



IEA / ERI

In collaboration with Energy Research Institute

Workshop on International Comparison of Industrial Energy Efficiency

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This document contains the proceedings of the workshop on International Comparison of Industrial Energy Efficiency, which took place on 18-19 March 2008, at the Shen Zhen Hotel in Beijing. The workshop was organised in collaboration with the Energy Research Institute of the National Development and Reform Commission. This meeting is a follow-up to the Tracking Industrial Energy Efficiency and CO₂ Emissions: The Way Forward workshop held in Paris on 1-2 Oct 2007 where global industry representatives stressed the need to involve Chinese industry more closely in future activities. The workshop aimed at deepening collaboration on industrial energy efficiency indicators between the IEA and Chinese and International industry experts. This document reflects discussions of the participants at the workshop. The views expressed in this paper do not necessarily represent those of the IEA, IEA policy or ERI.

Summary

In June 2007, the IEA published *Tracking Industrial Energy Efficiency and CO₂ Emissions*, a major new analysis that uses indicators to assess industrial energy efficiency on a country level. The indicators can be used to evaluate energy efficiency progress over a period of time and also they can be used to identify improvement potentials. These indicators have been applied to assess the efficiency of key sectors worldwide (Iron and Steel, Chemicals and Petrochemicals, Cement, Pulp and Paper and Aluminium).

The findings of this analysis show how industrial energy efficiency has improved dramatically over the last 25 years. Yet important opportunities for additional gains remain. The report calculates that technical energy savings potentials of 25 to 37 EJ per year are available based on proven technologies and best practices. This is equivalent to 600 to 900 Mt of oil equivalent per year or one to one and a half times Japan's current energy consumption. Improved energy efficiency contributes positively to energy security and environmental protection and helps to achieve a more sustainable economic development. The industrial CO₂ emissions reduction potential amounts to 1.9 to 3.2 Gt per year, about 7 to 12% of today's global CO₂ emissions.

This study is a first attempt to provide a reliable and meaningful set of global indicators of energy efficiency and CO₂ emissions in the manufacturing industrial sector. It has drawn on a comprehensive analysis of the available data, numerous workshops with experts from key industries and an extensive review process. One important conclusion from this process is that more work is needed to improve the quality of data and refine the analysis.

China has very ambitious plans for a 20% energy efficiency intensity improvement by 2010, and national and provincial programs to assign and track energy intensity improvements at major industrial facilities. Indicators can help to evaluate the progress towards meeting these goals, and to develop benchmarks. The data and expertise needed to develop these indicators goes beyond the level of information that is usually available from government statistics. It is therefore essential to cooperate closely with industry. Moreover, any action to improve industrial energy efficiency will require industry involvement. Therefore the IEA is keen to work in close cooperation with major industrial sectors.

The workshop provided a good opportunity for both Chinese and International industry experts to exchange experience on improving industrial energy efficiency, to deepen existing collaborations and, in some cases, to discuss the possibility of including China in existing international initiatives. Industry experts shared their experience with data collection, monitoring and target setting (benchmarks) for the top five energy intensive sectors (iron and steel, cement, pulp and paper, chemicals and petrochemicals and aluminium).

Key Findings

- China's goal of reducing energy use per unit of GDP by 20% between 2005 and 2010 has led industry to focus on greater energy efficiency.
- Indicators can help to track progress with energy efficiency and identify technical improvement potentials, so stimulating technology cooperation.
- It is not possible to create a single indicator of industrial energy efficiency for a sector and hence a wide variety of indicators are needed to identify and monitor improvements in industrial energy efficiency.
- Industrial energy efficiency indicators based on physical output are generally superior to value added based indicators.
- While benchmarking and indicators can be very useful for supporting policy making, there is an urgent need to improve data and methodologies. At the moment, the IEA's industrial indicators analysis is not yet suitable for target setting.
- In many sectors China was seen to have the best and worst global performers as rapid capital expansion and economic growth has resulted in the latest technologies being deployed in China, but many smaller out of date industrial processes still remain.
- Chinese experts noted that international comparisons should be made using the latest data available for China, as policies implemented over the last couple of years are beginning to have a significant impact on energy efficiency.
- IEA estimates for energy savings potentials in Cement and Iron and Steel in *Tracking Industrial Energy Efficiency and CO2 Emissions* are too high. The new estimate for Cement 1958 PJ or 1.63 GJ / tonne of cement and for Iron and Steel is 1946 PJ or 5.57 GJ / tonne steel.
- China's industry has many unique features (for example: coal is the main feedstock in the Chemical sector, lack of scrap availability, large number of small and medium enterprises etc...) which make international comparisons more complex.
- China's industry is growing very rapidly and changing very fast where as industry in OECD countries are already mature which adds to the difficulty of making international comparisons.
- Production volumes and efficiency rates are changing rapidly in China.
- Current national statistics in most countries are not sufficient for industrial indicators analysis.
- Improving data availability in China and achieving consistency with international standards should be a priority.
- Industry and government need to work together to improve data availability.
- Different sectors have tackled sectoral approaches in different ways and there is to date not one agreed definition of what a sectoral agreement is. What has become clear is that a sectoral approach could be an important building block in the international post 2012 architecture.
- Information sharing and greater technology collaboration is needed.

Next Steps

- Experts recognise the need to improve energy data collection in China and agreed to work together with the IEA and other international experts on improving energy data collection.
- All sectors stressed the importance of on-going collaboration with IEA's industry analysis and continued cooperation was supported.
- The IEA seeks to intensify its cooperation with China and aims to work with Chinese industry on sector analysis, inviting Chinese experts to international meetings, and developing scenarios for Chinese materials demand and industrial production structure and energy efficiency.