



Industrial Energy and CO₂ Emissions -- Scenarios --

**John Newman
Consultant**

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Next Steps in Industry Analysis

- **Prospects for Industrial Energy Use and CO₂ Emissions (working title)**
 - ◆ Assess the potential of new technology for efficiency and CO₂ reduction
 - ◆ Assess the economics of emissions reduction
 - ◆ Develop sector-specific scenarios with technology and country-level detail
 - ◆ Publication February 2008
- **Summary chapter in Energy Technology Perspective 2008 (May 2008, input for G8)**

Scenario Framework

- **Timeframe -- 2004, 2015, 2030, 2050**
- **Geography – G8+5 Countries and 8 Regions**
- **Sectors**
 - ◆ **Iron & Steel; Chemicals & Petrochemicals; Cement; Pulp & Paper; Alumina & Aluminum**
- **Energy types**
 - ◆ **Coal, Gas, Oil, Electricity, Heat, Biomass & Waste, Other Renewables**
- **Scenarios**
 - ◆ **Base Case**
 - ◆ **Accelerated Technology (ACT)**
 - ◆ **BLUE**

Sector Detail (1)

- **Iron and Steel**

- ◆ **Blast Furnaces (includes cokemaking & Sintering)**
- ◆ **Direct Reduced Iron (DRI)**
- ◆ **Smelt Reduction**
- ◆ **Electric Arc Furnace (EAF) & Finishing**
- ◆ **Basic Oxygen Process (BOP) & Finishing**

Sector Detail (2)

- **Chemicals and Petrochemicals**
 - ◆ Ethylene
 - ◆ Propylene
 - ◆ BTX (Butadiene, Toluene and Xylenes)
 - ◆ Ammonia
 - ◆ Methanol

Sector Detail (3)

- **Cement**
- **Pulp and Paper**
 - ◆ **Chemical Pulp**
 - ◆ **Mechanical Pulp**
 - ◆ **Recycled Pulp**
 - ◆ **Paper and Paperboard**
- **Alumina & Aluminium**
 - ◆ **Alumina**
 - ◆ **Primary Aluminium**
 - ◆ **Recycled Aluminium (to be added)**

Scenario Overview

CO2 Emissions relative to 2004

	Total CO2	Industry CO2
Base Case	+130 %	+45%
Accelerated Technology	+6% to +27%	-22% to +10%
BLUE	-50%	-50% to 0%

Analytical Parameters

- **Materials production projections**
 - ◆ Full country & regional breakdown
- **Energy intensity of production projections**
 - ◆ Shares by process
 - ◆ **Energy Intensity of Process**
(starting data: IEA Tracking Industrial Energy Efficiency and CO2 Emissions)
 - ◆ Full country & regional breakdown
 - ◆ CHP offsets (to be added)

Technology Outlook

- **Base Case - Full characterisation**
 - ◆ Actual and Best Practice
 - ◆ Full timeframe (including 2004) & geographical detail
- **Emerging and Breakthrough Technologies**
 - ◆ Energy savings & CO₂ reduction potential (per tonne material; overall global effects)
 - ◆ Costs and investment issues
 - ◆ Deployment schedule (introduction & rate of uptake)
 - ◆ Practical limits to deployment share
 - ◆ Technical and cost challenges & RD&D needs
 - ◆ Non-energy, non-CO₂ advantages/disadvantages



Thank you !

john.newman@iea.org