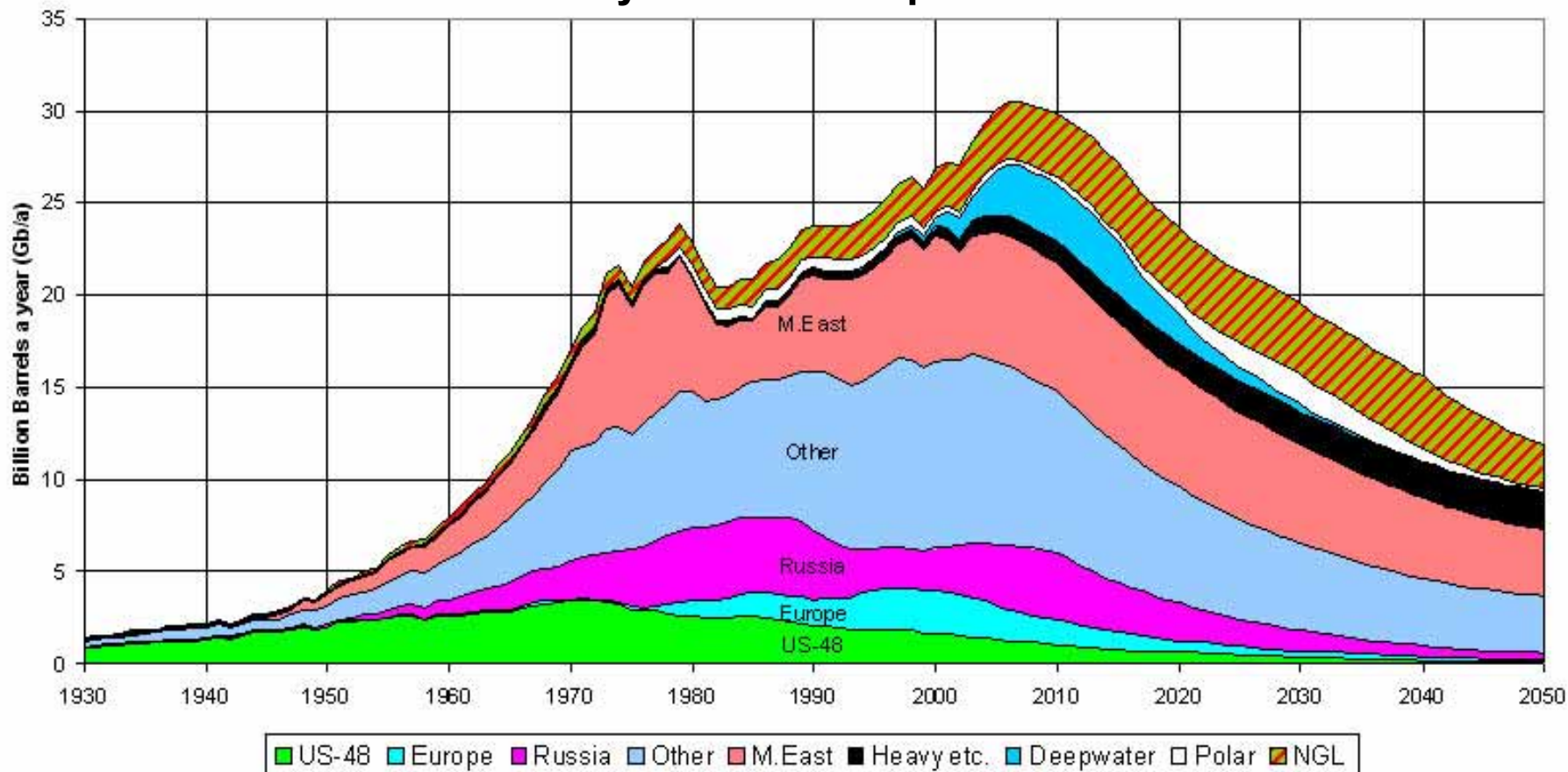


BP Statistical Review

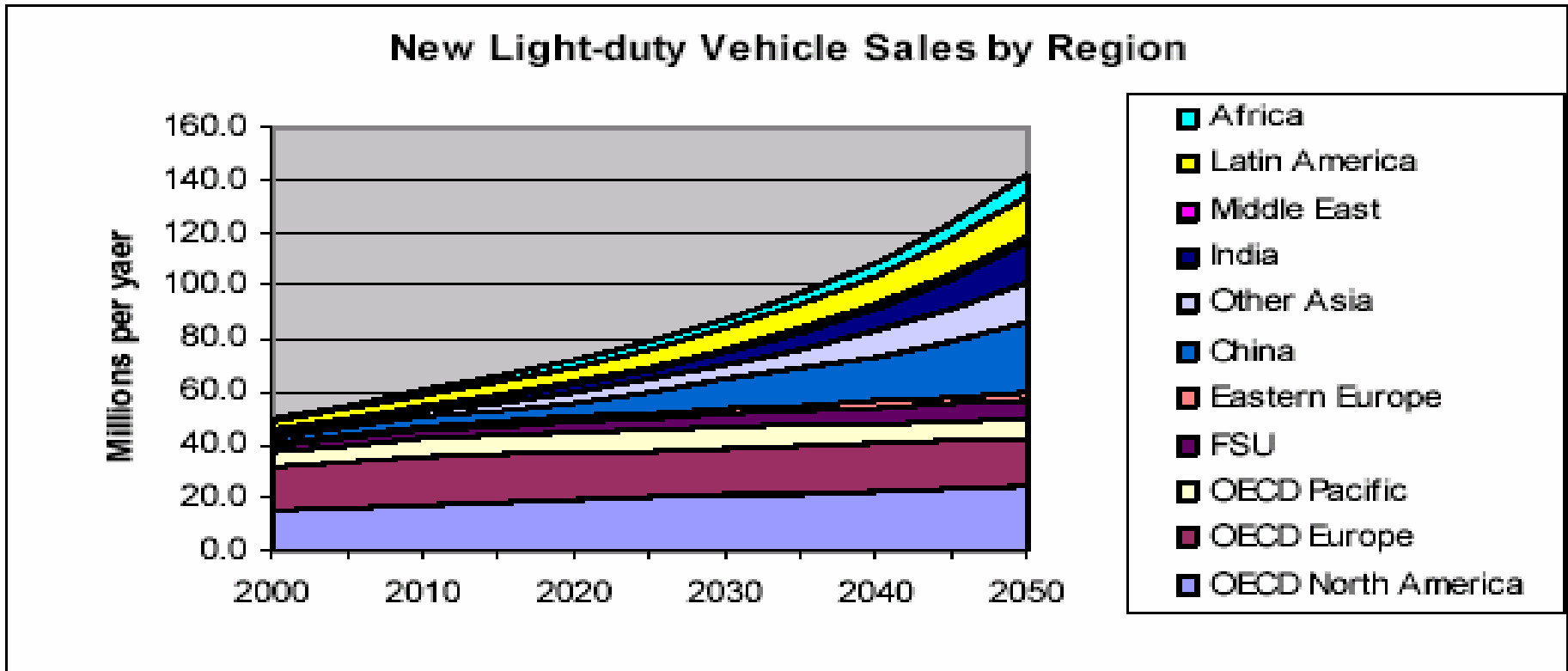
World Oil Production



OIL AND GAS LIQUIDS 2004 Scenario By Colin J. Campbell



Growth Of Cars And Light Trucks

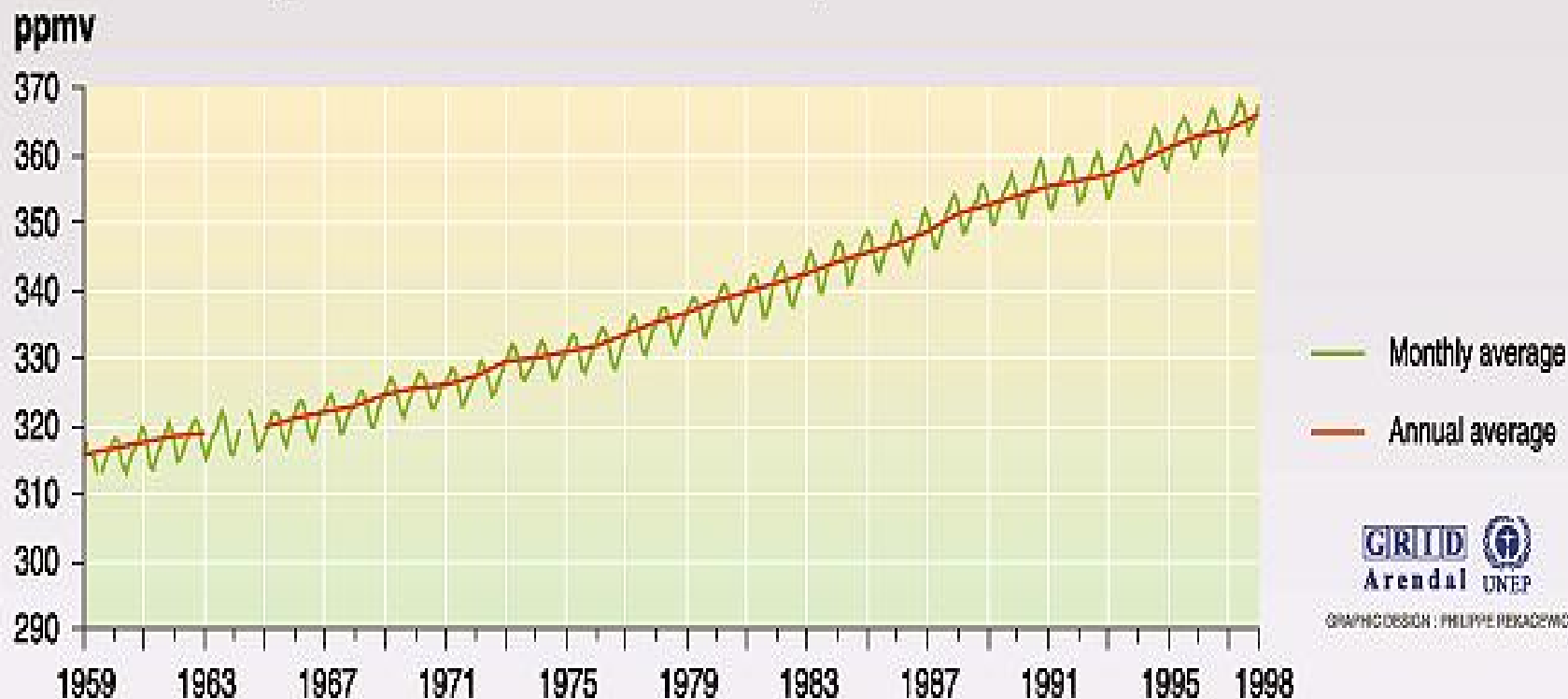


(International Energy Agency 2004)

CO₂ Concentration



CO₂ concentration in the atmosphere: Mauna Loa curve



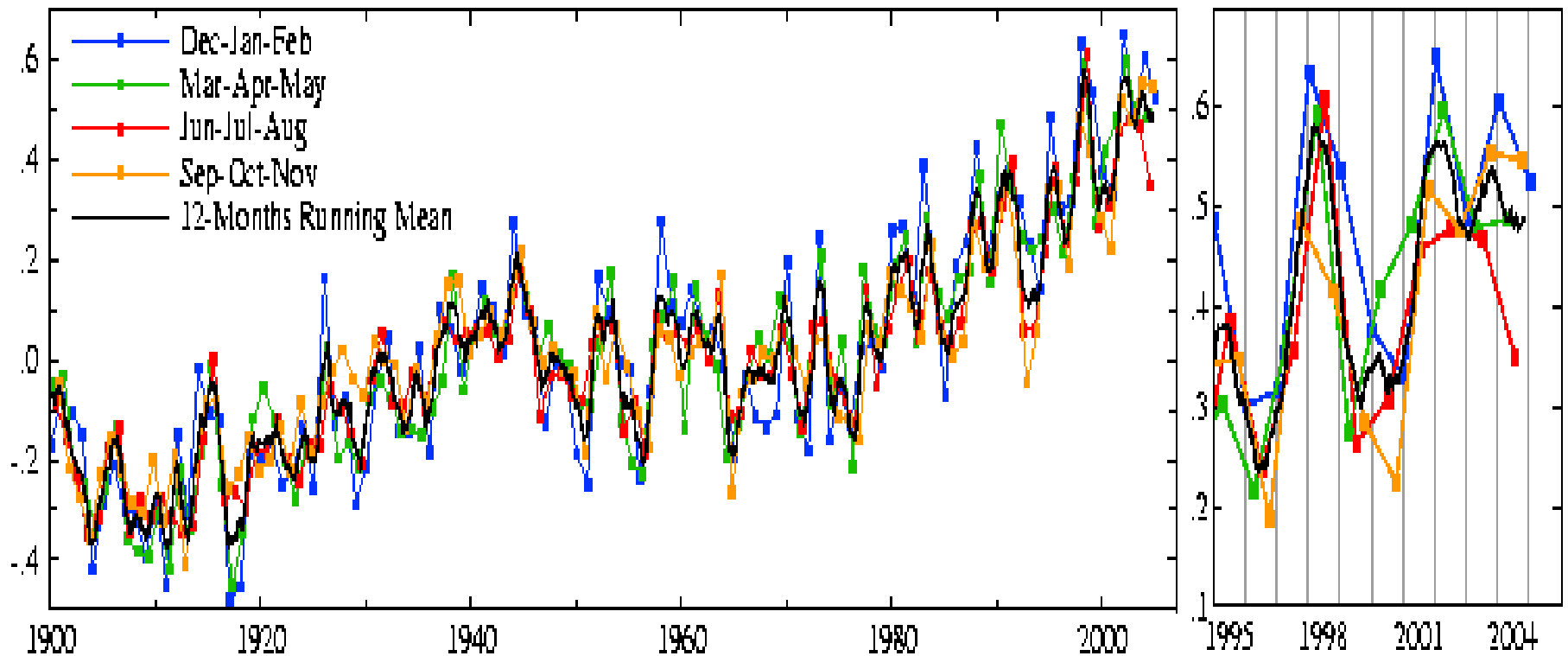
Source : Scripps Institution of oceanography (SIO), University of California, 1998.

NASA – Goddard Institute for Space Studies

Global Temperature Rise



Global-Mean Seasonal-Mean Temperature Anomaly ($^{\circ}\text{C}$)



NASA – Goddard Institute for Space Studies

Most Scientists Involved Agree That:

- Greenhouse gases from human activities, primarily CO₂, are adding to the earth's natural greenhouse gases, reducing the natural radiation of heat to space.
- “There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.” (IPCC Third Assessment Report)

Alcoa's Direction

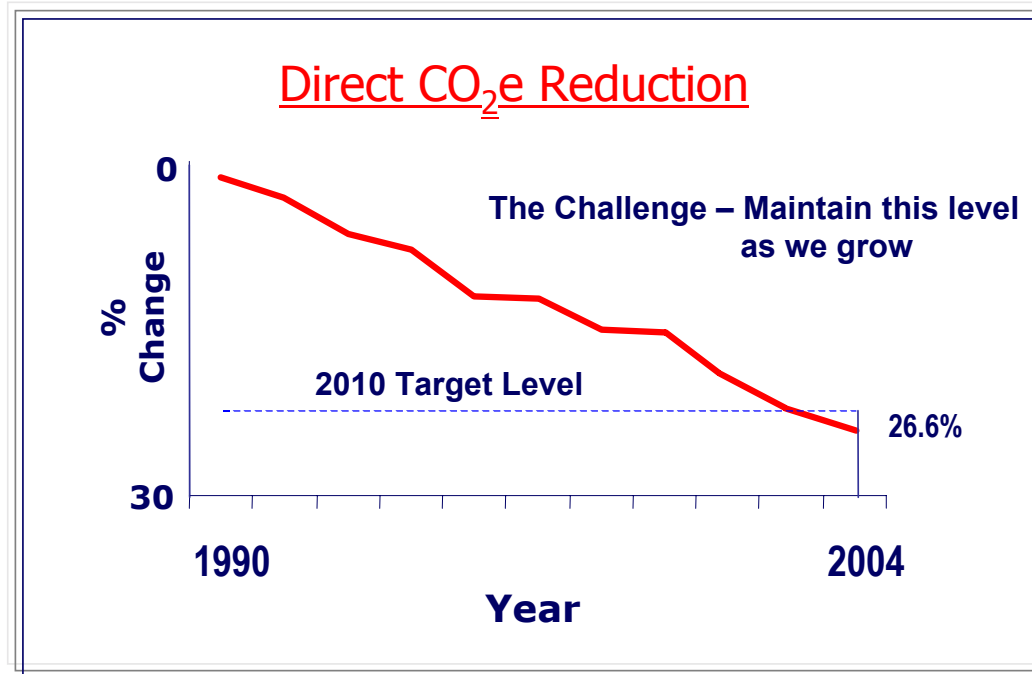


- Alcoa has concluded that available evidence indicates Greenhouse Gas (GHG) emissions from human activities affect climate, making it an issue requiring action.
- Alcoa, a global company, is committed to playing its part in an efficient and cost effective global response in cooperation with national governments and relevant international agencies.

Commitments Moving Forward



- Global warming
- Automobiles
- Recycling
- Water
- Renewable power



- Maintain 25% GHG reduction
- Education and advocacy
- Legislative / regulatory solutions

Automobiles: Emphasis On Lightweighting And Fuel Efficiency

Aluminum Benefits to Transport



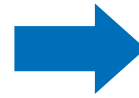
- **Lightweighting**
 - **Six to eight percent fuel savings can be realized for every 10 percent reduction in weight.**
 - **The typical aluminum part is 40 to 50 percent lighter than a comparable steel part.**



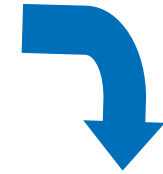
Aluminum Benefits to Transport



Reduced Mass



Better Fuel Economy



Improved Performance



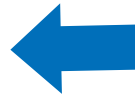
Improved Safety



Less Emissions



Near 100% Recycle

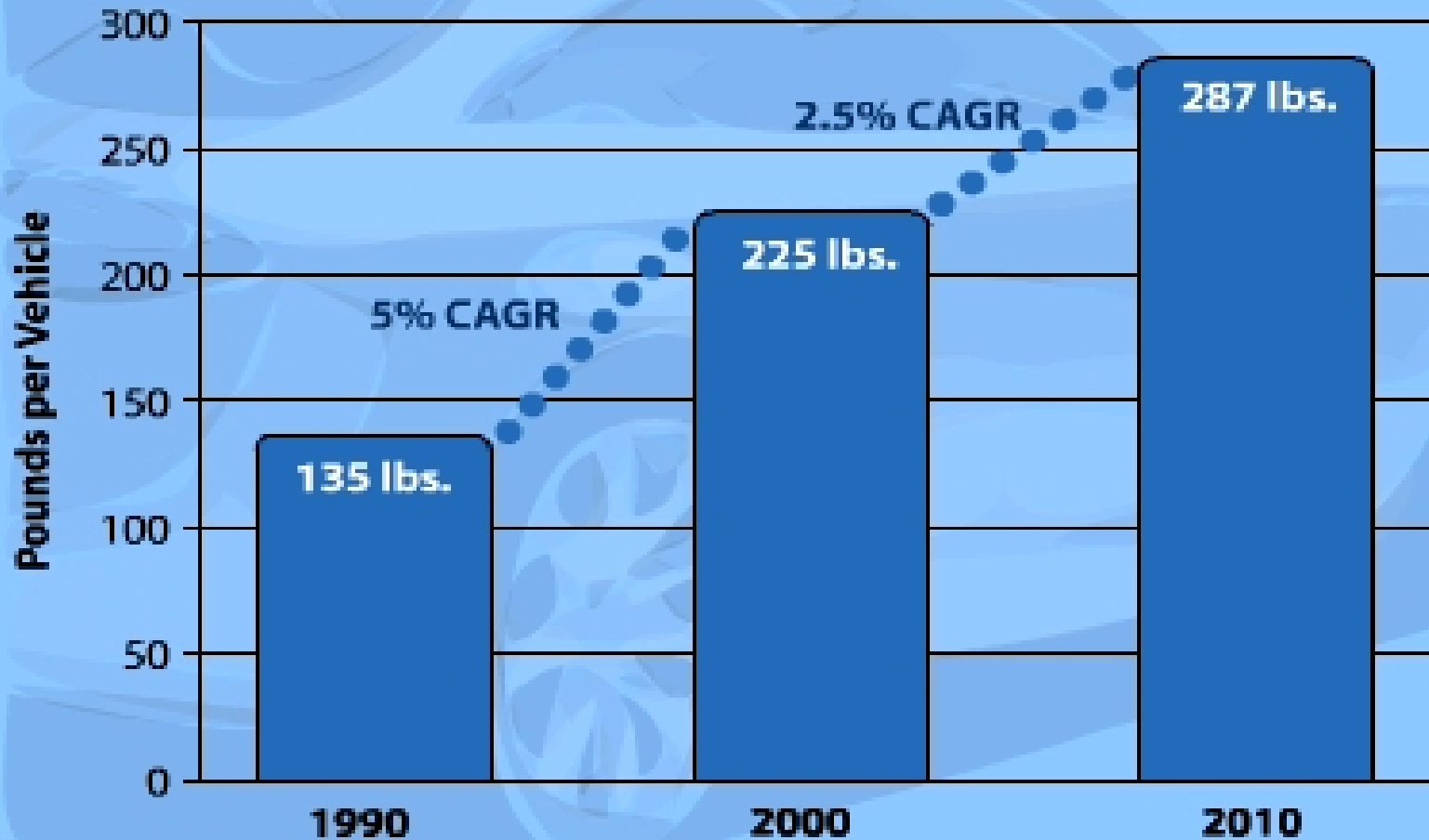


Steve Larkin – AEC talk

Aluminum Content Growth



Weighted Average Light Vehicle Aluminum Content for North America, Europe & Japan



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Source: Ducker Research Company, Inc.

Alcoa Automotive Position



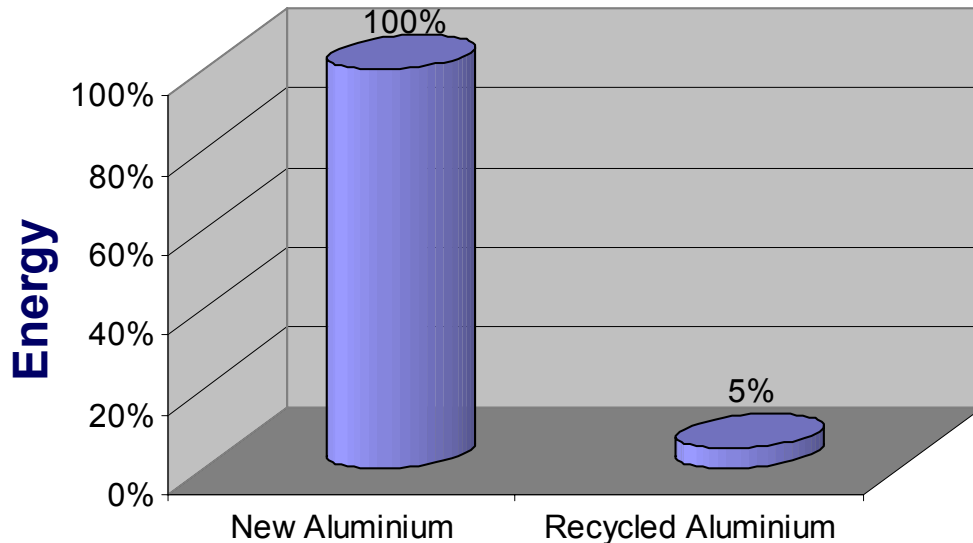
- We believe that expanded use of aluminum in automobiles and light trucks is good for the environment, energy independence, communities, and business
- We will work in the industry to promote advanced automotive design that leverages the environmental and other advantages of aluminum.

Recycling

Aluminum Recycling and Alcoa GHGs



Opportunity

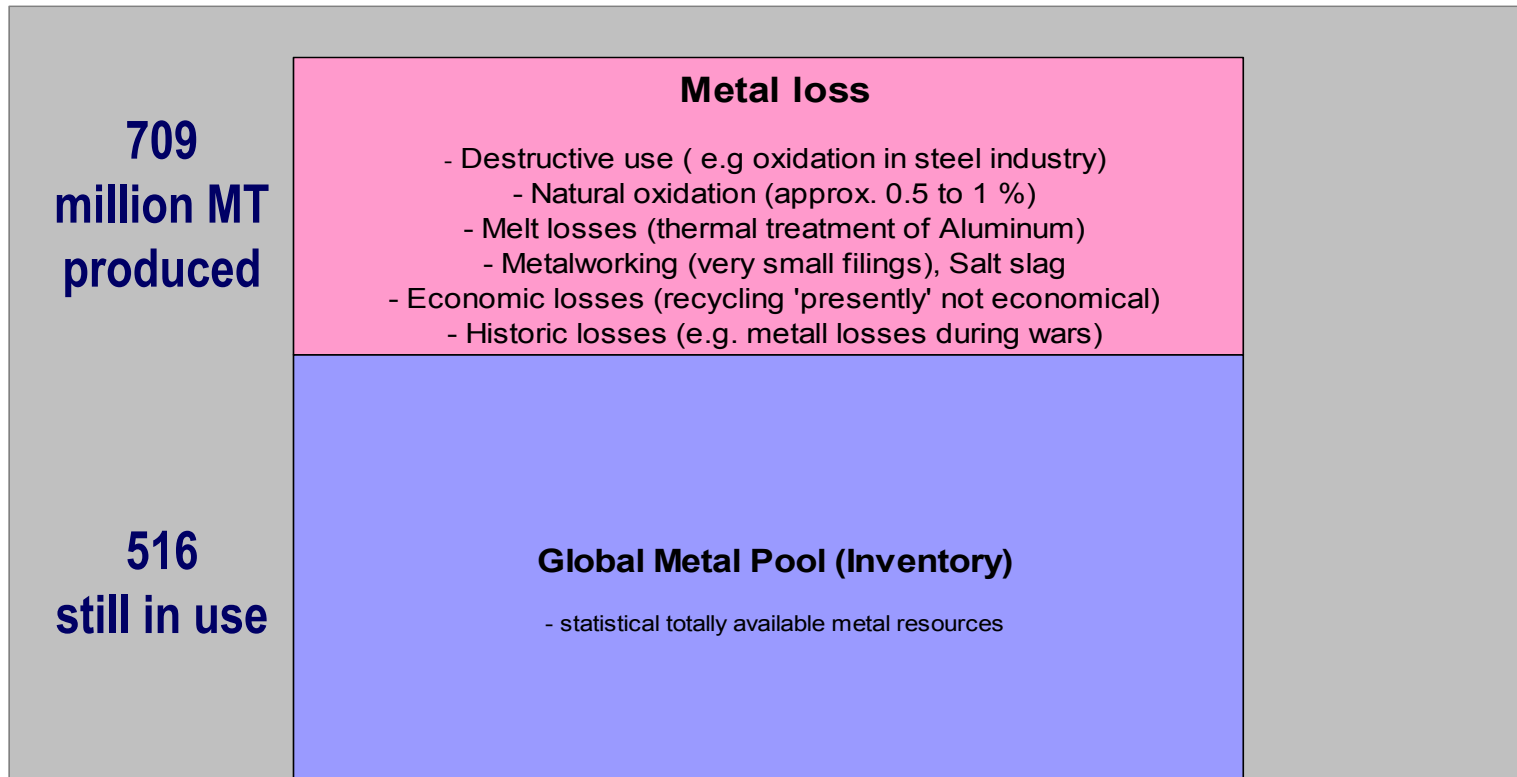


- **Re-melting recycled metal consumes only 5% of the energy as primary production and is far less GHG intense (0.6 MT CO₂ per MT of Al with negligible indirect emissions)**
- **Alcoa utilizes about 20% recycled metal for fabricated products**

Challenge

- **Alcoa has publicly committed to 50% of fabricated products from recycled metal by year 2020**

Aluminum Product Sustainability



Source: Günther Kirchner, 'Substitution of Primary Aluminium by Recycled Aluminium - Wishful Thinking or Reality ?'

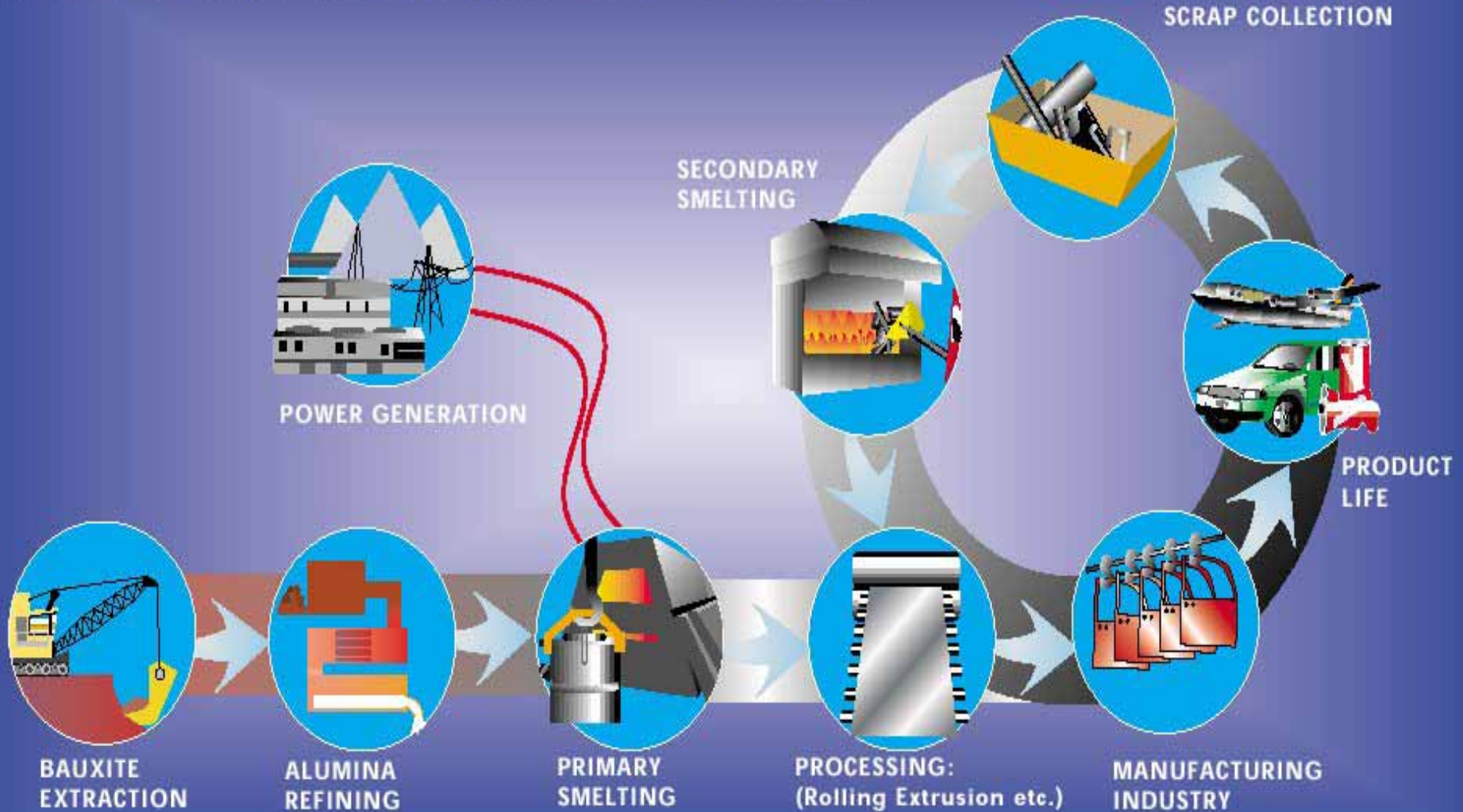
Since 1888, 709 million metric tons of aluminum produced

About $\frac{3}{4}$ of the aluminum ever made is still in productive use

Aluminum Products



ALUMINIUM PRODUCTION AND LIFE CYCLE

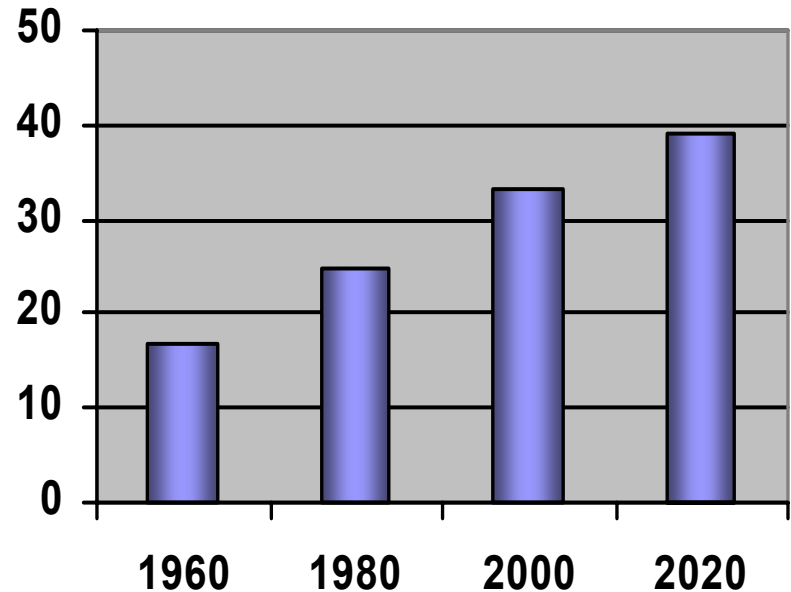


Global Aluminum Supply Mix



Modeling indicates that the industry's average metal supply from post consumer or customer returns:

- Has increased from 17% in 1960 to over 33% today
- Is predicted to increase to 37% by 2020



% Recycled Metal to Total Metal Consumed

Alcoa Recycling Commitments



- Expand our recycling capabilities
- Employee / community education
- Technology advancements in Brazil and Spain
- Industry leadership and collaboration

Water Reduction



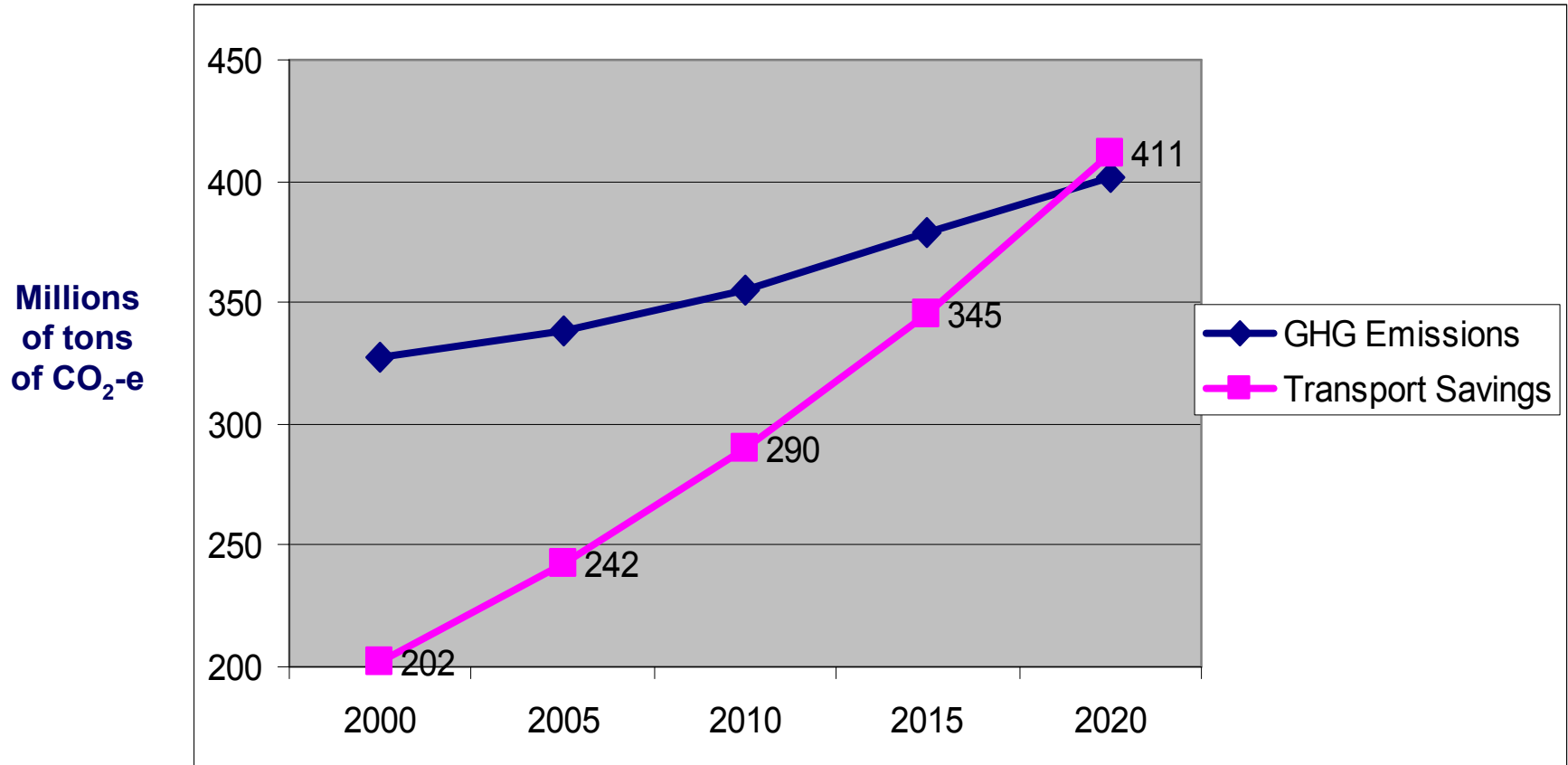
- Alcoa usage reduced 17%
- Committed to 60% reduction by 2008

- Founding member of Green Power Development Group
- Participated in U.S. largest REC purchase
- More efficient hydropower



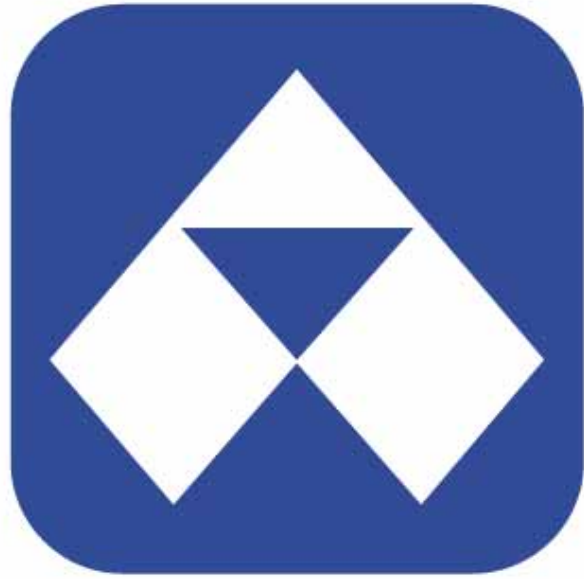
Climate Neutral

Aluminum Can Be GHG Neutral by 2020



Potential Emissions Savings From Transport Growing Faster Than Aluminum Production Emissions

- Embracing the challenge
- Transportation efficiency
- Recycling and waste stream reduction



ALCOA