ENERGY INDICATORS

Efficient Power Generation 2011

Roundtable 4: Efficient use of energy in the end-use sector

Moscow, 20 September 2011

Energy Savings Through Energy Efficiency

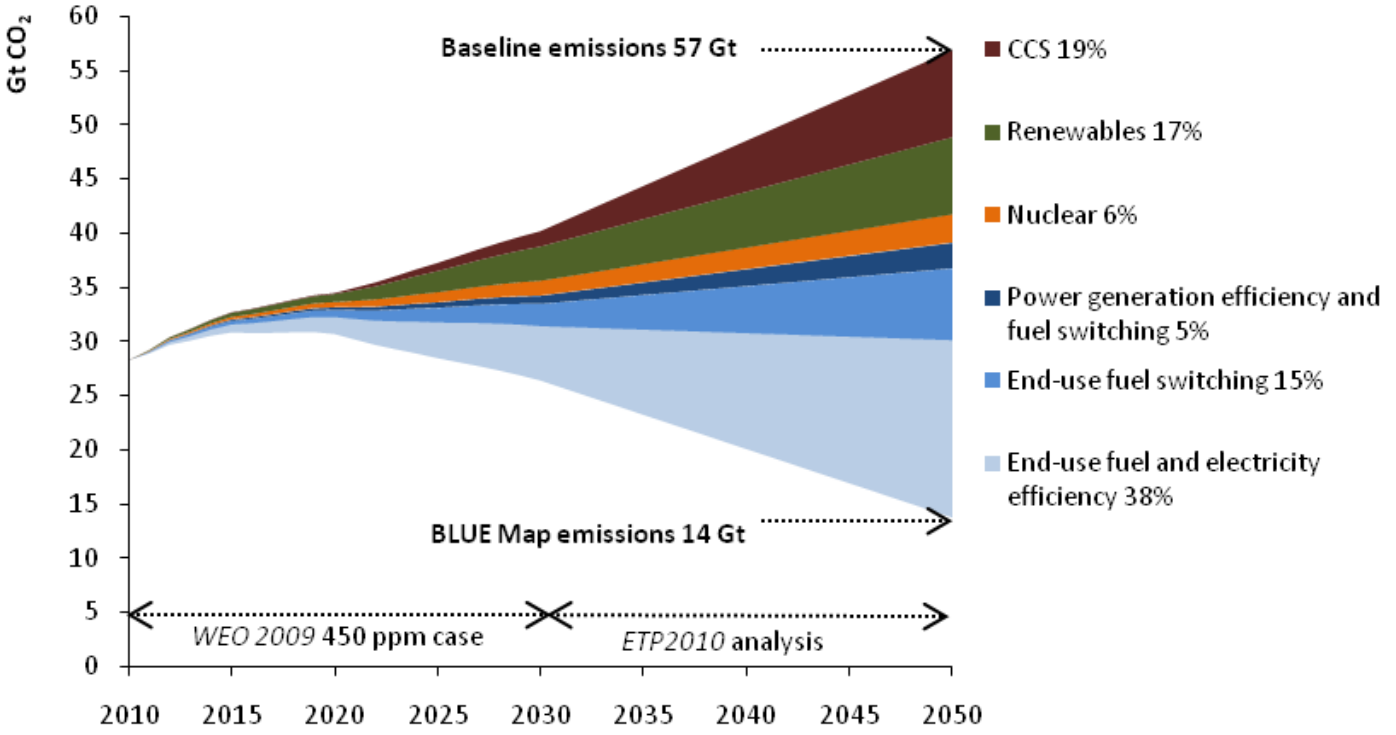
Key Insights from IEA Indicator Analysis

Nathalie Trudeau
International Energy Agency

Why such an interest for energy efficiency?

- Reduced investments in energy infrastructure
- Lower fossil fuel dependency – optimise export volumes and revenues
- Increased competitiveness
- Improved consumer welfare
- Deliver environmental benefits by reducing greenhouse gas emissions and local air pollution

Energy efficiency is a key abatement option to substantially reduce energy consumption and CO_2 emissions



In the BLUE Map scenario, most of the reductions in energy-related CO_2 emissions are from improved efficiency.

ENERGY TECHNOLOGY PERSPECTIVES 2010

Scenarios & Strategies to 2050

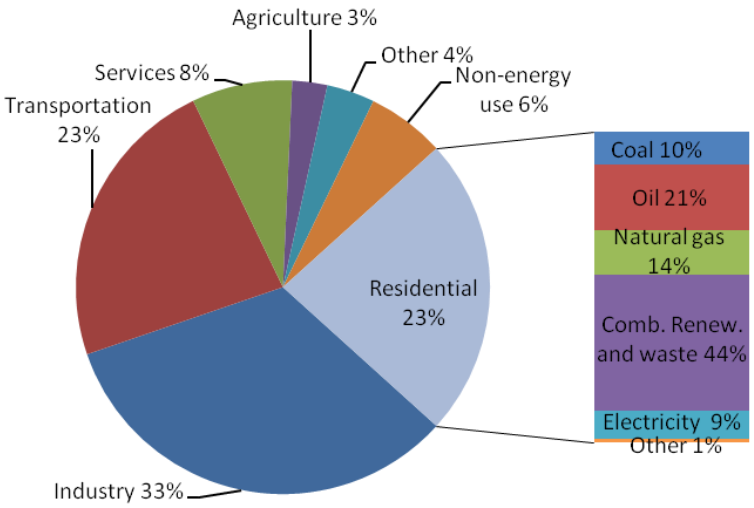
How to take advantage of the "low-hanging fruits"?

- Understand trends in energy consumption
  - Which sector is the most energy-consuming
  - How energy is used within the sector
  - What are the main factors driving energy consumption
- Assess the potential to improve energy efficiency and/or reduce energy consumption
- Design policies and measures to unlock the potential

This is the goal of the IEA/Rosstat/REA collaboration on development of energy efficiency indicators

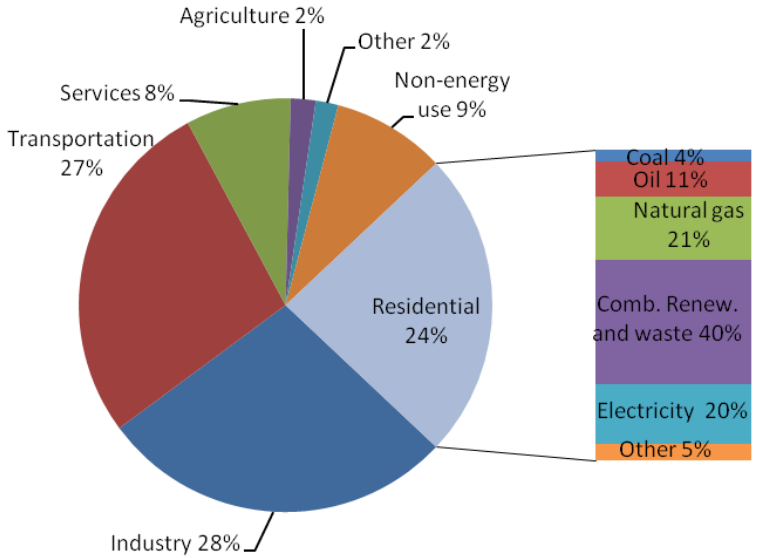
Information from energy balance provides interesting insights

1973



World: 4 676 Mtoe

2008



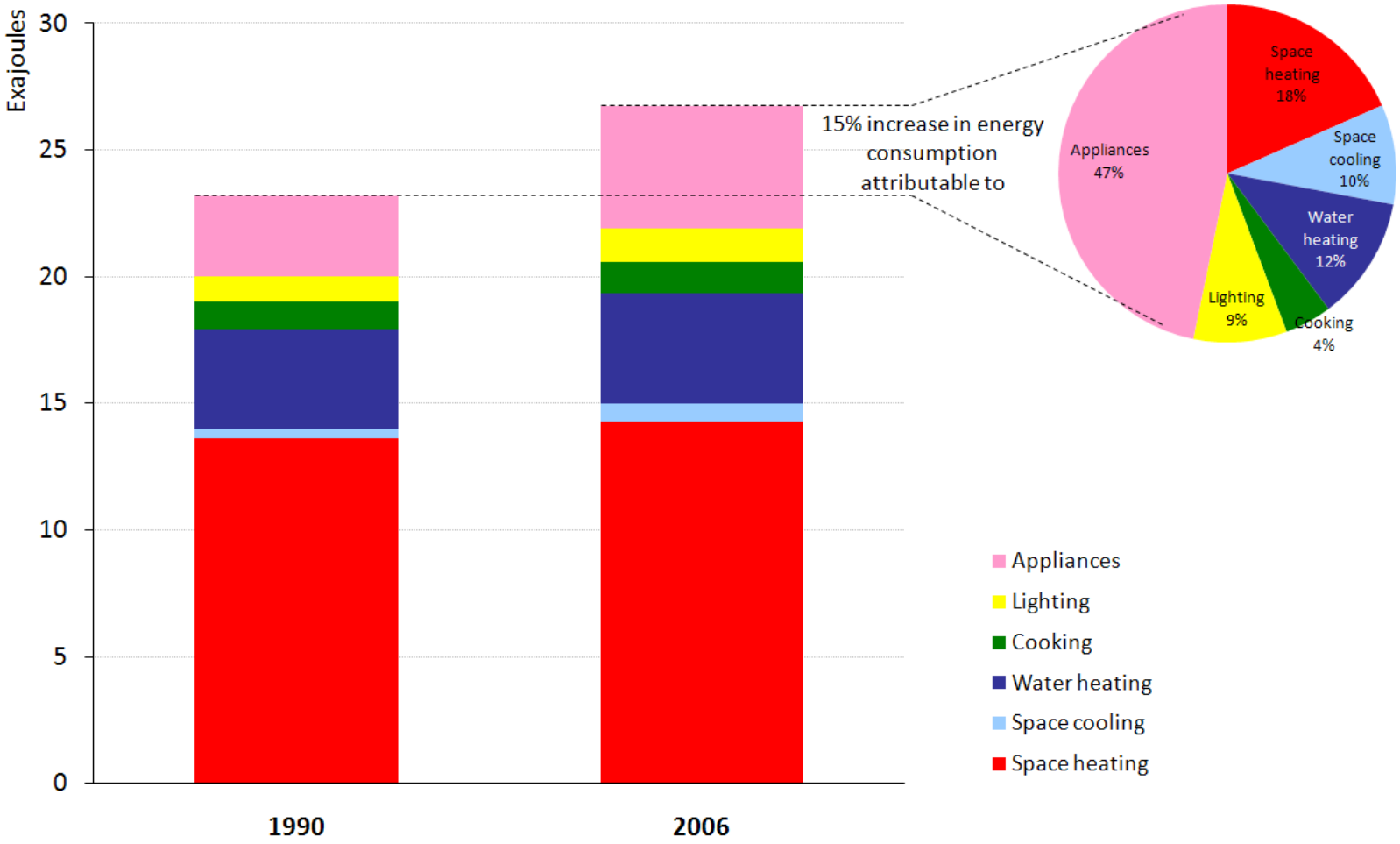
World: 8 428 Mtoe

Electricity and natural gas account for 41% of global residential energy consumption in 2008; up from 23% in 1973

Key Insights from IEA Indicator Analysis

ENERGY INDICATORS

Detailed information is required to:
1) understand how energy is used

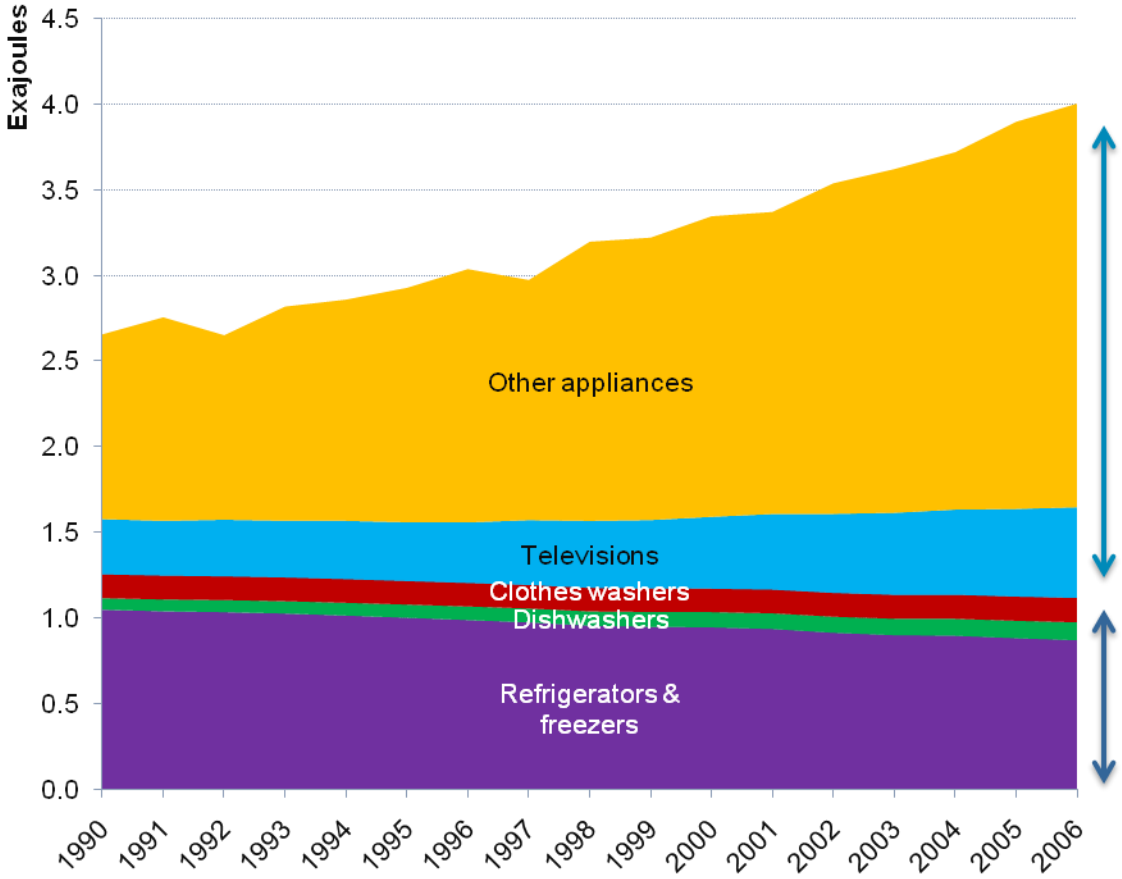


Key Insights from IEA Indicator Analysis

47% of the growth in residential energy consumption in 19 IEA member countries is attributable to appliances and electronics

But more information is required to:

2) evaluate the potential impact of existing energy policies and programmes



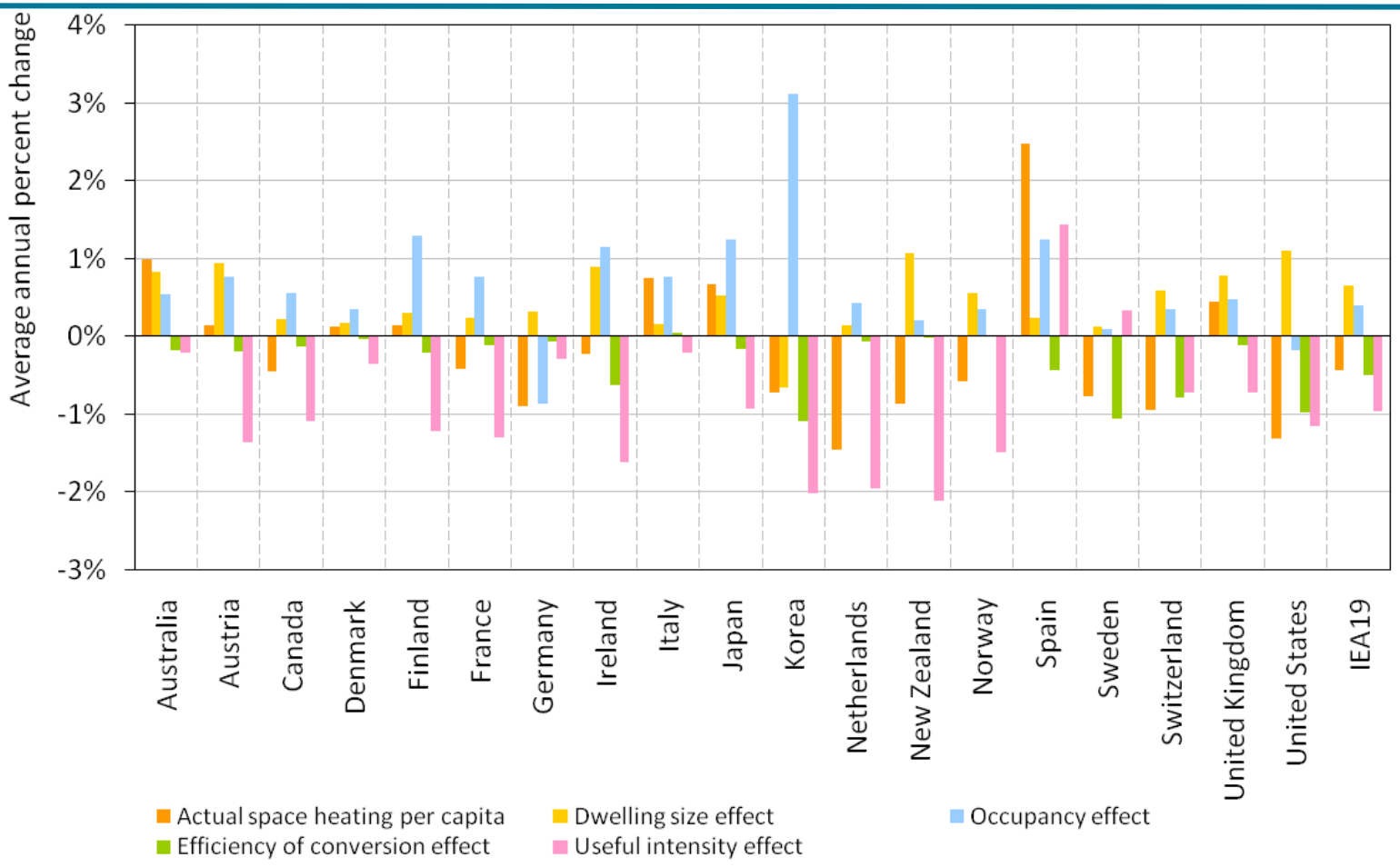
The increase is entirely due to small appliances… but little detailed information exist for this category

Energy consumption from large appliances decreased by 11%

Despite growth in population and stock per capita, the policies resulted in reduction in energy consumption

Key Insights from IEA Indicator Analysis

But more information is required to:
3) provide insights on the main factors influencing the trends in energy consumption

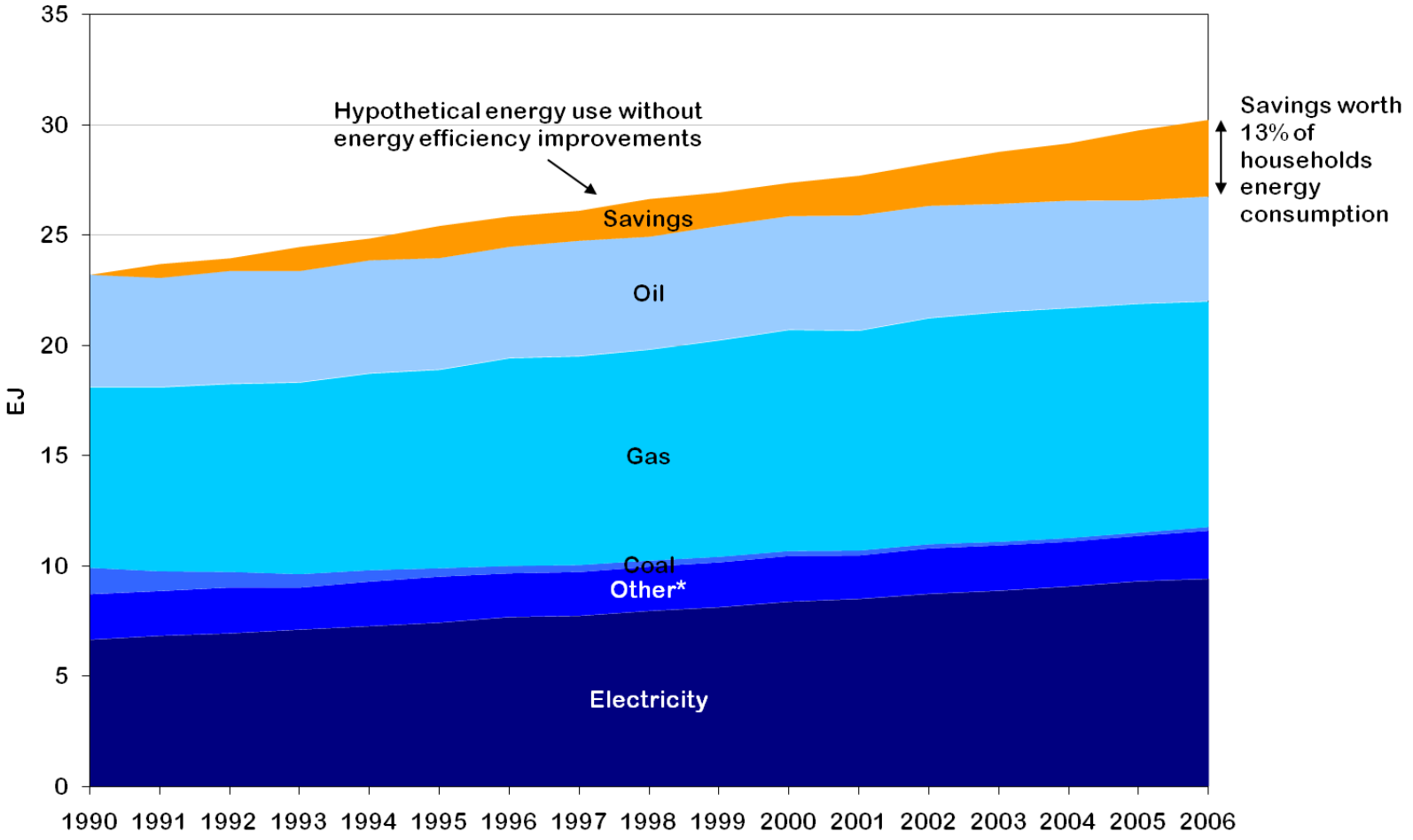


In general, higher per capita space heating energy demand – caused by fewer occupants and larger homes – was offset by an improvement in energy efficiency

Key Insights from IEA Indicator Analysis

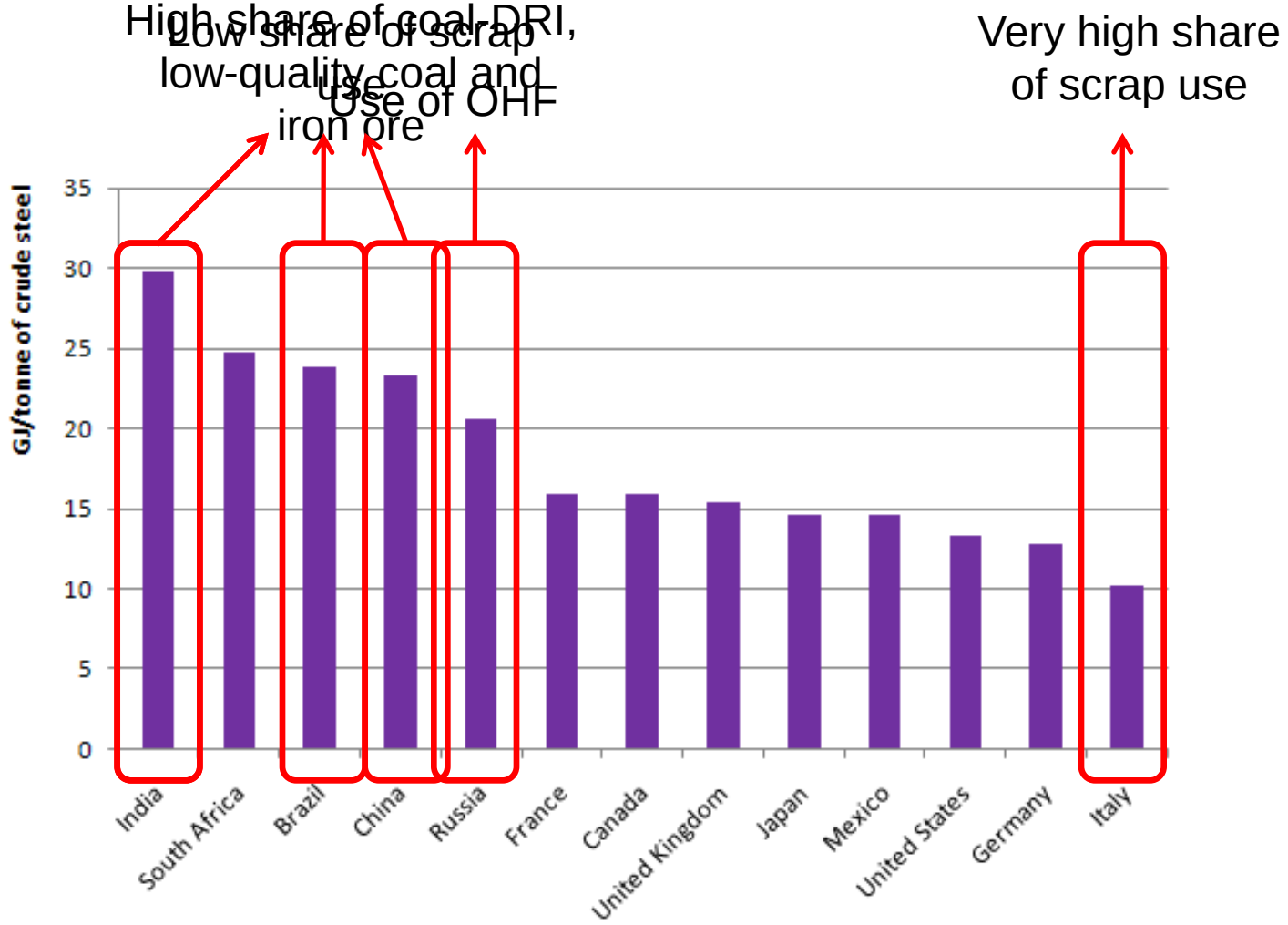
But more information is required to:

4) evaluate the role energy efficiency played in restraining the growth in energy consumption



Without savings from energy efficiency, energy consumption in IEA 19 would have been 13% higher in 2006

Again, these indicators hide important information

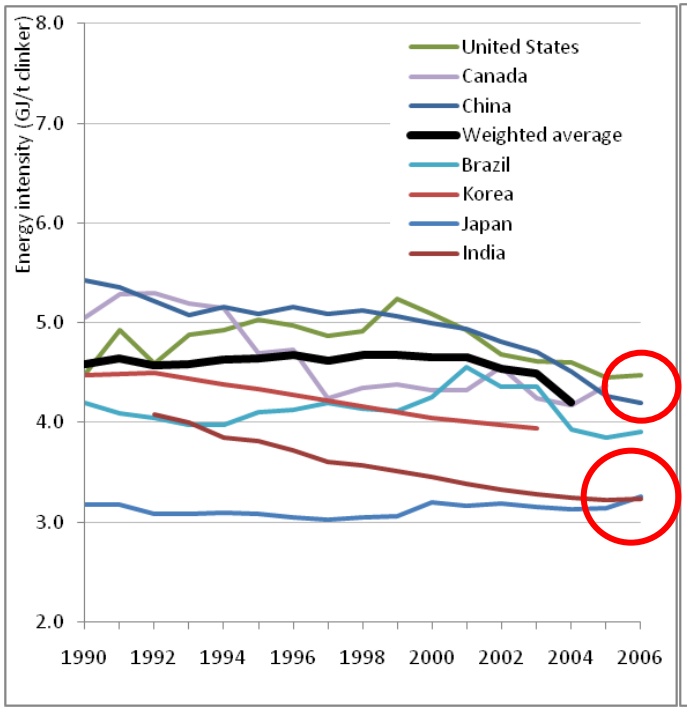


Specificities of a country/an industry can explain large variations in energy intensity

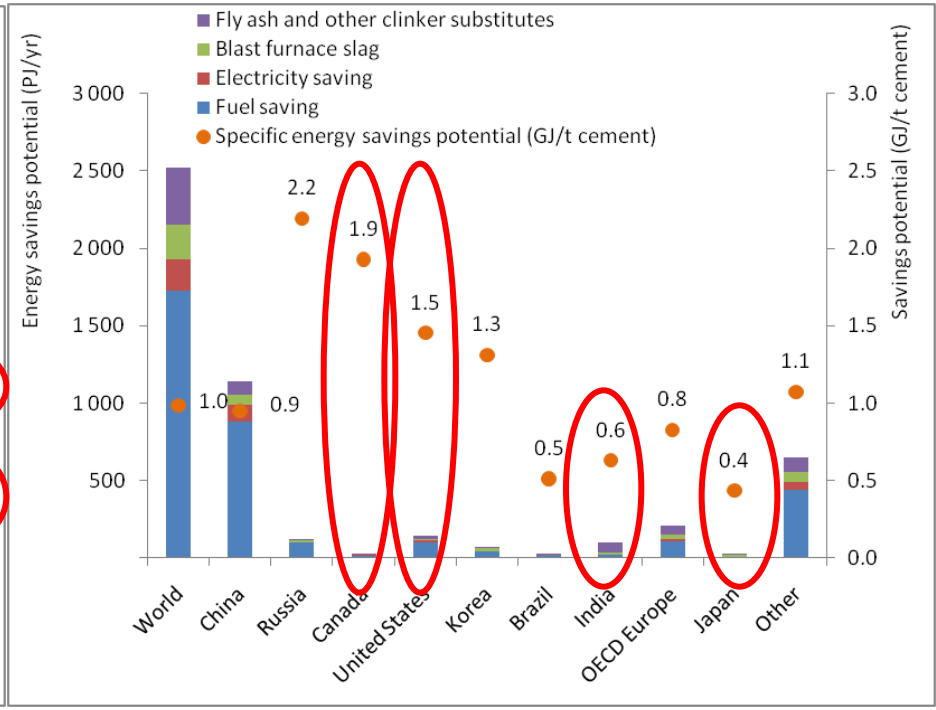
The IEA developed new disaggregated indicators for energy intensive industries

Key Insights from IEA Indicator Analysis

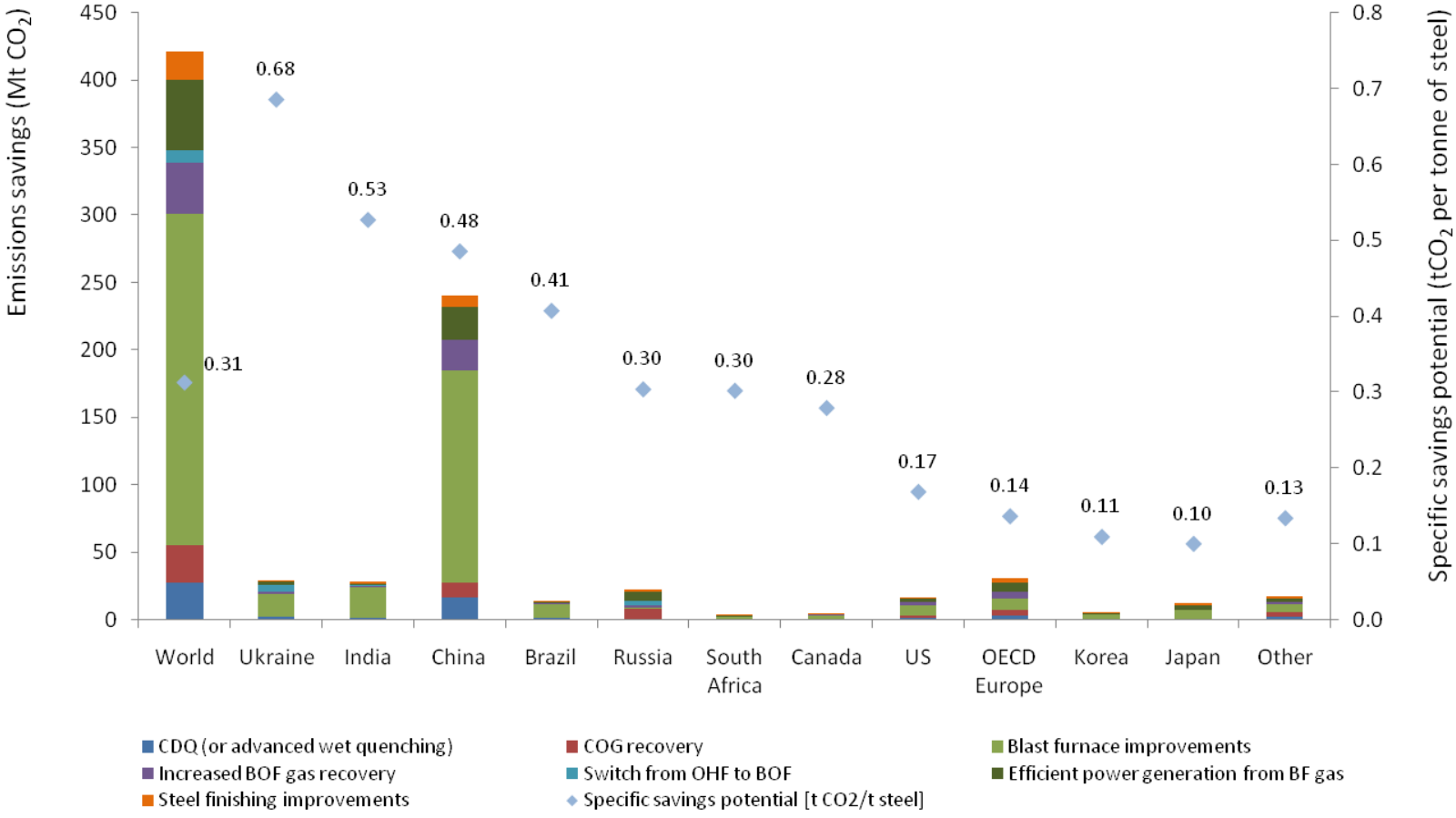
Thermal energy consumption by tonne of clinker



Energy savings potential based on best available technology



They provide insights on both energy and emission savings potential



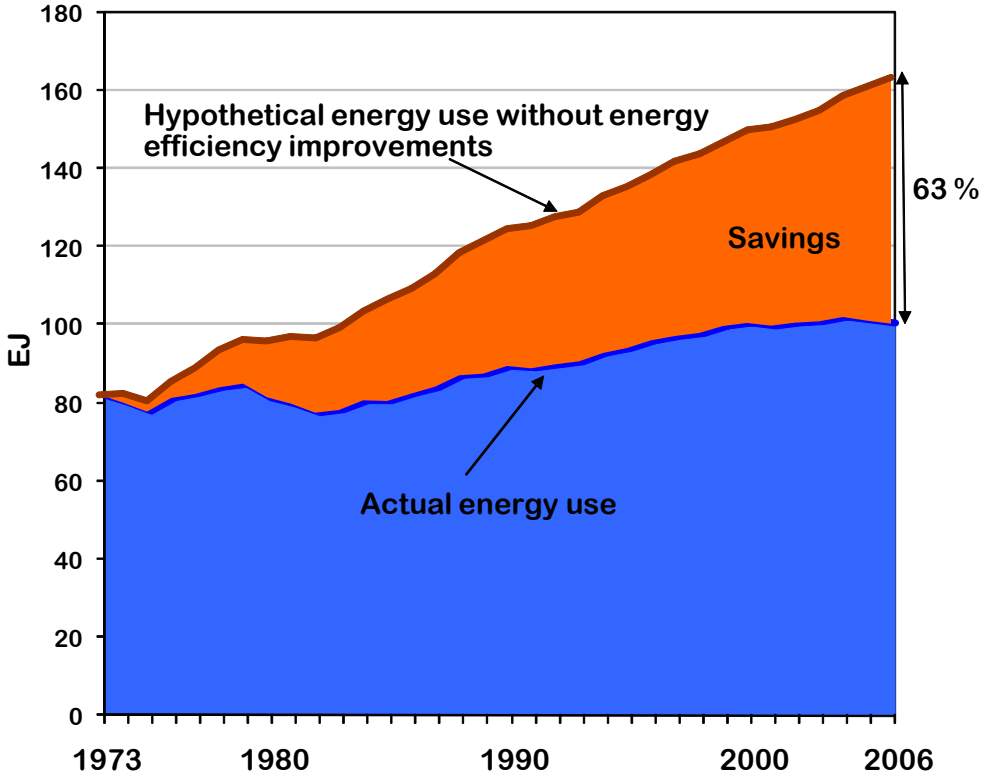
Over 400 Mt CO_2 can be saved by applying best available technology in the iron and steel sector

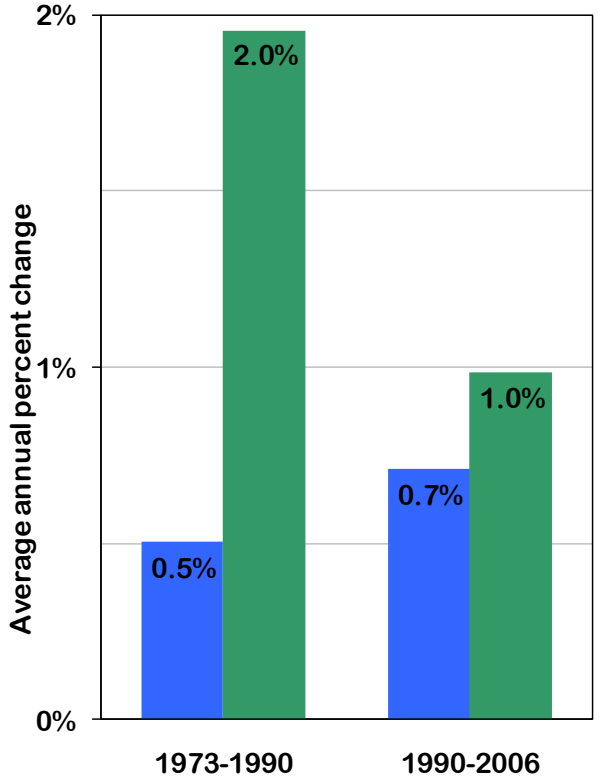
Key Insights from IEA Indicator Analysis

Energy efficiency contributed to restrain the growth in energy use

TOWARDS A MORE ENERGY EFFICIENT FUTURE

Applying indicators to enhance energy policy





Actual energy use | Energy savings due to efficiency improvements | Energy efficiency improvements

Without the savings from improved energy efficiency since 1973 in 11 IEA countries, energy use would now be 63% higher.

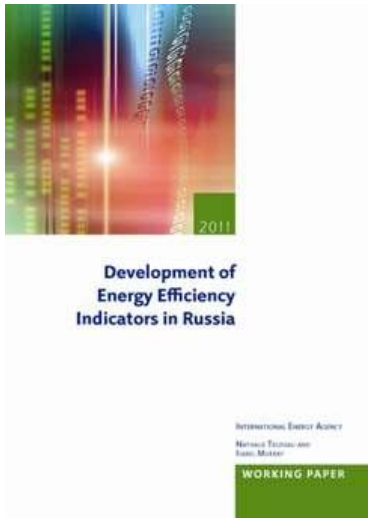
Key messages from IEA indicators work

- Energy efficiency can contribute to all the main goals of energy policy
  - Economic growth
  - Energy security
  - Environmental protection
- Energy efficiency has shown sustained improvement over many years
  - Results are often not visible, as offset by other factors
  - Rate of improvement needs to be substantially increased
- Energy efficiency is the single most important option to reduce CO_2 emissions in the future
  - Often low cost and relatively quick to implement
  - Can buy time for less mature technologies to be developed
  - Barriers remain, but these can be overcome by effective policies
  - Requires Worldwide Implementation Now

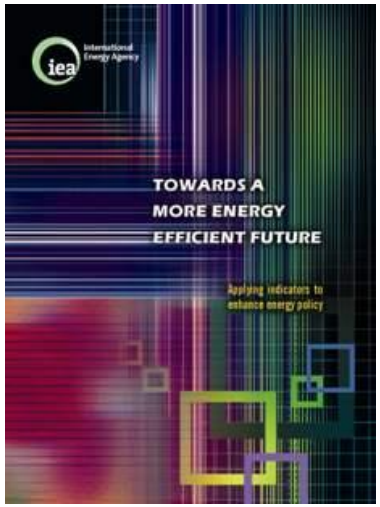
Key recommendations for Russia

- Improve end-use data availability to develop indicators
  - Build on past work on energy efficiency indicators
  - Define priority areas
  - Gather data available
    - Assessment of quality
    - Assessment of comparability
  - Collect other required data
  - Build on existing expertise (EU/Canada) and successful projects (IEA/Mexico)
- Develop indicators to understand past trends, assess potential and better support policy-making towards meeting Presidential targets and goals
- Use indicators work to guide development of policy and measures
- Develop tools to ensure compliance, enforcement and monitoring of energy efficiency policies

Energy efficiency publications



Soon available in Russian at IEA Russian-language web-site



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