

Improving Industry Energy Efficiency

A Driver for Economic Growth and International Competitiveness

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Objectives

1. **Outline potential economic effects:** In what ways can a more efficient use of energy and improved competitiveness benefit the economy?
2. **Why is it important** to understand the economic effects of improved energy efficiency?
3. **Suggested methodology:** Which steps are involved in assessing the economic effects of energy efficiency measures?

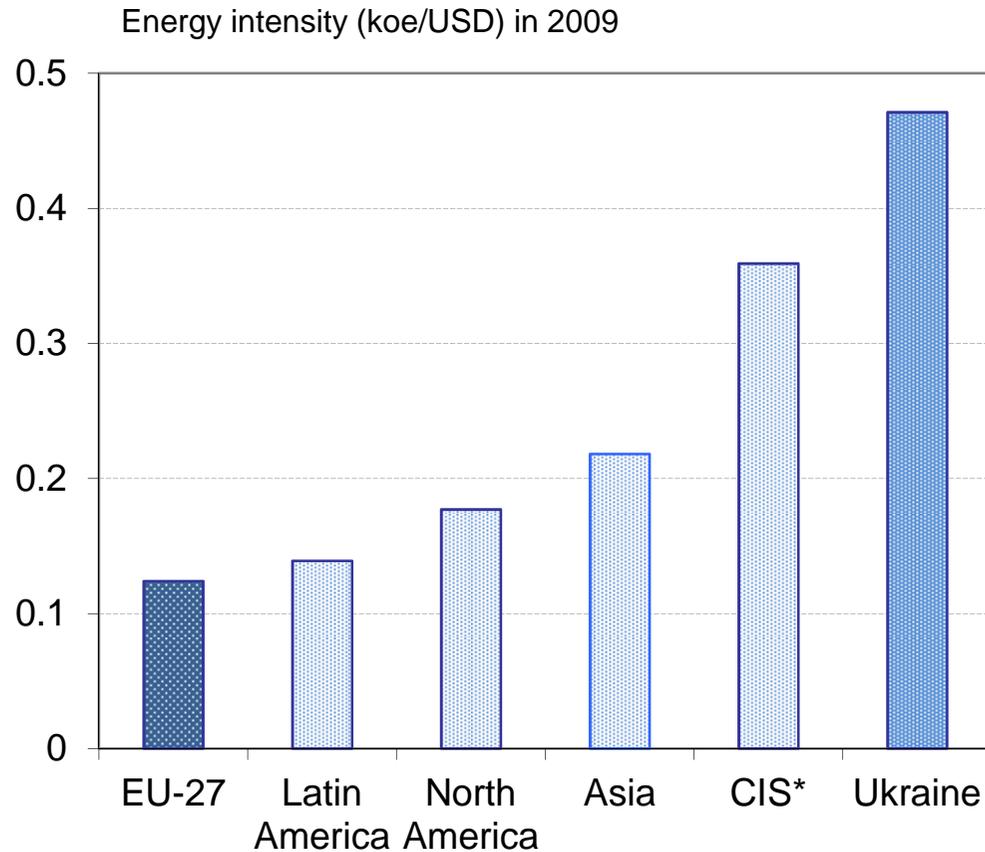
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I. Setting the scene

II. Understanding the economic impact

III. Suggested methodology

Energy efficiency in Ukraine lacks behind



- Ukraine: Energy intensity four times higher than EU average
- Climate and industry structure can only explain some of the difference

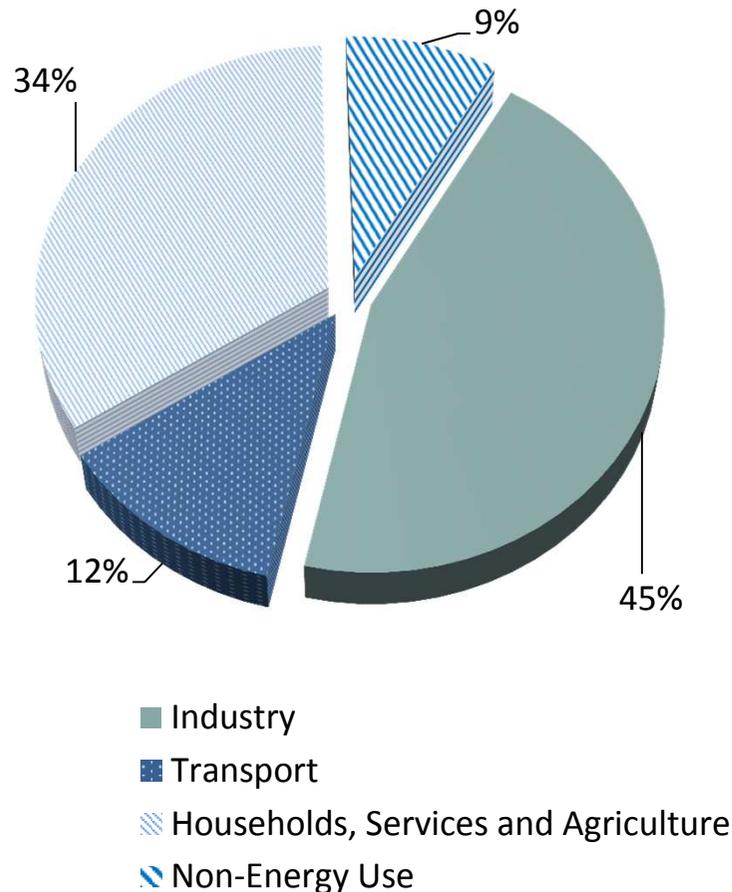
Conclusion:

- **Need to reduce wasteful energy use**

Source: IEA

Industry sector needs to contribute

Final energy consumption by sector in 2009



Source: IEA

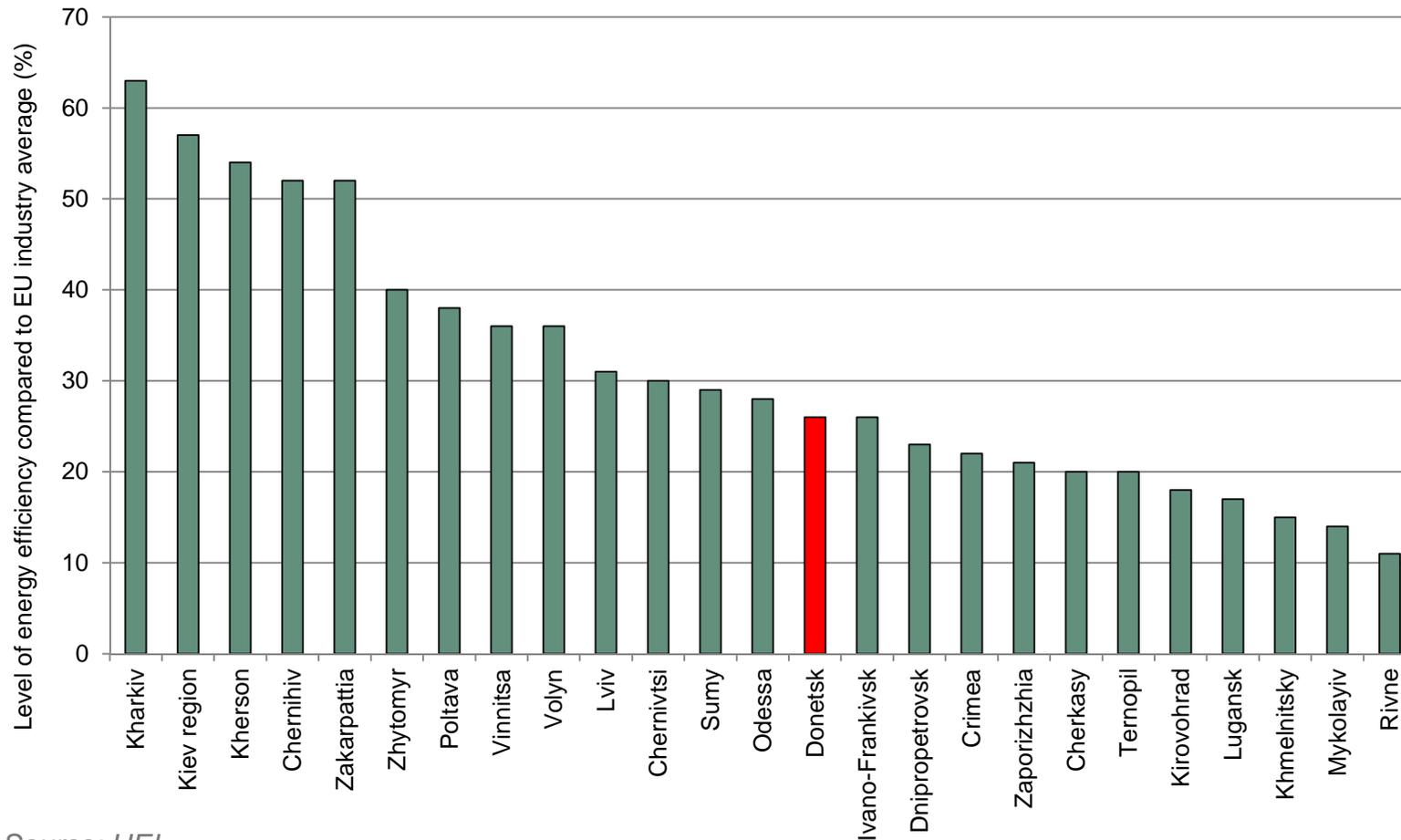
- Industry accounts for 45% of final energy consumption
- Consequently industrial companies need to contribute significantly to a more efficient use of energy

Questions

- What is the potential for improved energy efficiency in industry?
- How will it affect the regional and national economy?

Energy efficiency of industry in Donetsk only at less than 30% of EU benchmark

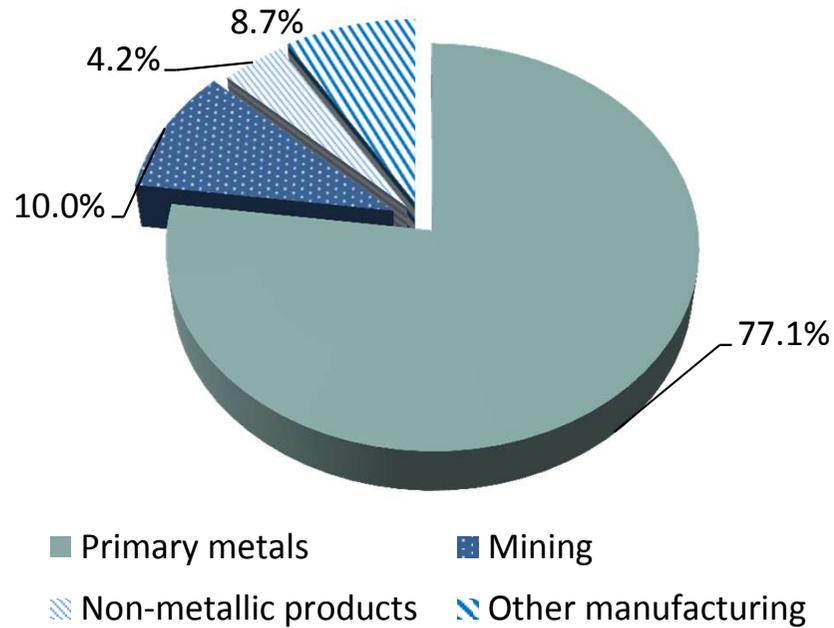
Industrial energy efficiency in Ukraine compared to EU average, by Oblast 2010



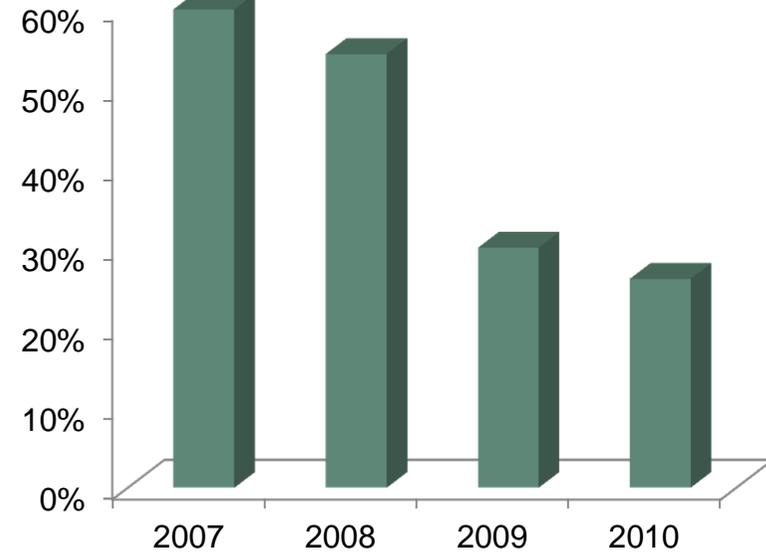
Source: UEI

Energy consumption and efficiency in industry in Donetsk

Energy consumption in industry in 2010



Development of energy efficiency in industry

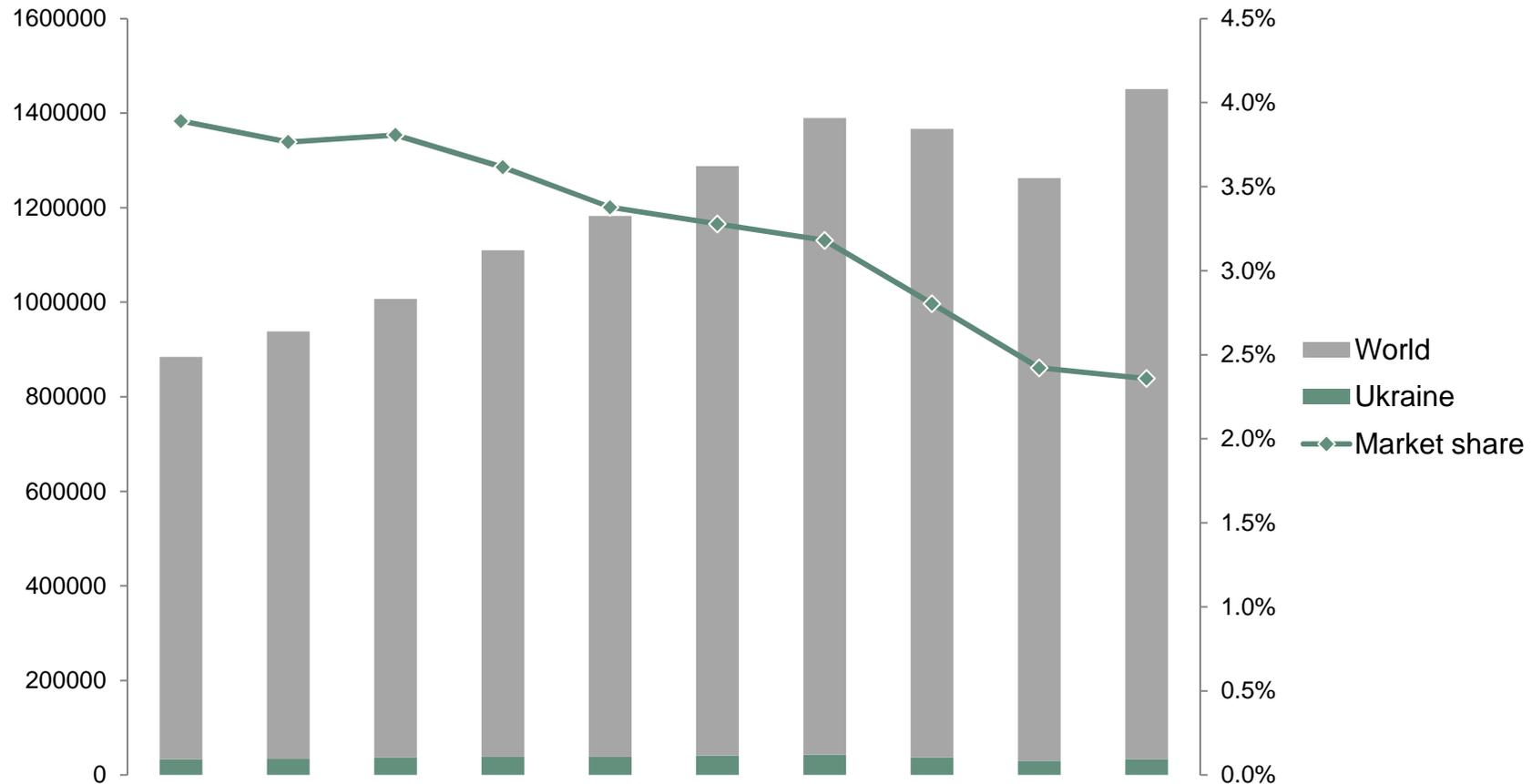


Note: Compared to EU benchmark (=100%)

Source: UEI

Declining market share points to competitiveness issues

Steel production (1000 tonnes) and Ukrainian market share (RHS), 2002 -2011



Source: World Steel Association

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I. Setting the scene

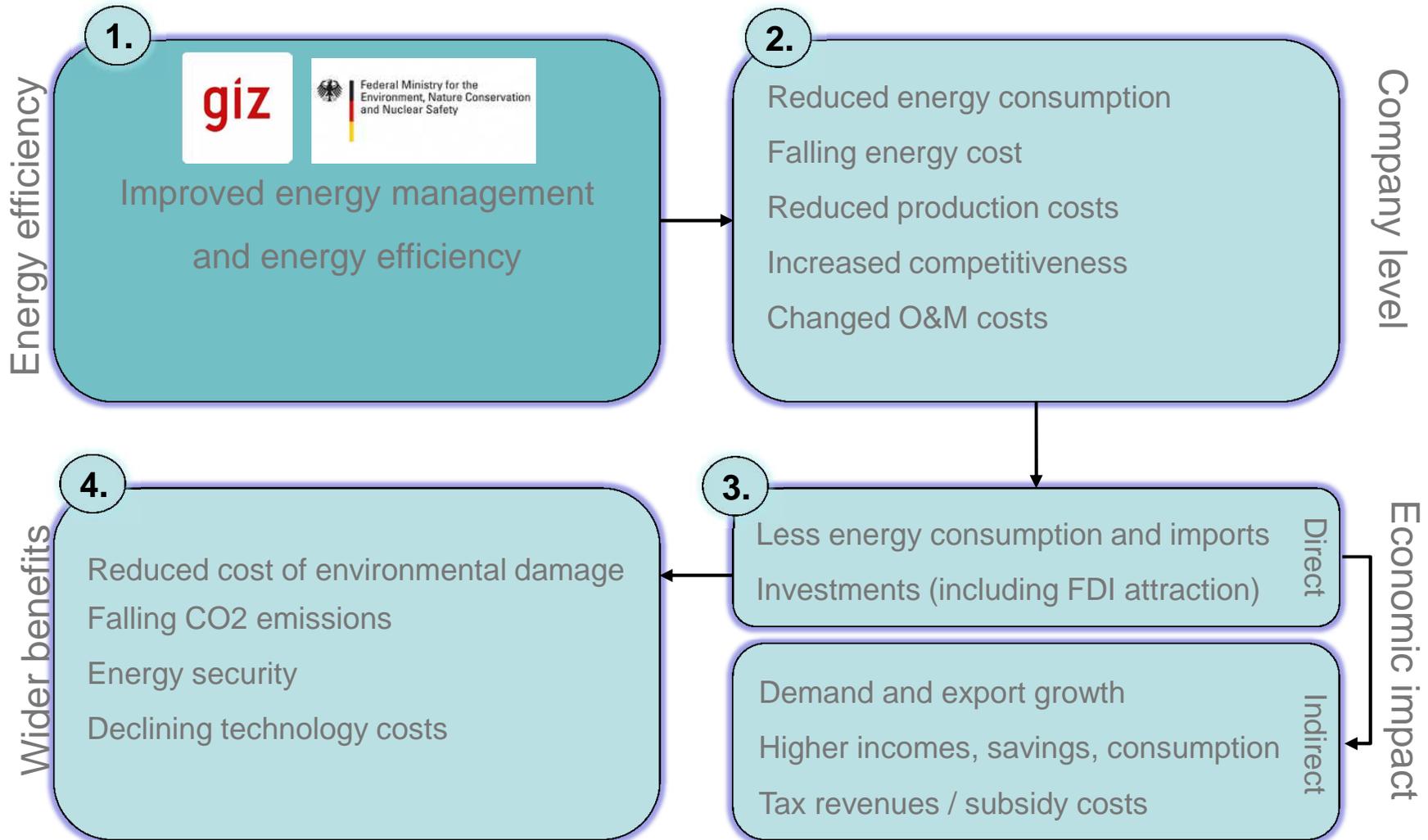
II. Understanding the economic impact

III. Suggested methodology

II. Understanding the economic effects key to unlocking energy efficiency improvements

- A more efficient use of energy offers a significant economic potential however only if implemented on a national scale
- Individual companies likely to underestimate the economic benefits arising from implementing energy efficiency measures – less efficiency than would be in Ukraine's interest
 - This requires suitable policy instruments
- Many policy instruments exist while funds are limited
 - Policy should promote those measures that work best at given cost
 - Need a tool that can assess different policy options
- Need to understand the economic potential of improved energy efficiency to convince policy makers

What are likely economic effects?



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III. Steps involved in estimating the economic impact

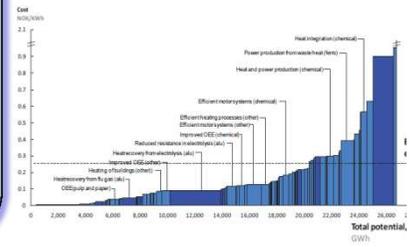
1.
Energy efficiency measures
 What measures are available?

- Donetsk pilot projects data and international experience
- Understand individual measures, reductions, costs



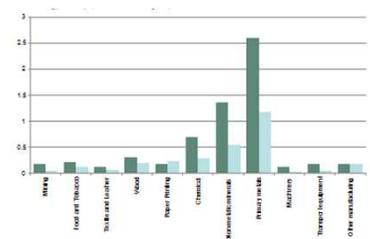
2.
Economic efficiency potential
 What is the scope for improved energy efficiency?

- Estimate the technical and economic potential for improved energy efficiency
- Aim: What kind of reduction is possible and what are the costs?
- Output: Abatement cost curve for Ukraine



3.
Benchmarking
 What is the status quo and how much improvement is possible?

- Benchmarking of status quo with (international) leaders in terms of energy efficient industrial production
- Aim: What kind of reduction is possible?



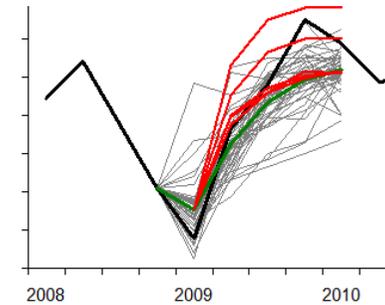
Steps involved in estimating the economic impact (continued)

4.

Direct economic impact

What are the direct economic benefits of increased efficiency?

- Focus on affected industries
- Impact on energy expenditure, energy imports, investments, etc.
- Reduced production costs and impact on competitiveness

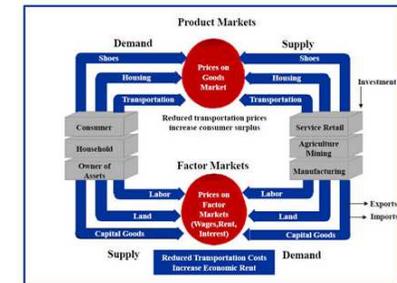


5.

Indirect economic impact

What are the knock-on effects?

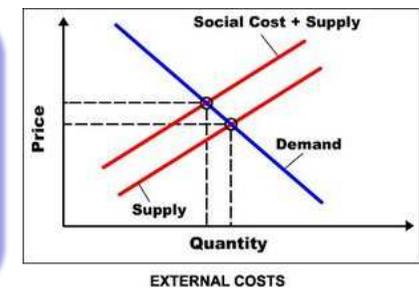
- CGE model to estimate effects on rest of economy
- Total GDP impact from energy efficiency improvements
- Focus: Effect on competitiveness and market shares



6.

Cost-benefit assessment

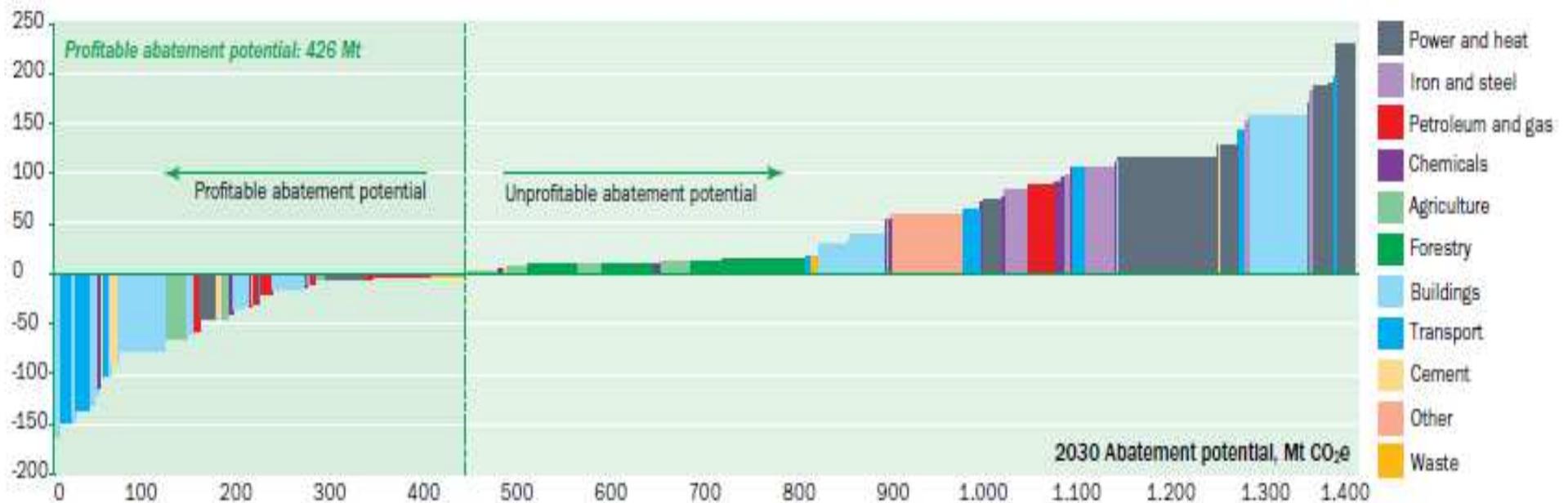
- Evaluation of wider benefits
- Reduction in CO2 emissions, reduced cost of environmental pollution, energy security, etc.
- Overall assessment of policy scenario



Step 2: What is Ukraine's potential for energy reduction?

Example of an abatement cost curve

Abatement cost curve for Russia, EUR per tonne CO2 avoided



Source: McKinsey & Company, EBRD

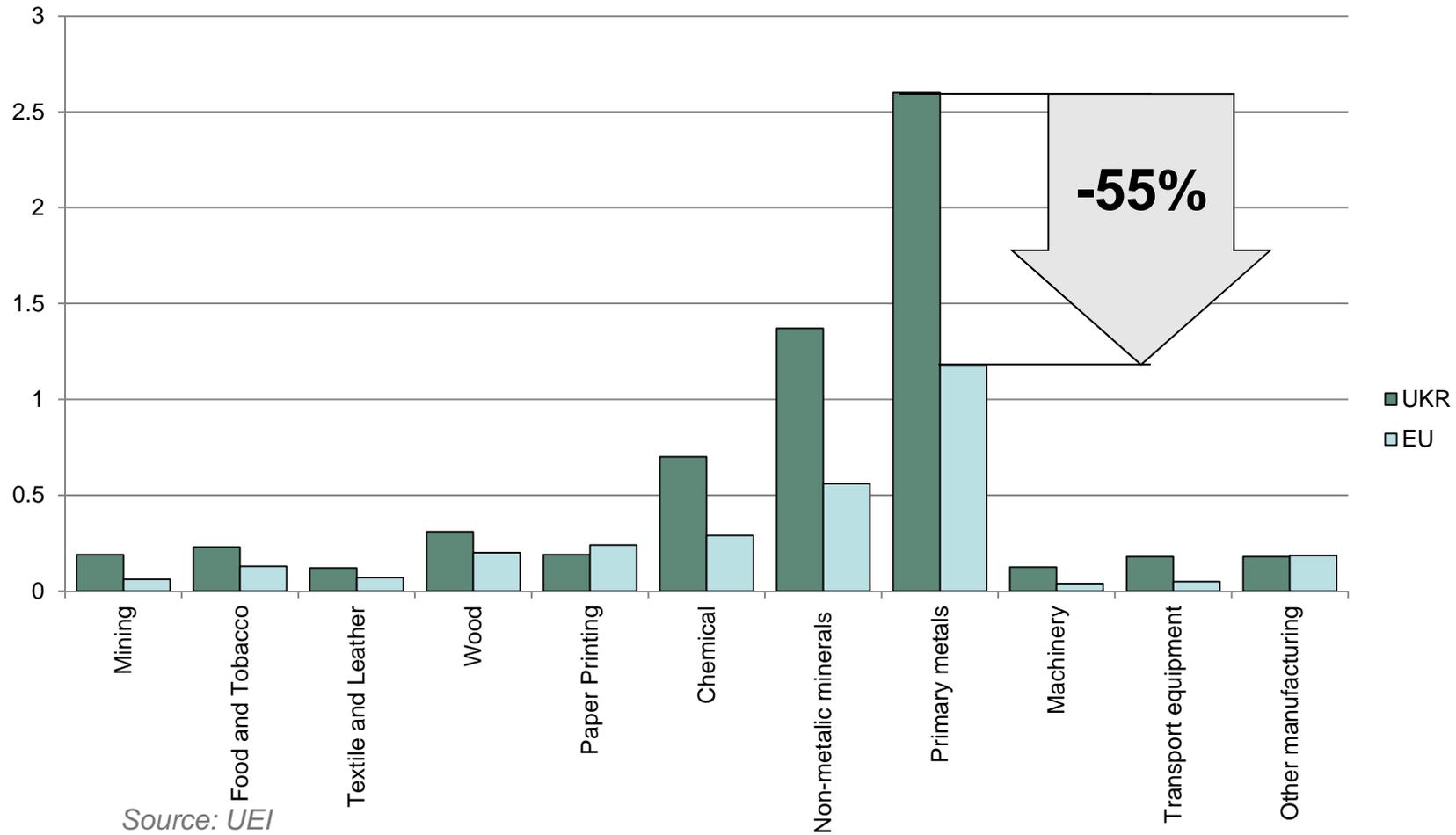
Step 3: Benchmarking approach

Benchmarking will be used to determine which reduction is technically possible

- Top down approach
 - Comparison with group of best countries
 - Alternatively comparison with best available technology e.g. newly build factory
- Bottom up
 - Review of individual energy efficiency measures
- We will combine both approaches
- Mind differences in industrial structure that can not be addressed through energy efficiency
- Good approach to determine potential but need yet to understand how it will affect the economy

What is a likely benchmark benchmark?

Energy intensity (koe/value-added measured at EUR PPP-weighted) in 2011



Source: UEI

Step 4: Estimating the economic effects of improved energy efficiency

Reducing energy efficiency is likely to have a substantial impact on the regional and national economy

- Direct effects include investments, reduced energy costs, energy imports and are straightforward to assess
- BEST estimates that improving energy efficiency in industry in the Donetsk Oblast to EU level could reduce energy consumption by 4.6 million tonnes of oil equivalent
- This could save energy cost of around EUR 2 billion per year

Step 4 and 5: Estimating the economic effects of improved energy efficiency

- However, there will be further knock-on-effects on the wider economy
 - Changed production costs and in turn competitiveness
 - This will affect demand and export potential
 - Investment can trigger demand for other sectors of economy
 - Consequence higher incomes, savings, consumption
 - Employment
- Standard tool to assess these effects is a Computable General Equilibrium (CGE) model
- Main result will be total impact on GDP
- Ideal tool to assess different policy options and scenarios

Thank you!

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