

# Understanding Energy and CO<sub>2</sub> Performance

2<sup>nd</sup> International Workshop on Sectoral Emission  
Reduction Potential

Paris, October 22<sup>nd</sup> 2008

# IEA Energy Indicators Work

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- Establish a harmonised framework for analysis
  - Harmonisation => Comparability
  - Comparability => Understanding of global trends and drivers
- Produce meaningful cross-country analysis to provide guidance to policy-makers on:
  - Underlying drivers (economic activity & structure, income, prices...)
  - Trends in energy use and CO<sub>2</sub> emissions
  - Energy efficiency opportunities and progress
  - Policy effectiveness

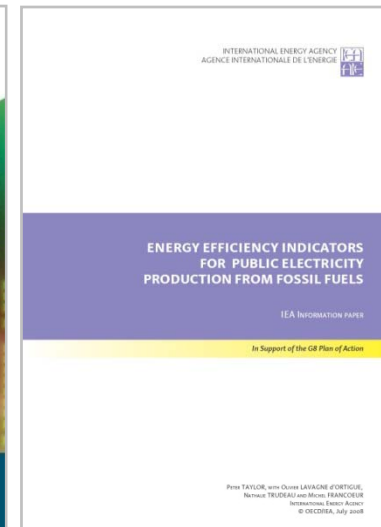
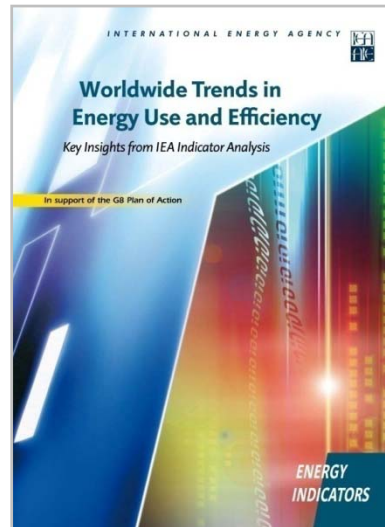
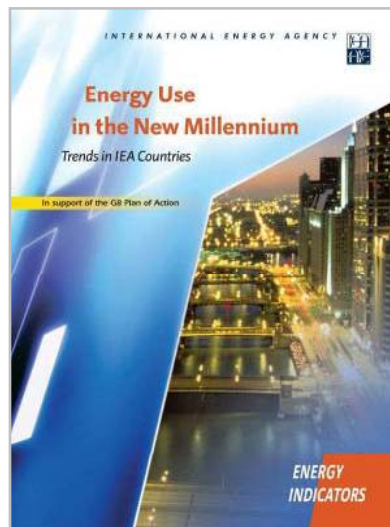
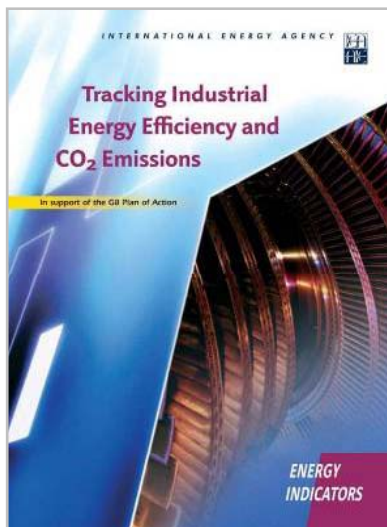
# Key Outputs from the Indicators Work

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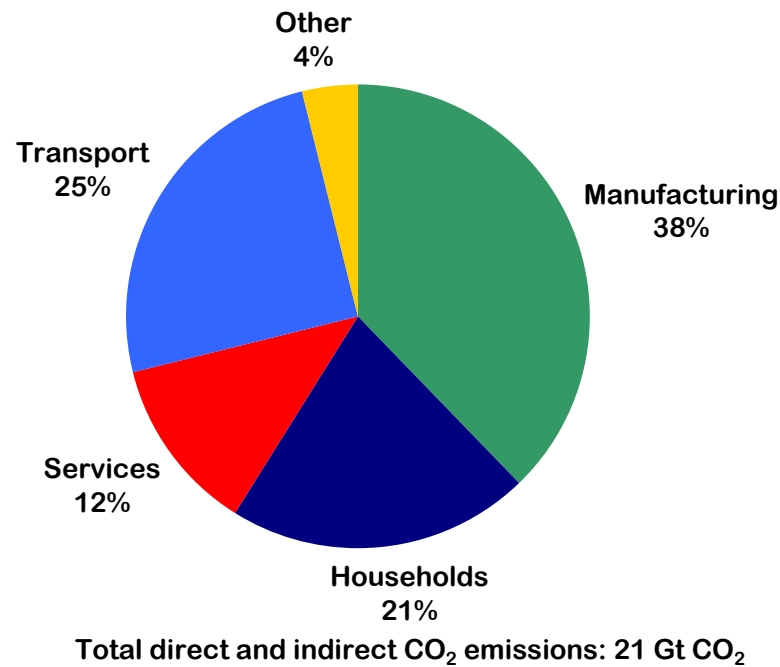
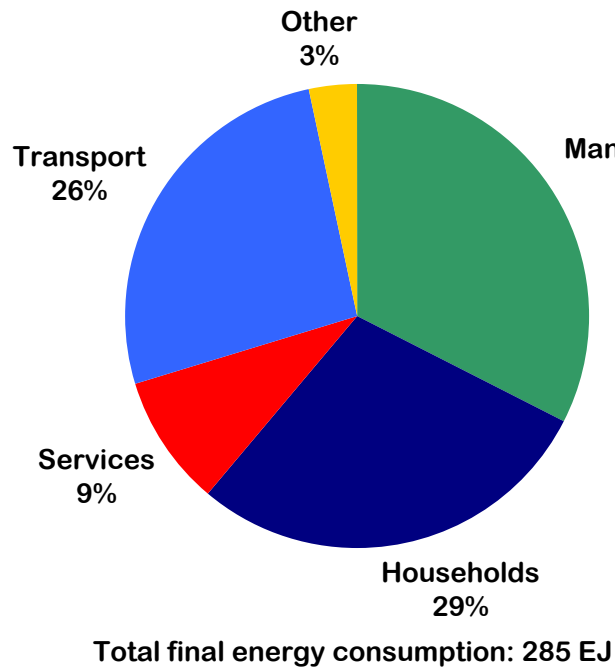
In support of the G8 Plan of Action

2007

2008



# Shares of Global Final Energy Consumption and CO<sub>2</sub> Emissions by Sector, 2005

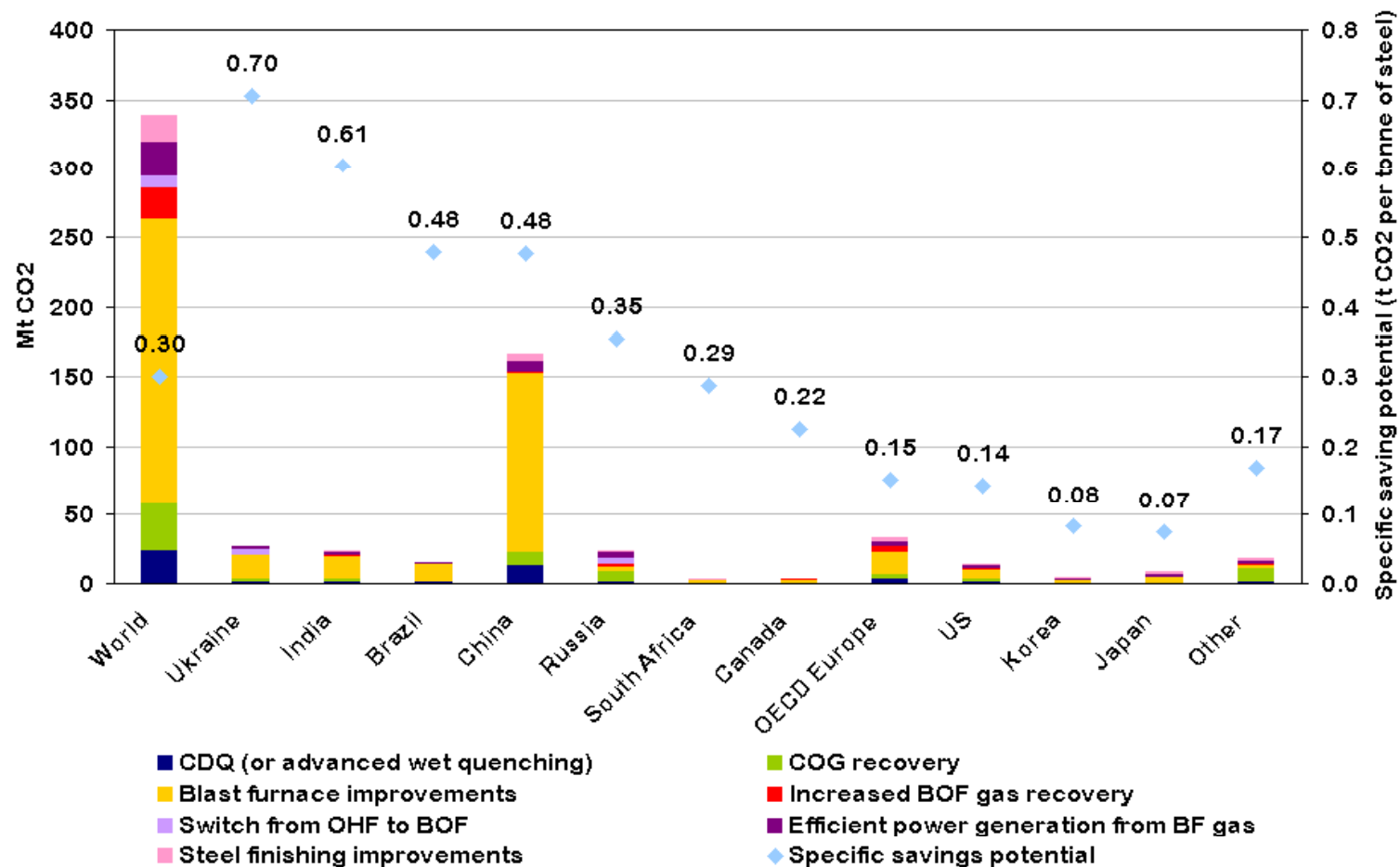


# Industry Indicators - Content

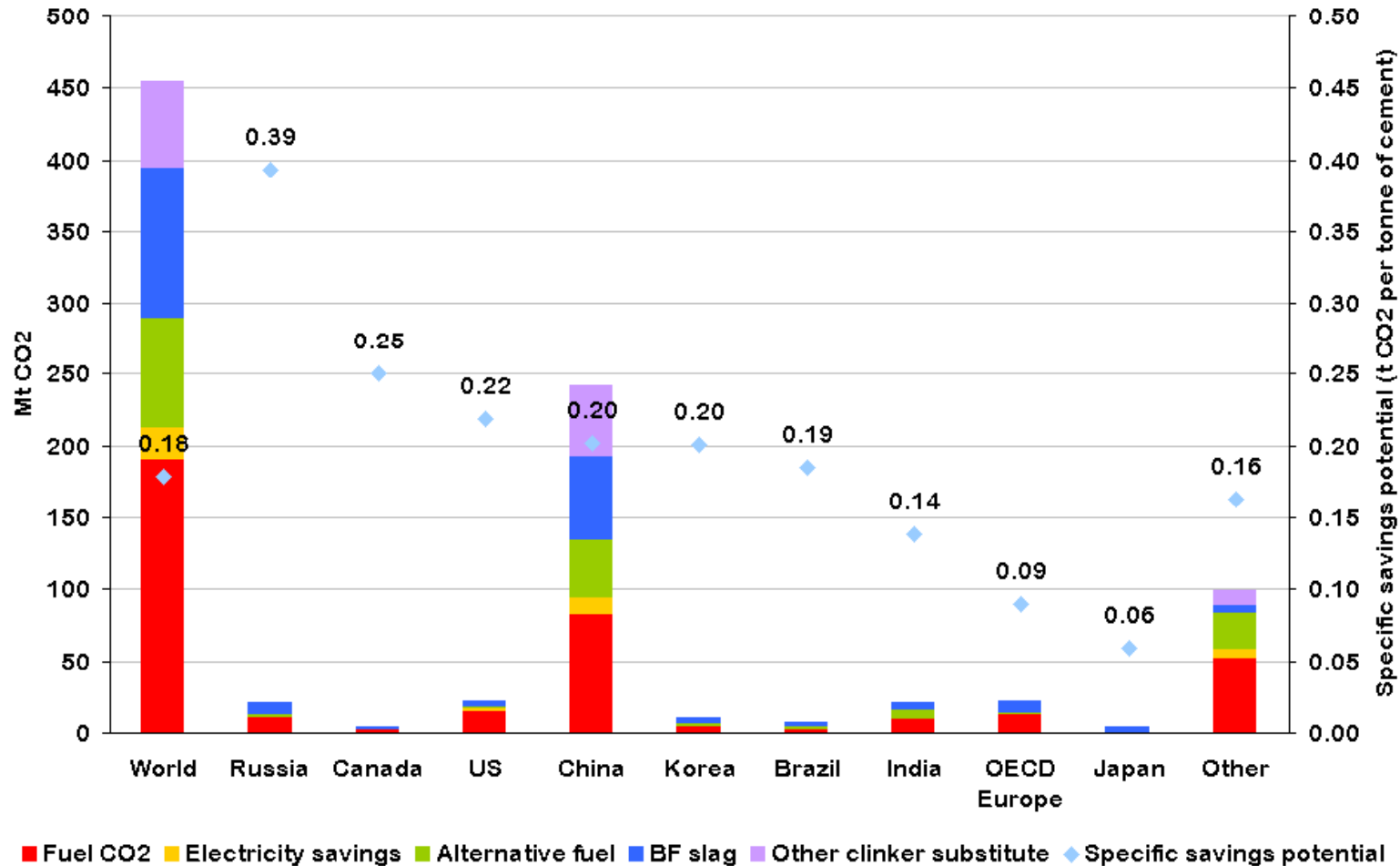
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- Current efficiencies and past trends on a country or region level, by sector
- Focus on energy and CO<sub>2</sub> emissions per unit of physical product
- Proposes multiple indicators: there is no “true” country ranking
- Based on indicators, assessment of realistic technical long term improvement potentials (BAT only, no new technology)
- Sectors considered: Iron & Steel, Cement, Chemicals, Aluminium, Pulp & Paper
- Electricity generation sector was included in the latest indicators publication

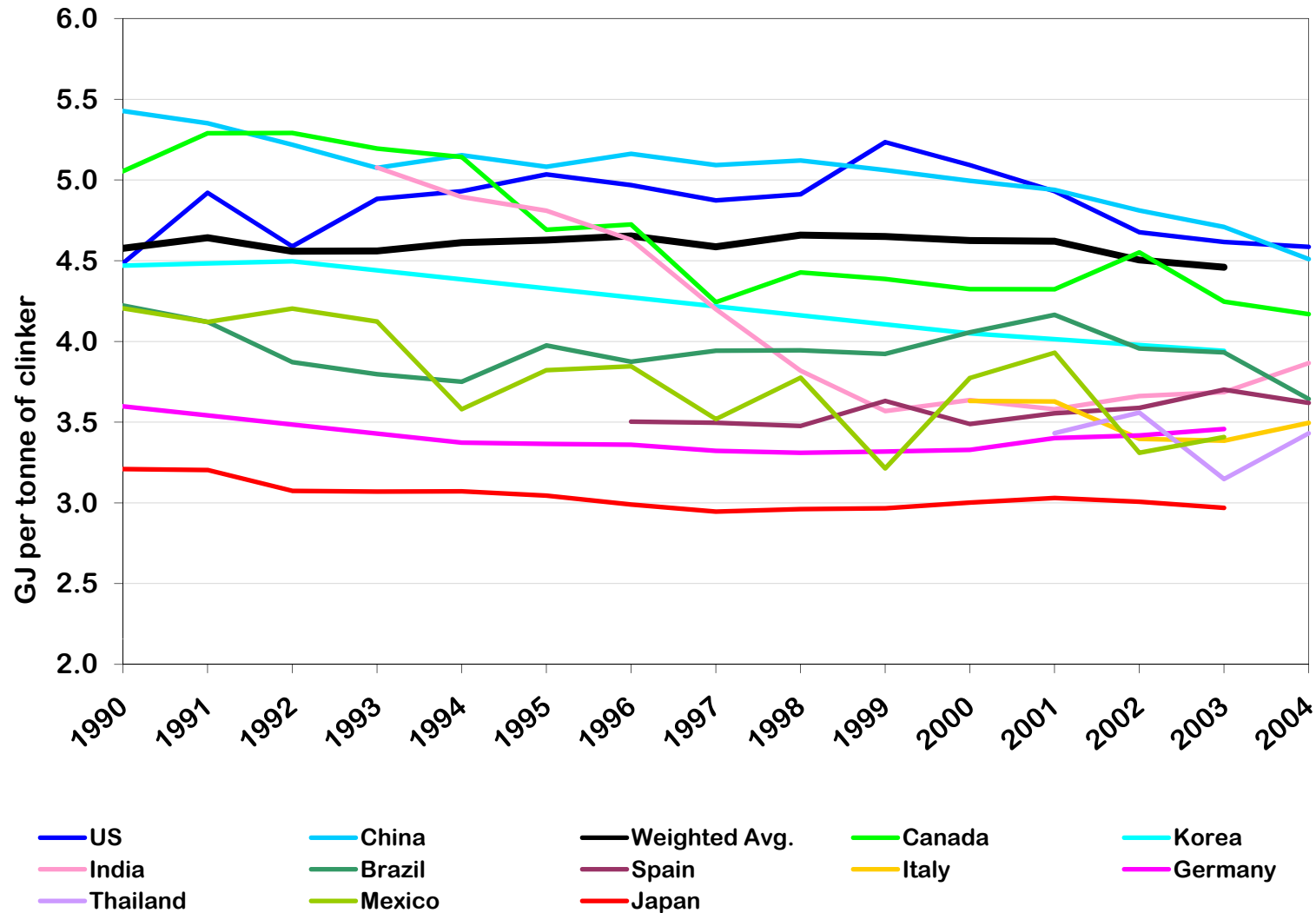
# CO<sub>2</sub> Reduction Potential in Iron and Steel, Based on Best Available Technology



# CO<sub>2</sub> Reduction Potential in Cement, Based on Best Available Technology

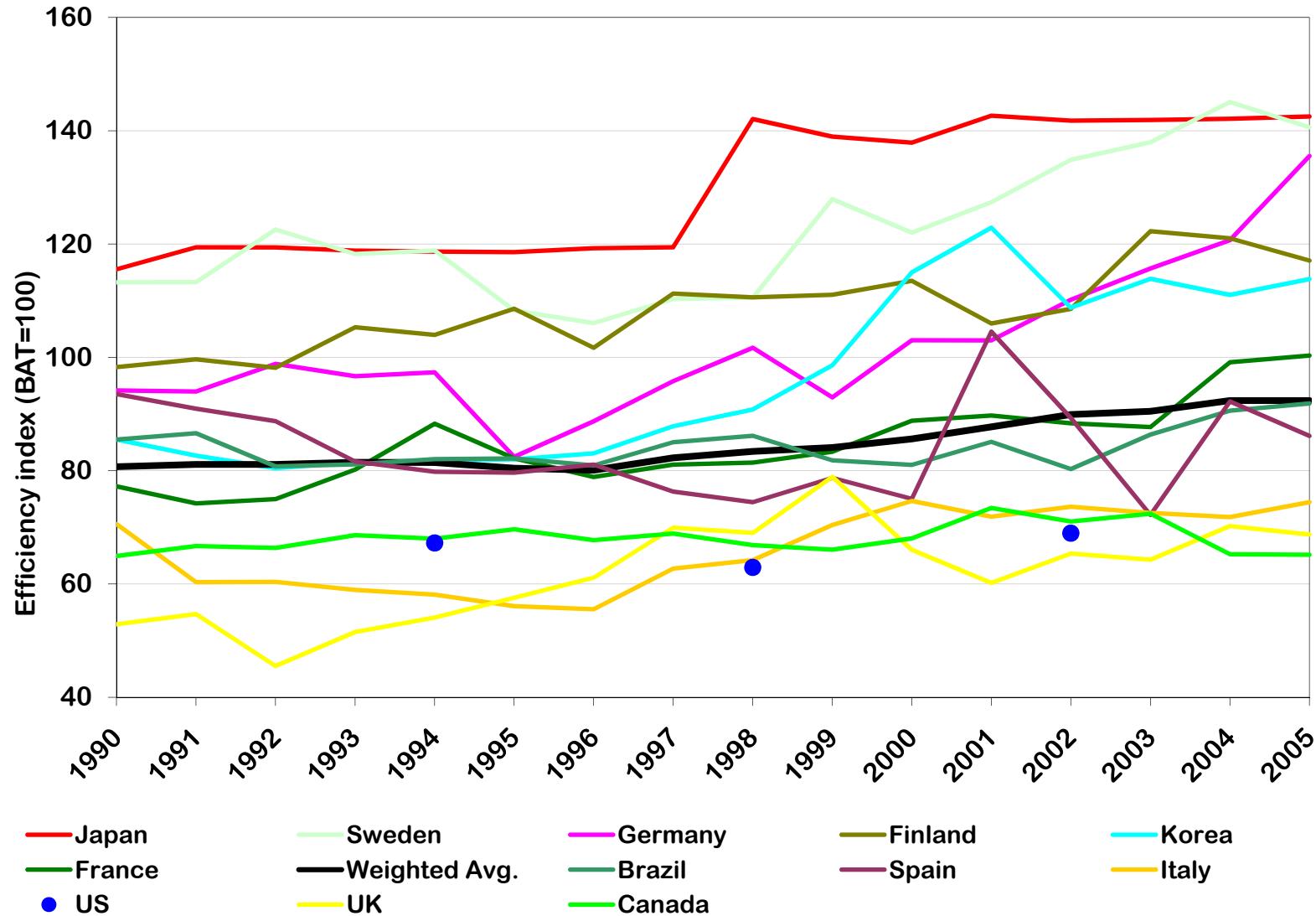


# Energy Consumption per Tonne of Clinker (including alternative fuels)

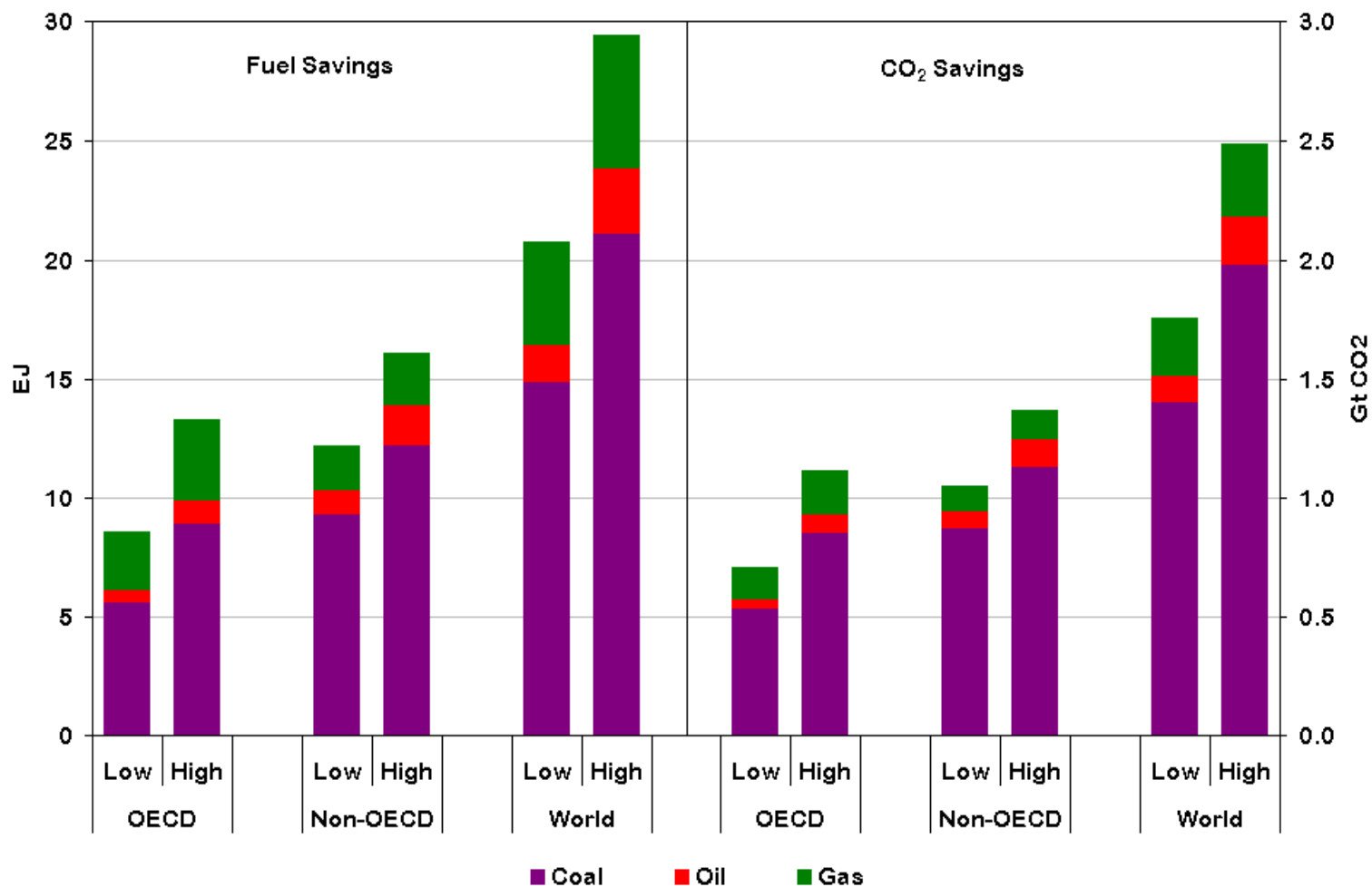




# Heat Consumption in Pulp and Paper Production versus Best Available Technology



# Technical Fuel and CO<sub>2</sub> Savings Potential from Improving the Efficiency of Electricity Production



# Key Conclusions from the Indicators Work

- Global indicators of energy efficiency and CO<sub>2</sub> emissions are useful for industries, governments and others to:
  - Analyze historical trends and improve forecasting of industrial energy
  - Show and explain differences between countries and regions
  - Identify technical savings potential
- The need for data detail and the availability of data should be balanced with the new indicators developed
- Based on BAT/BPT, manufacturing industry can improve its energy efficiency by 18% to 26% while reducing the sector's CO<sub>2</sub> emissions by 19% to 32%
- Significant improvements in final energy intensity in developing countries, although intensities often still higher than in IEA
- Energy use growth can and must be decoupled from economic growth, but will require strong policy-action from Governments
- Urgent need for governments to enhance framework for monitoring end-use energy consumption and address the gaps in available statistical data

# Main Outstanding Issues

- System boundary and allocation issues are very important in the design of indicators and other performance measures for comparative purposes. For example, the allocation of upstream emissions and downstream energy recovery benefits is an element that can affect performance significantly
- Industrial sub-sector data that countries report to the IEA are not sufficiently detailed to allow country comparisons of physical indicators at a level of relevant comparable physical product. Therefore, other data sources must be used
- More work needs to be done to improve the quality of the data and refine the analysis. In many case, data are either not available due to a lack of resources in collecting the data or for confidentiality reasons
- Data on the level of on-site process integration and combined heat and power are lacking, and energy efficiency performance data for actual motor and steam systems are almost non-existent

# Main Recommendations from the Indicators Work

- New government and industry co-operation schemes are evolving. It is recommended that such efforts be coordinated
- Data collection system for key energy saving options (on-site process integration, combined heat and power and energy efficiency performance data for actual motor and steam systems) should be strengthened and suitable indicators should be developed since a large body of case studies suggests important improvement potentials based on these existing technologies
- Care should be taken when data of different quality are mixed for country comparisons. If data are to be used for international agreements, a monitoring and verification system will be needed
- The treatment of combined heat and power in IEA statistics need to be complemented with better data on current CHP capacity, use and generation, as well as through improved presentation of CHP in energy balances and statistics
- Industrial physical production data should be collected by the IEA on a regular basis, notably for energy-intensive commodities
- A comprehensive framework should be developed including indicators, benchmarking, capital stock age data at a plant level and in certain cases on a process level

# Conclusion - Next Step

- Production of a new industry book focusing on scenarios, new technologies, energy efficiency and CO<sub>2</sub> reduction potentials, including material analysis and economic indicators (release in 2009)
- Improved data reporting to cover all IEA countries and key non-OECD countries
- Include statistics on physical production for major commodity in the IEA energy indicators reporting template
- Continued work on resolving inconsistencies between countries regarding data definitions and boundaries
  - Energy efficiency guidelines book
  - Definitions, boundaries and methodologies ISO certifies
- Enhancement of the link between indicators and the assessment of key policies

**Thank You!**

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