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Why ISO 50001 and Energy Management for Developing Countries and Emerging Economies Industry

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Geneva, 17 June 2011

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Outline

- ✓ Context
  - Use, productivity and demand for energy
  - Developing countries and emerging economies
  - Climate Change
- ✓ Energy Efficiency in industry
- ✓ Why ISO 50001 and what it can achieve
- ✓ Opportunities and challenges for industry and policy makers
- ✓ ISO 50001 and Trade
- ✓ UNIDO Energy Management Programme
- ✓ Conclusions

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An Overview of UNIDO

- ✓ **The United Nations Industrial Development Organization** (**UNIDO**) is a specialized agency of the United Nations, whose mandate is:
  - i. to promote and accelerate **sustainable industrial development** in developing countries and economies in transition;
  - ii. to work towards **improving living conditions** in the world's poorest countries by drawing on its combined global resources and expertise.
- ✓ UNIDO activities are focused on three thematic priorities:

1) POVERTY REDUCTION THROUGH PRODUCTIVE ACTIVITIES
2) TRADE CAPACITY BUILDING
3) ENERGY AND ENVIRONMENT

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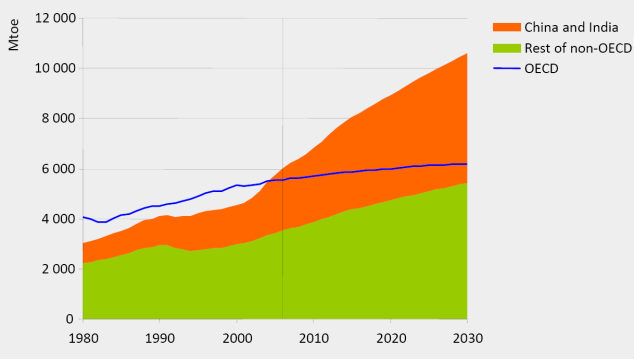
Demand for Energy

World primary energy demand in the Current Policies Scenario

Source: IEA World Energy Outlook 2008

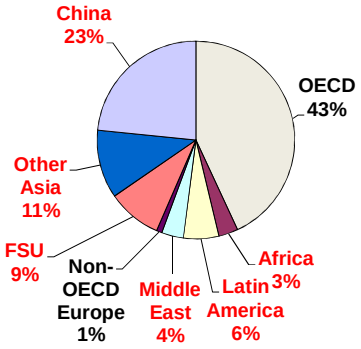


Non-OECD countries account for 87% of projected increase in global demand between 2006 and 2030, driven largely by China and India

Industrial Energy Use

- ✓ Industry accounts for about 1/3 of global final energy use
  - 40% of electricity use
  - 77% of coal and derivatives use
  - 37% of natural gas use

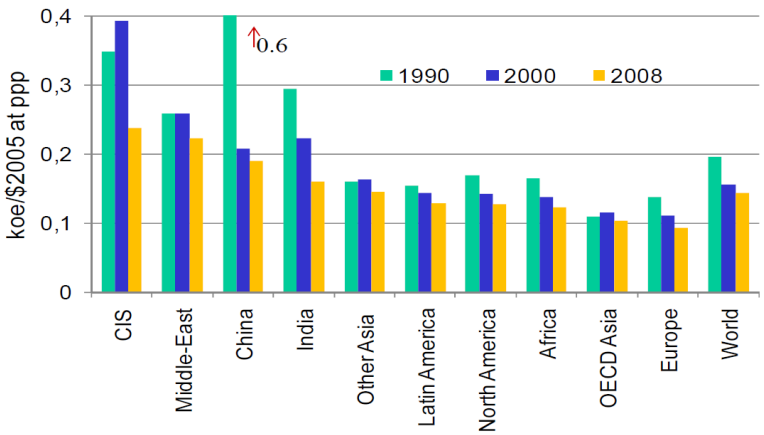
  and 1/3 of global CO_2 emissions



Global industrial energy use by regions

Source: IEA, 2007 & 2009

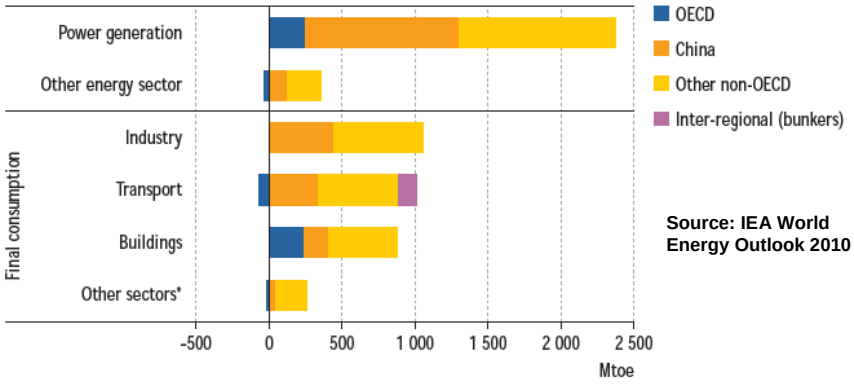
Energy Intensity of Industry



Source: ENERDATA

Incremental Energy Demand

Incremental energy demand by sector and region in the New Policies Scenario, 2008-2035



Source: IEA World Energy Outlook 2010

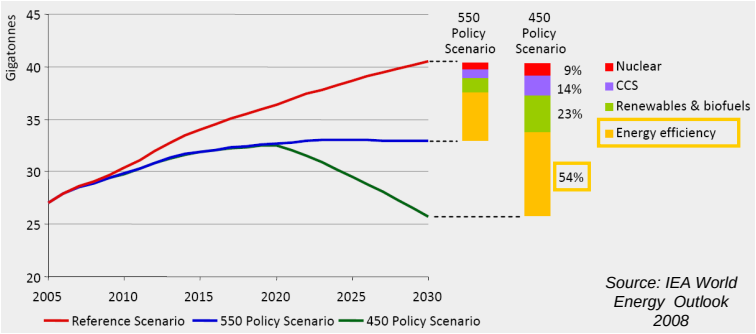
* Includes agriculture and non-energy use.

Developing countries & Emerging Economies

- ✓ Industrial energy use can be up to 50% of the total use → energy security, competition for energy
- ✓ Energy efficiency and productivity still lagging behind
- ✓ Obsolete industrial capital stock → sector growth is pushing refurbishment and expansion of existing plants, and building of many new facilities (including substantial growth in energy intensive sectors)
- ✓ Building in energy efficiency the first time is much more cost-effective than retrofitting it later
- ✓ Price of energy to industry steadily and rapidly increasing (progressive removal of subsidies)

Climate Change – Needs or Opportunities

Reduction in energy-related CO_2 emissions in the climate-policy scenarios



Efficiency gains and deployment of existing low-carbon technologies and best practices account for most of the savings

Industrial Energy Efficiency Benefits

Energy efficiency has demonstrated, time and again, that:

- ✓ It saves industrial firms money
- ✓ It increases reliability of operations
- ✓ It has a positive effect on productivity
- ✓ It can offer very attractive financial and economic returns
- ✓ It reduces exposure to rising energy prices
- ✓ It increases security of supply
- ✓ ….

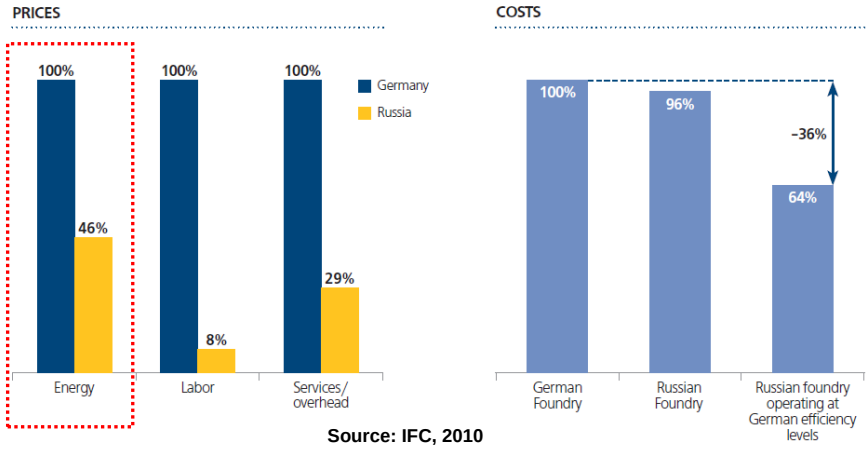
Why it is not happening?

Barriers to Industrial Energy Efficiency

- ✓ Management focus is on production and not on energy efficiency
- ✓ Lack of understanding of financial, economic and quality benefits
- ✓ Lack of adequate technical skills for EE measures and projects
- ✓ Poor monitoring systems and data
- ✓ Technology and equipment bias
- ✓ First costs more important than recurring costs → disconnection between capital and operating budgets
- ✓ EE knowledge resides with individuals rather than with the organization → sustainability risk
- ✓ Financial constraints

Case Study – Benchmarking in Foundry sector 1/2

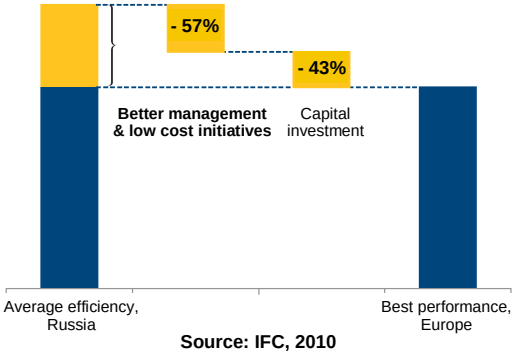
Poor resources management → Loss of Competitive Edge



Source: IFC, 2010

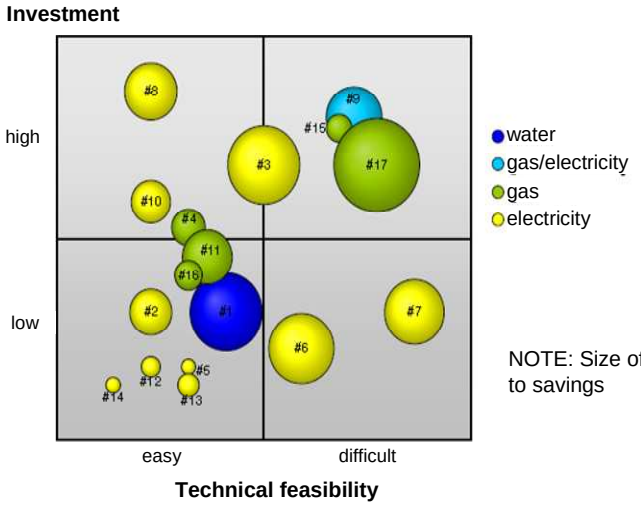
Case Study – Benchmarking in Foundry sector 2/2

- ✓ Matching the efficiency of best performing Russian (average European) foundry could **increase operational profitability** of individual enterprises **by up to 15%**
- ✓ **More than half of the savings** and benefits could be realized **through better management practices and various low-cost initiatives alone**, with no need for major capital expenditure



Source: IFC, 2010

Financing and technology bias



NOTE: Size of circles proportional to savings

Energy Management System Standards – Why?

Most energy efficiency in industry is achieved through changes in ***how energy is managed*** in an industrial facility, rather than through installation of new technologies.

Energy Management Systems (EnMS) provide:

- ✓ A framework for understanding significant energy uses
- ✓ Action plans for continually improve energy performance
- ✓ Structure and organizational framework to sustain energy performance improvements over time and change of personnel

ISO 50001 – Energy Management Standard provides:

- ✓ A market-based framework and best-practice methodology to integrate EE into industry corporate culture and daily management practices.

What can an EnMS achieve?

- ✓ Management focus
- ✓ Systematic activity
- ✓ Obligation to train and raise awareness
- ✓ Obligation to provide resources
- ✓ Continuity through changes of personnel

- ❑ Most industrial enterprises that have implemented EnMS achieved average annual energy intensity reductions of 2-3% against 1% reduction of business as usual (IRL, NET, DEN, USA)
- ❑ For companies new to energy management, savings during the first 2 years are 10-20%

Opportunities and Challenges for Industry

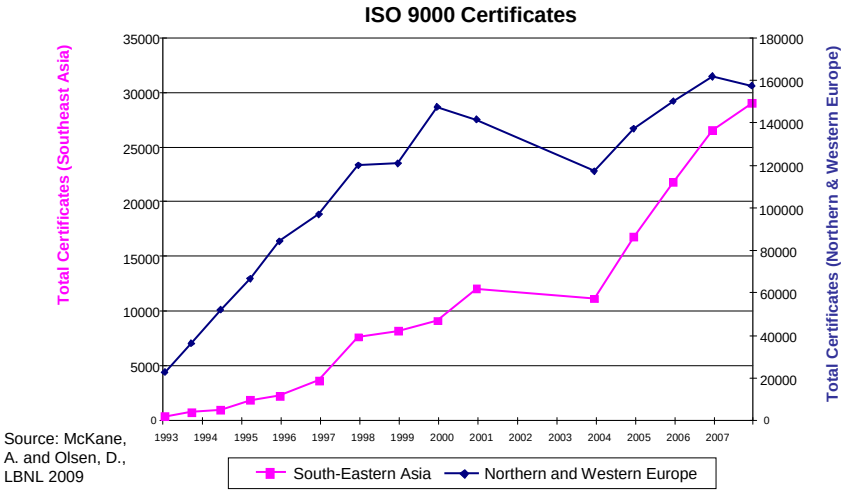
Opportunities

- ✓ Cost reduction (energy, maintenance, downtime, etc.) & enhanced competitiveness
- ✓ Corporate image (environment, social responsibility, etc.)
- ✓ Green financing
- ✓ Carbon footprint
- ✓ Trade (retain of old clients, access to new markets/clients, etc.)

Challenges

- ✓ In-house expertise & resources availability for EnMS implementation
- ✓ Integration with other management system standards (quality, environment, safety, etc.)
- ✓ Availability of expertise in the market for advising and assisting in implementation

ISO 50001 and Trade



Source: McKane, A. and Olsen, D., LBNL 2009

ISO 50001 and Trade

- ✓ Uptake of ISO 9001 in the supply chain was driven largely by Western European countries and Japan
- ✓ Uptake of ISO 50001 will be driven by the US, Canada, the expanded EU, Japan, Korea, Brazil, China
- ✓ Use of ISO 50001 will be driven by companies seeking an internationally recognized response to:
  - National and international energy efficiency and climate agreements
  - National cap and trade programs, carbon or energy taxes
  - Corporate sustainability/responsibility programs
  - Increasing market value of "green manufacturing"
  - Carbon trading schemes
- ✓ Companies will demand participation by their suppliers
- ✓ Exporters that position themselves now will be at a competitive advantage

Opportunities and Challenges for Policy-Makers

Opportunities

- ✓ EnMS and standard provide pillar for national EE programs
- ✓ EnMS and ISO 50001 applicable to all economy sectors → significant economies of scale
- ✓ Boost development of the EE service sector, including job creation
- ✓ Accelerate technology upgrade and innovation
- ✓ Proven international supporting policy best practices are available

Challenges

- ✓ Limited technical expertise and institutional capacity
- ✓ Supporting programs and incentives will be needed for wide and rapid uptake of EnMS and ISO 50001 → need to allocate adequate resources
- ✓ Demonstrate benefits and measure impact → Monitoring and verification
- ✓ Ensure market credibility → certification and accreditation
- ✓ SMEs will need special attention and support

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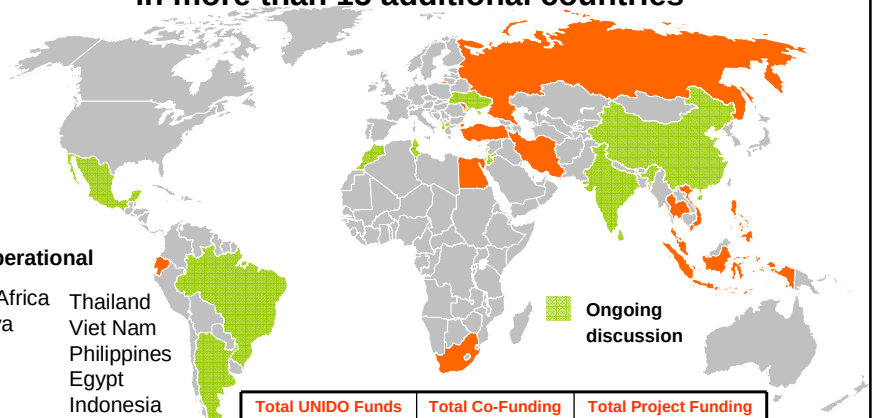
UNIDO EnMS/ISO 50001 Programme

Operational in 12 countries; ongoing & planned activities in more than 15 additional countries



Operational

South Africa
Moldova
Russia
Turkey
Iran
Malaysia
Thailand
Viet Nam
Philippines
Egypt
Indonesia
Ecuador

Ongoing discussion

Total UNIDO Funds	Total Co-Funding	Total Project Funding
58 Mio US$	456 Mio US$	514 Mio US$

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UNIDO EnMS/ISO 50001 Programme

- ✓ Provision of training to enterprises' staff on EnMS development and implementation
- ✓ Training of national experts on EnMS development and implementation in line with ISO 50001
- ✓ Provision of technical assistance to partner enterprises for the development and implementation of EnMS in line with ISO 50001 as well as of specific energy efficiency improvement projects
- ✓ Provision of technical assistance to partner enterprises for preparation and facilitation of EE investments
- ✓ Policy advice and institutional capacity building for the development of a programmatic framework for EnMS and standards in industry

Conclusions

The implementation of ISO 50001/EnMS will assist companies in developing countries and emerging economies to:

- ✓ Actively managing energy use, reducing costs and exposure to rising energy prices
- ✓ Continually improve energy performance
- ✓ Better utilize company personnel and resources, including capital stock
- ✓ Adopt energy efficiency best-practices and low-carbon technologies
- ✓ Improve enterprises' bottom line

Improve Energy Productivity and **Enhance Competitiveness** while delivering a **dividend to** the **Environment** and the goal of **Sustainable Development**

Thank you

For more information:

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