

Monitoring of Energy Demand Trends and Energy efficiency in the EU

ODYSSEE-MURE (EU-27)

Grant agreement N° EIE-07-297

*Project duration (24 months):
from September, 18.2007 to September, 17.2009*

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ODYSSEE-MURE project in brief

This project has five main objectives:

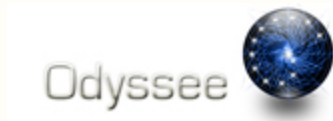
- Monitor energy efficiency progress (and CO₂- reduction) for the EU-27 countries plus Norway and Croatia
- Understanding the energy demand trends for EU countries
- Compare the countries in their relative energy efficiency performance, as well as to benchmark values.
- Measuring the contribution of innovative energy efficiency and renewables technologies to the Lisbon targets to make Europe more competitive;
- Analyse and evaluate the performance of energy efficiency policies in the different EU Member States and at EU level

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Main output/ results of the ODYSSEE-MURE

- ❖ This project relied on two complementary and well established internet databases, covering the EU and 29 countries (EU 27, Norway and Croatia):
 - ✓ ODYSSEE, on energy efficiency / CO₂ indicators and on the data required for their calculation (energy use data and their socio-economic drivers);
 - ✓ MURE, on energy efficiency measures and their impact evaluation.



The two databases are available at:

<http://www.odyssee-indicators.org/>

<http://www.isisrome.com/mure/>



- ❖ Production of different products of dissemination :
 - ✓ Sectoral profiles : set of slides presenting energy efficiency trends by sector and country
 - ✓ Country profiles : 2 pages on main energy efficiency trends and policies by country
 - ✓ Country reports : detailed national reports on energy efficiency and policies
 - ✓ 4 sectoral brochures : report on energy efficiency trends in Europe
 - ✓ 5 newsletters: to inform regularly more than 2500 contacts

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ODYSSEE-MURE : a network of 33 partners coordinated by ADEME

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Energia Központ Kht.



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Background of ODYSSEE MURE project

❖ Why ODYSSEE MURE databases ?

- ✓ to have consistent and updated data and indicators on energy efficiency by EU-27 countries (plus Norway and Croatia)
- ✓ to compare, evaluate the differences between countries in their relative energy efficiency performances and identify potentials for improvement
- ✓ estimate top-down energy savings and indicators in all EU countries in the framework of EU directives, such as ESD or national policies, such as NEEAP

❖ Who use ODYSSEE MURE databases ?

- ✓ **DG-TREN**: explicit reference in the Energy Service Directive to the ODEX indicators;
 - ✓ **EMOS** observatory database includes about 20 indicators from ODYSSEE
- ✓ **EEA** (European Environmental Agency): use of ODYSSEE indicators in the annual TERM report and to produce indicators fact sheets
- ✓ **JRC Ispra and IPTS** : use ODYSSEE data for different studies for the Commission, including the reference system SRS for energy efficiency monitoring.
- ✓ **IEA**: use of ODYSSEE data to build its indicators for European countries.
- ✓ **CEN/CENELEC** : preparation of a standard on energy saving calculation with top-down indicators

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Objectives and main steps

ODYSSEE MURE project contributes significantly to monitor energy-policy actions in the EU Member countries and can be used to design new and more efficient energy policy in the future.

ODYSSEE database through around 200 indicators by country on energy efficiency can be used by experts in charge of energy environment policy to monitor or evaluate energy/efficiency policy at national or EU level

➤ Objectives of the project:

- ✓ Assessment and analysis of the energy efficiency improvement at EU level and for the EU-27 countries (plus Norway and Croatia) through updated and harmonised indicators (Odyssee db)
- ✓ Assessment and analysis of policy measures on energy efficiency and CO2 (MURE db)
- ✓ Regular exchange between member countries or experts in the calculation and evaluation of top-down energy savings and policies
- ✓ Dissemination of the results through two on-line database or documents (on website) or brochure (sectoral brochures publish by ADEME)

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Expected results

- Assessment and analysis of the energy efficiency improvement and (energy related) CO2 abatement by sector at the EU-27 level and for each Member State, Norway and Croatia over the last 10 years through updated and harmonised indicators.
- Provision of benchmark values to compare the relative energy efficiency performance of EU Member countries through adjusted and comparable indicators, with the supporting analysis to understand the differences observed , as well as comparing the EU with other OECD countries.
- Assessment and analysis of policy measures for the rational use of energy and for the promotion of end-use renewables in EU Member States, as well as of their impact.
- Report by sectors on energy efficiency trends and policies (industry, buildings and transport).
- Adoption of a common methodology to calculate and monitor top-down energy savings

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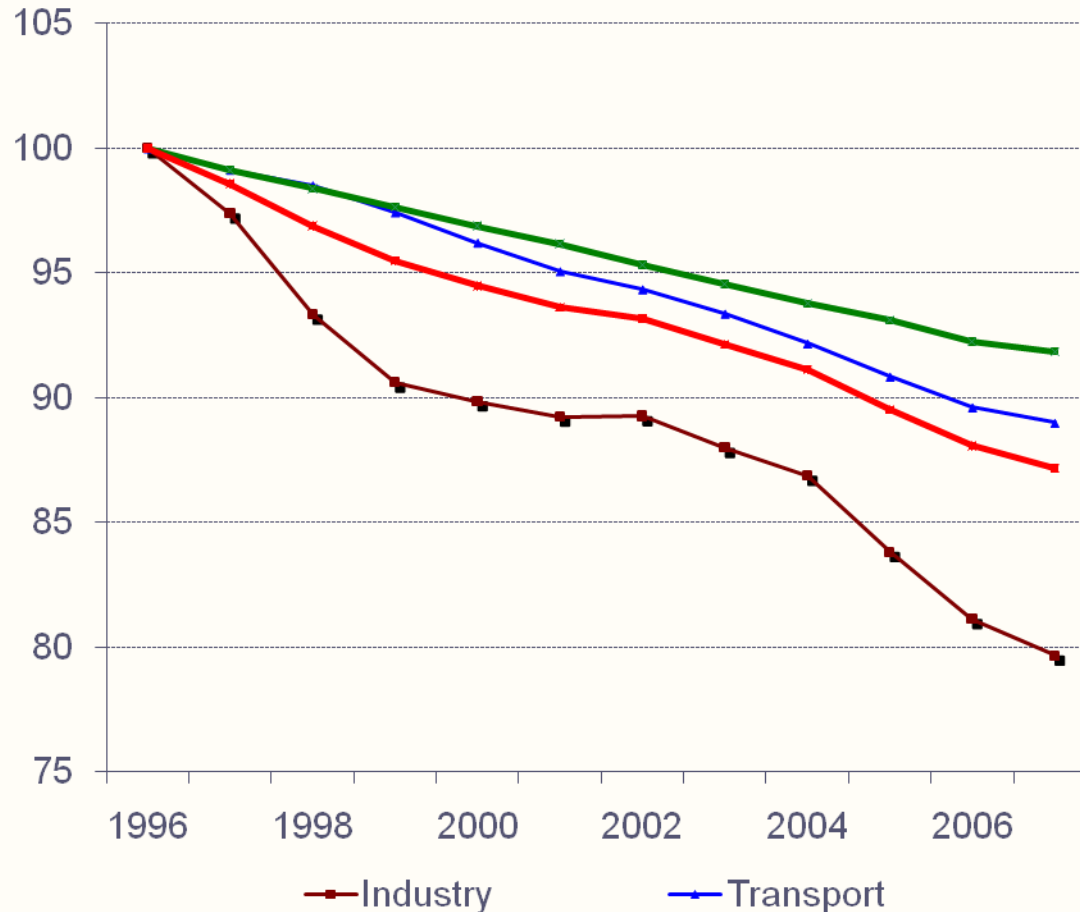
Main results of the project

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Energy efficiency progress in the EU-27

Energy efficiency in the EU-27 improved by about 13% between 1996 and 2007, corresponding to 160 Mtoe energy savings in 2007



Source : ODYSSEE

Methodology: based on ODEX calculation

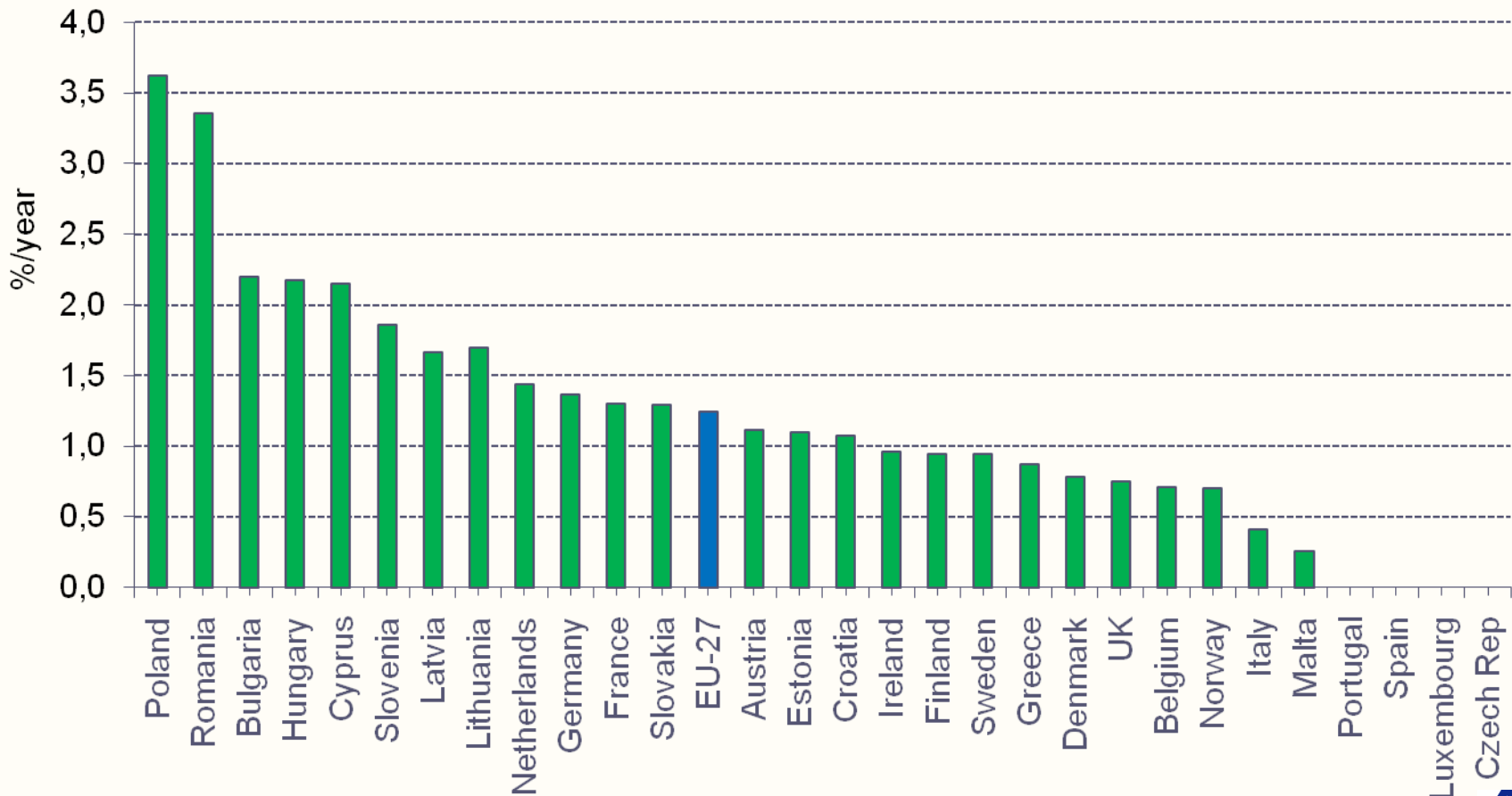
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Energy efficiency progress in EU countries

Large discrepancies in energy efficiency progress through countries: more 2%/year for 6 New Member countries to less than 1%/year for 10 countries.

No more gains for 4 countries Portugal, Spain, Luxembourg and Czech Republic



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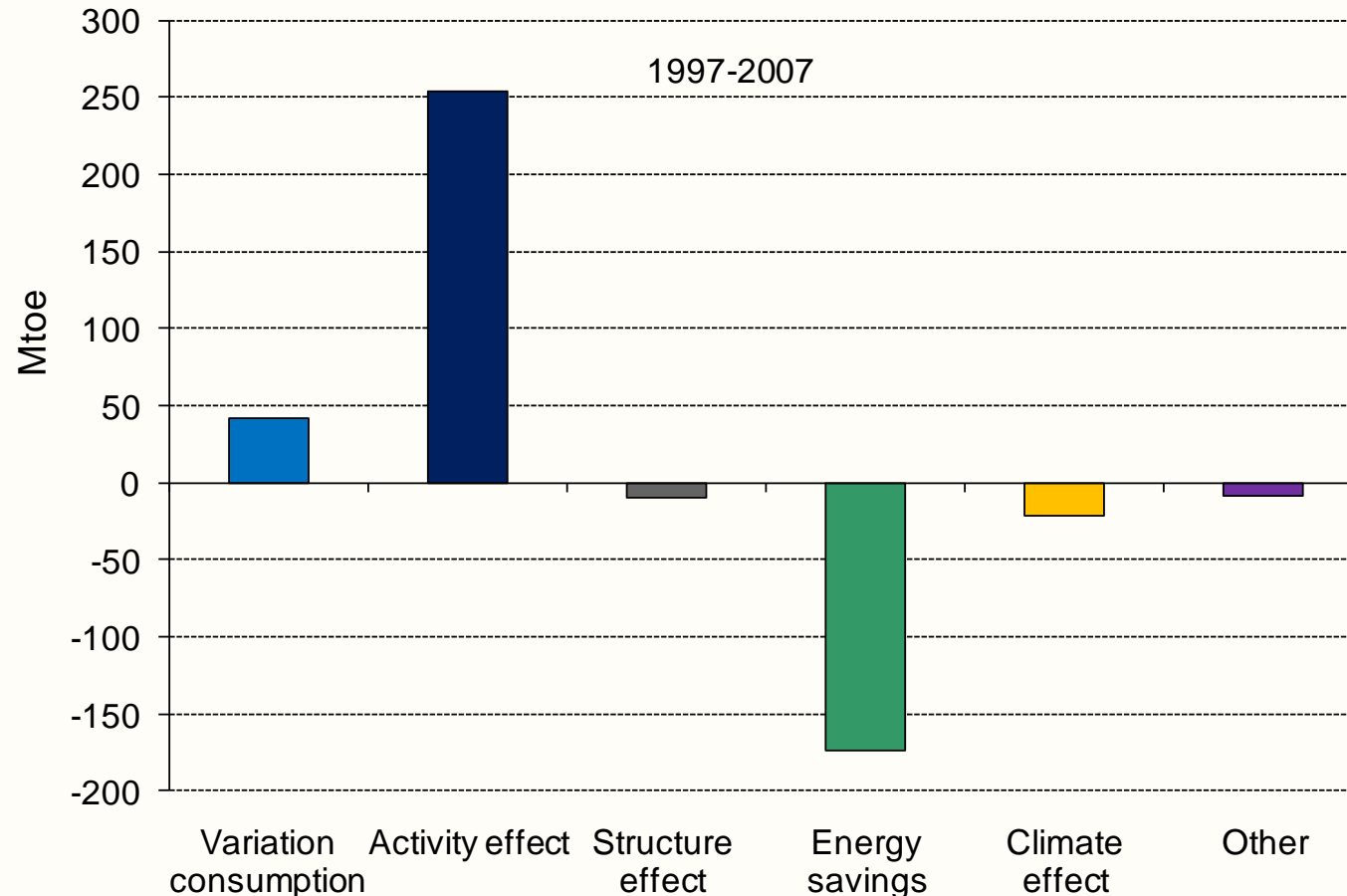


Source : ODYSSEE

Methodology: Energy efficiency improvement (ODEX) over the period 1996-2007

Drivers of the variation of the final energy consumption in the EU

The activity effect has contributed, all things being equal, to increase the consumption by 230 Mtoe between 1997; energy savings (175 Mtoe), structural effect and climate effect have limited the consumption increase.



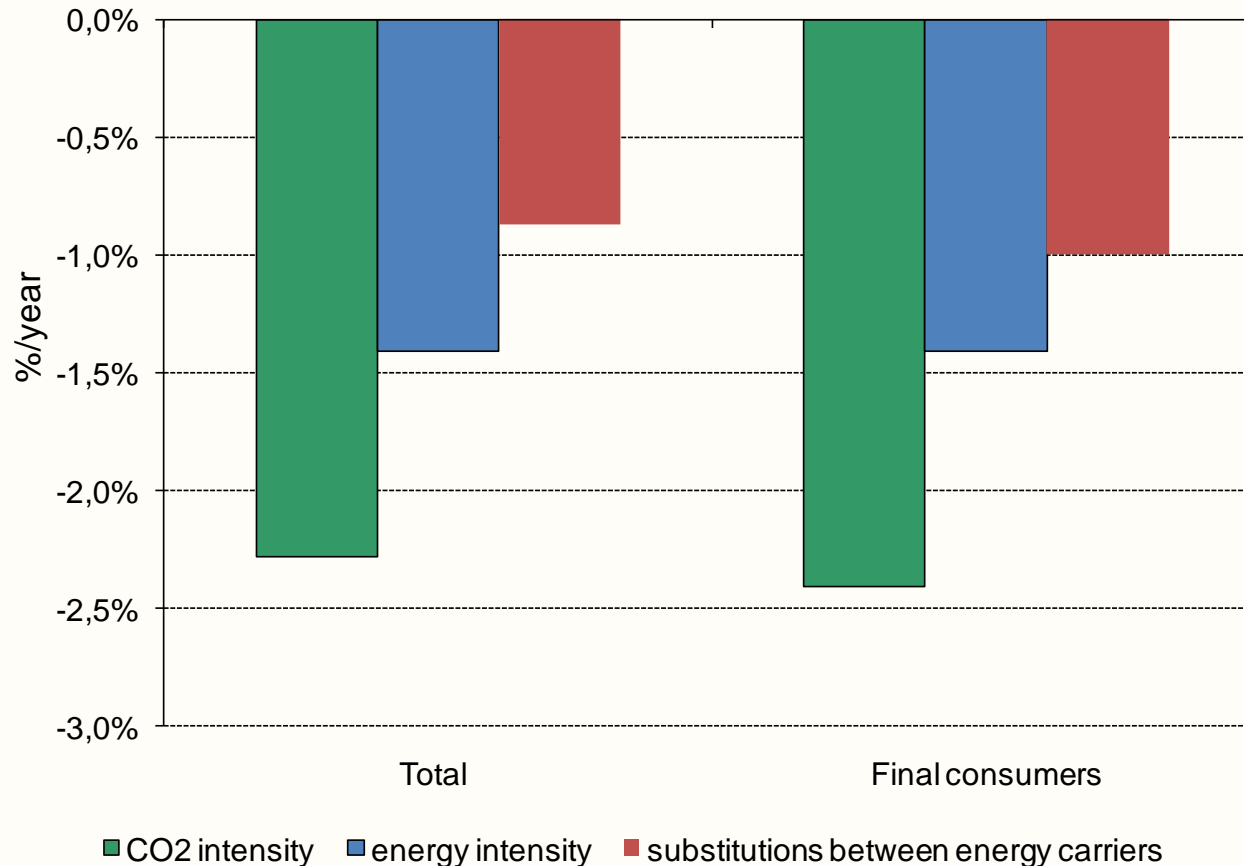
Source : ODYSSEE

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Variation of CO₂ intensity in the EU between 1990 and 2007

CO₂ emissions from energy use were 5 % below their 1990 level in 2007.
Almost 40% of the reduction in CO₂ intensity is due to increased use of energy carriers with lower emission factors

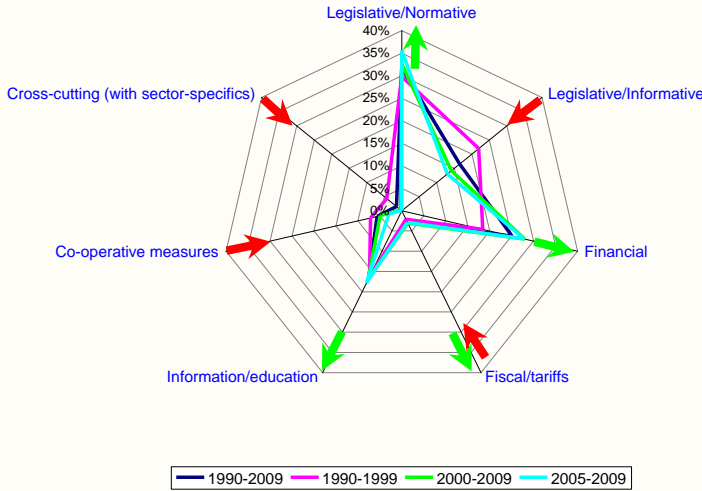


Source : ODYSSEE

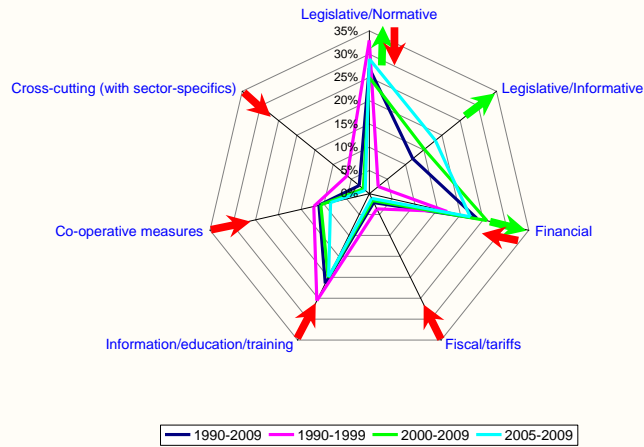
Patterns of energy efficiency policies by sector (1990-2010)

In the EU countries, prevalent measure type in households and tertiary are legislative / normative and financial; in industry, most of measures are financial measures to support audits and investment in energy efficiency; in transport the most common measures are more mixed

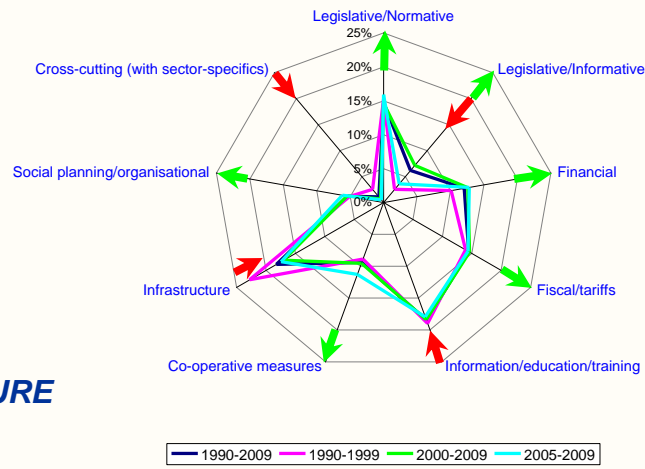
Households



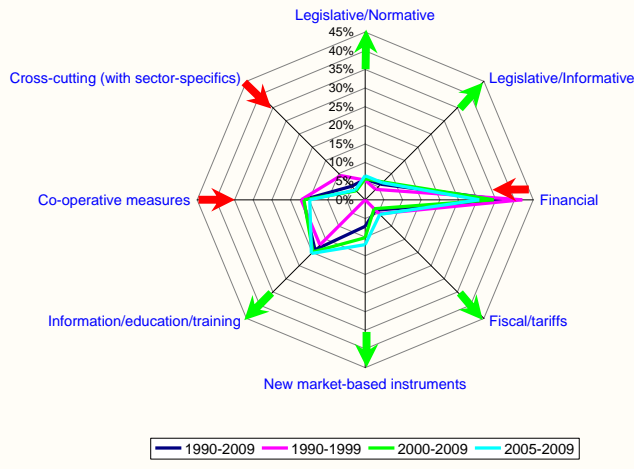
Tertiary Sector



Transport



Industry



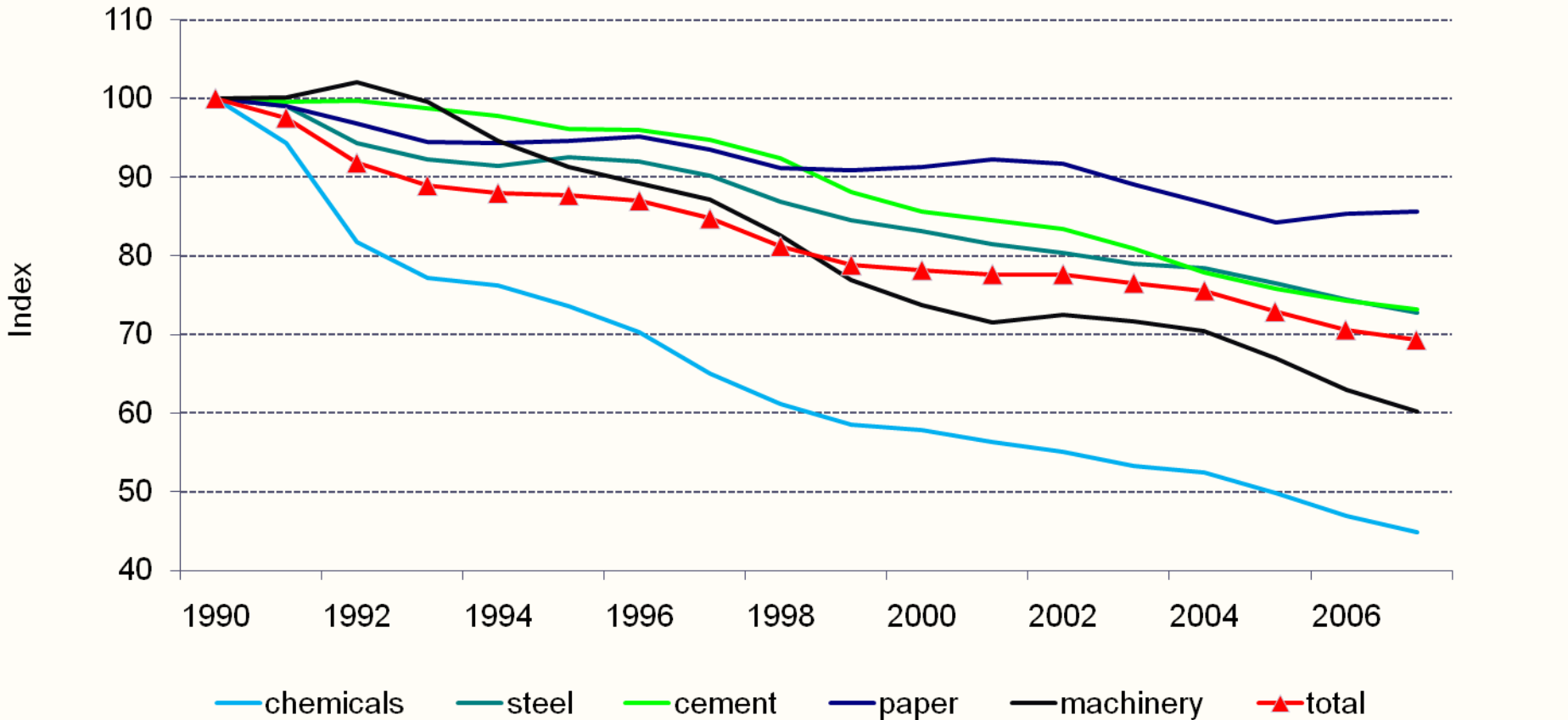
Source : MURE



Note: red arrows indicate shrinking importance, green arrows increasing importance

Energy efficiency index in industry (EU-27)

Around 30% progress in energy efficiency in industry in the EU-27 since 1990;
slow progression since 1998 (1,7 %/year compared to 2.6%/year from 1990 to 1998)

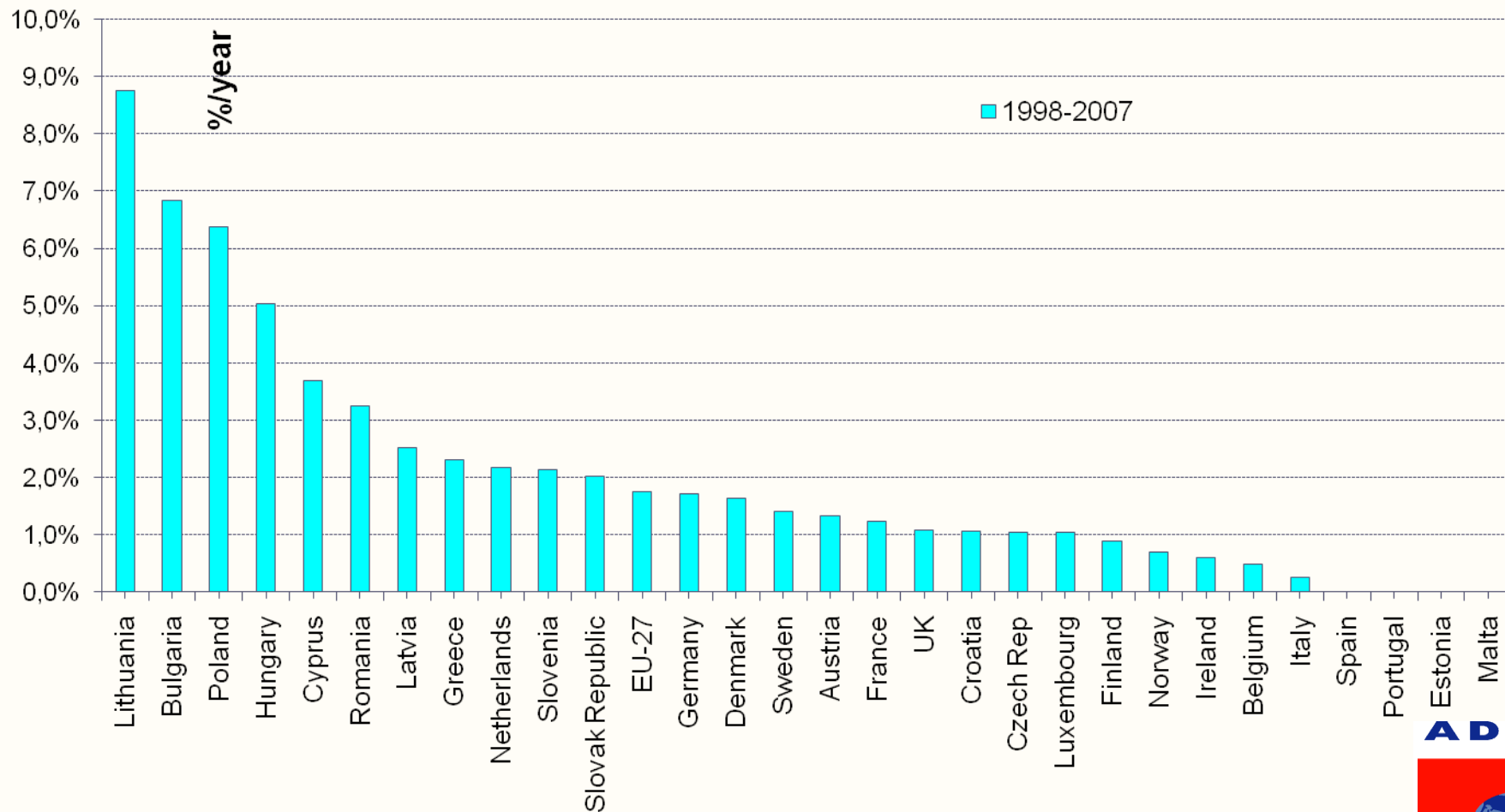


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Energy efficiency improvement in industry by country

Large discrepancies between countries in improvement in energy efficiency : from less than 1%/year for 5 countries (Italy, Belgium, Ireland, Norway and Finland) to more than 6%/year for 3 New Member countries (Lithuania, Bulgaria and Poland)



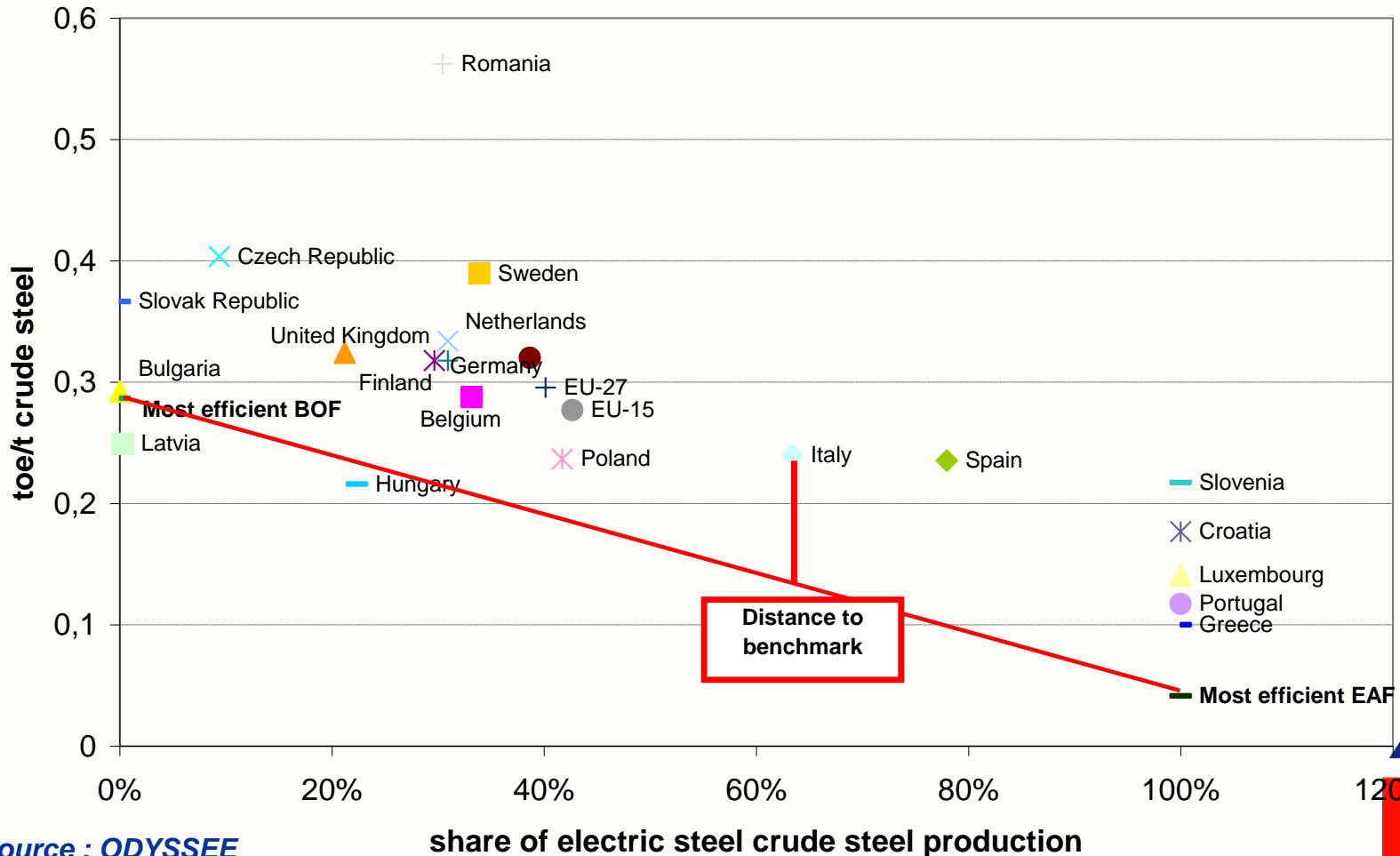
Source : ODYSSEE

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Industry: performance of the steel industry

The graph illustrates the performance of the European steel sector across the different countries in relation to the process mix. Some new EU Member States have reached good performance levels due to the renewal of the production equipment. However, in some countries such as Romania or Czech Republic still further improvement is possible.



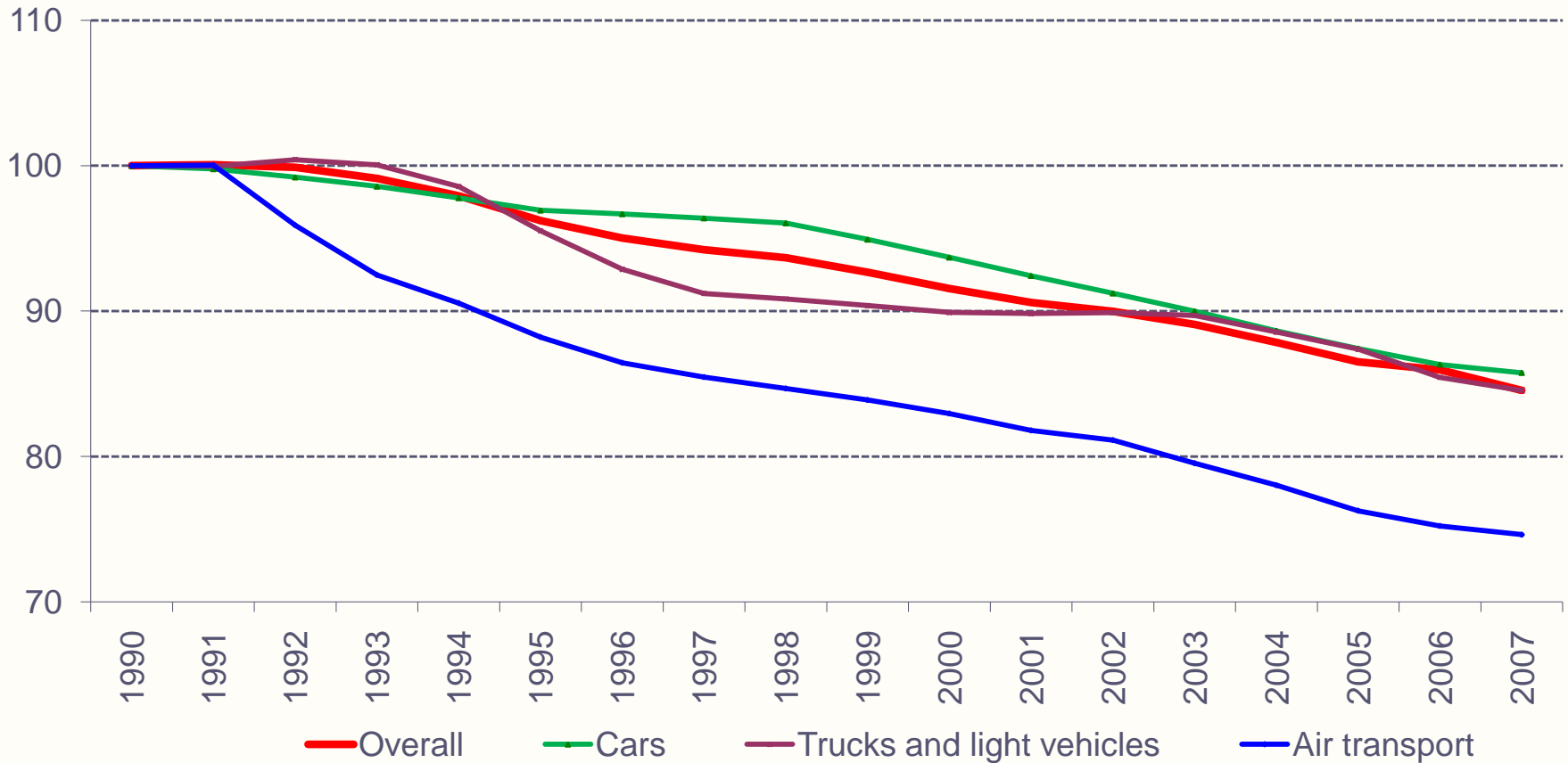
Source : ODYSSEE

Note: The vertical distance to the red line indicates the distance to the benchmark



Energy efficiency index in transport (EU-27)

Regular improvement of the energy efficiency of transport by 15% since 1990
Slow down in efficiency of trucks and light vehicles since 1999

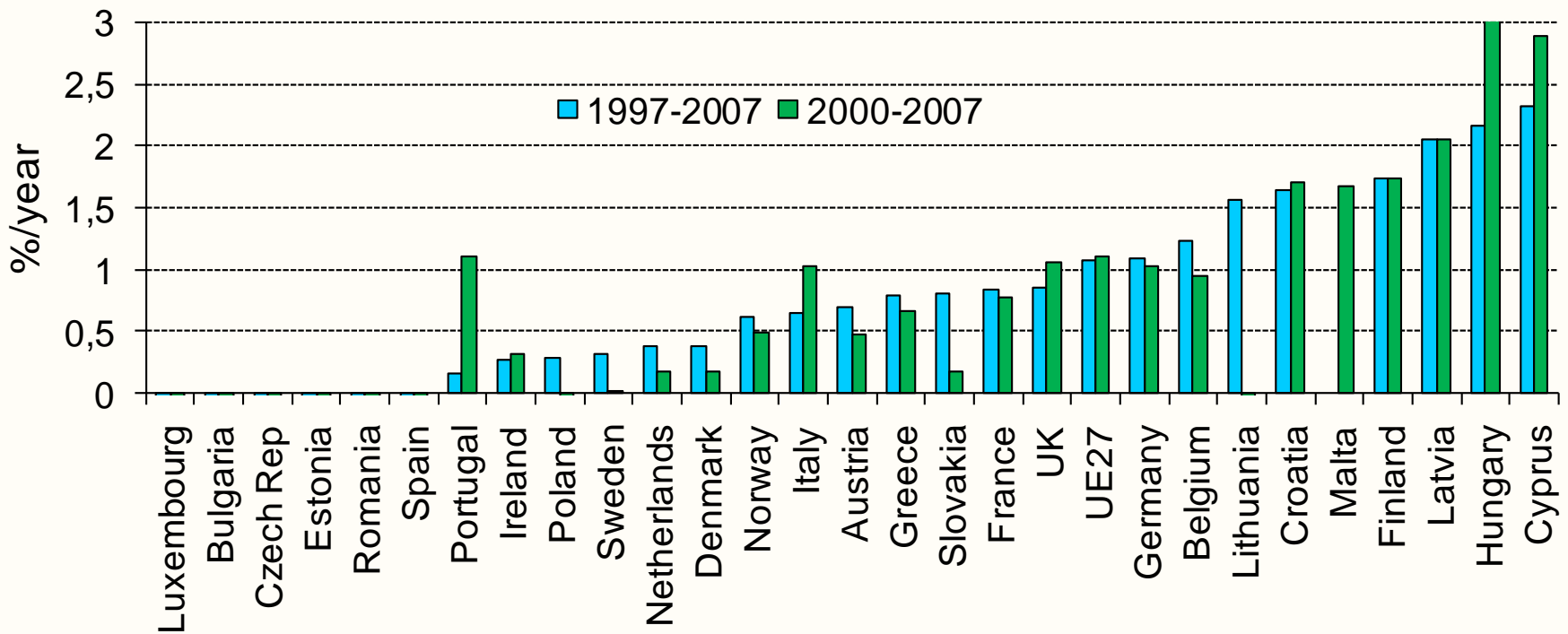


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Energy efficiency improvement in transport by country

Improvement in energy efficiency in almost all the countries, except for 7 countries (mainly due to goods road transport)



Source : ODYSSEE



Share of public transport in passenger traffic

Decreasing share of public transport in passenger traffic in most of countries
 Stabilisation in Germany, Italy, Sweden and Denmark and slight increase for 4 countries
 (Spain, France, UK and Belgium)



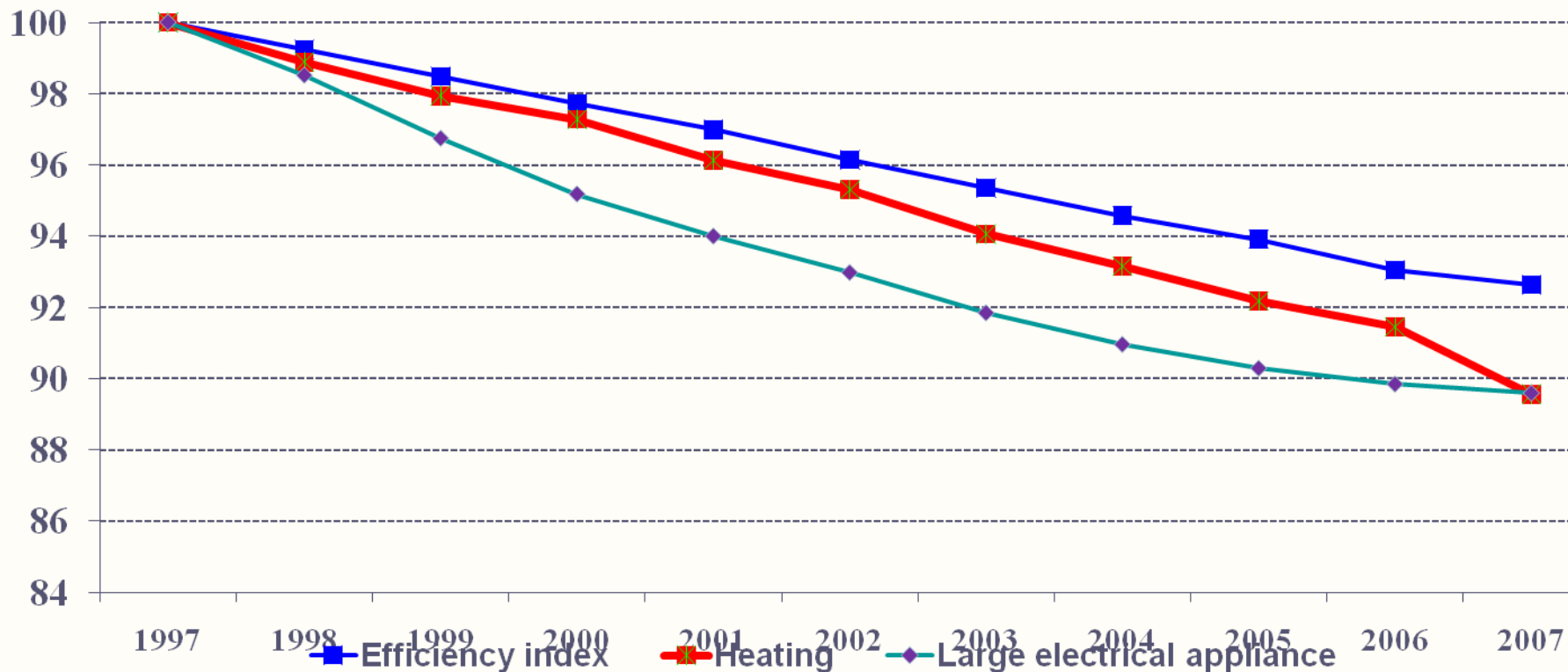
Source : ODYSSEE

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Energy efficiency index in households (EU-27)

8 % energy efficiency progress between 1997 and 2007 (0.8%/year)



Source : ODYSSEE

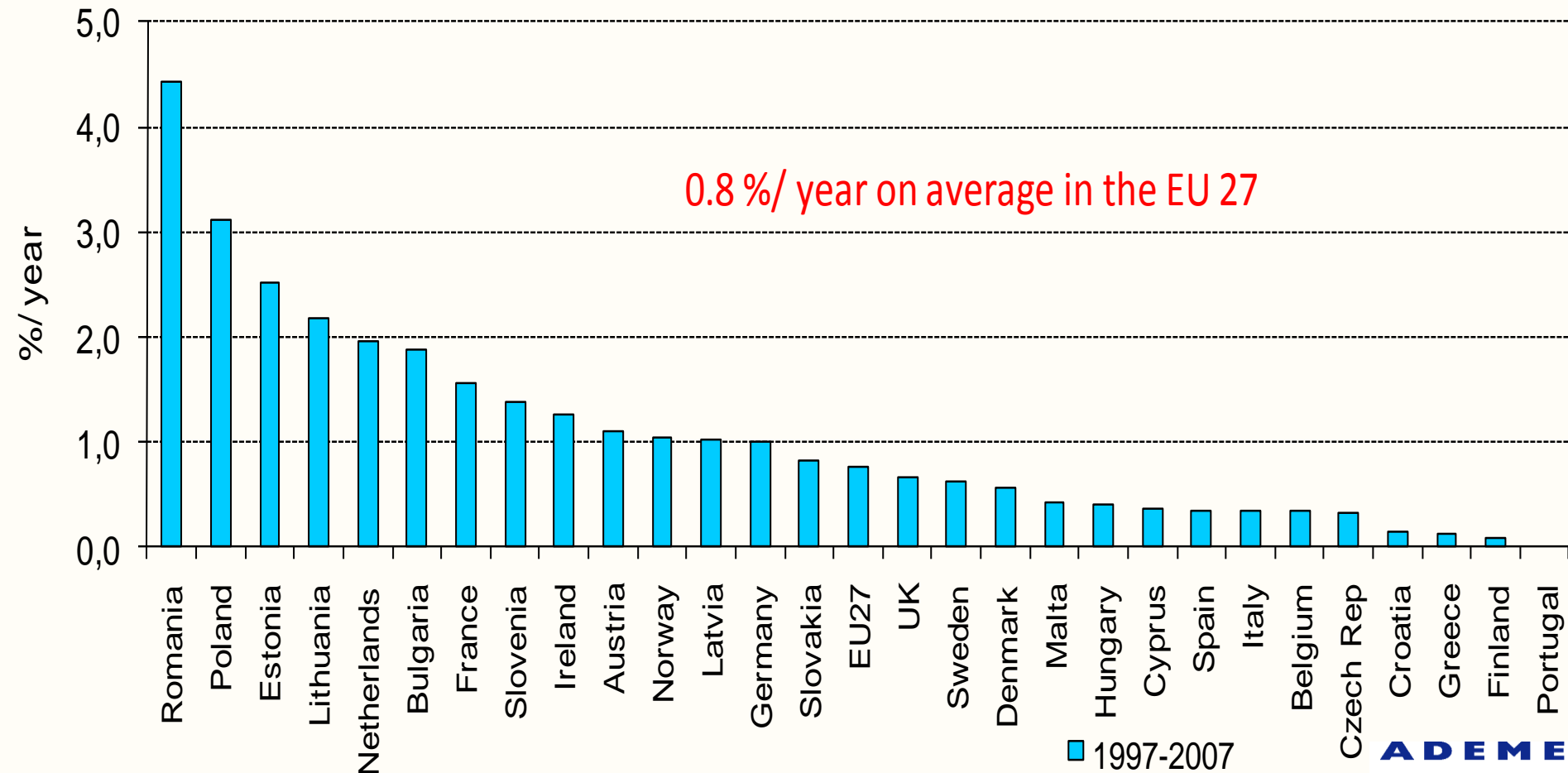
Notes: ODEX is an index weighting the energy efficiency progress gains of 8 end-uses/appliances : heating (toe/m²) water heating, cooking (toe/dwelling), refrigerators, freezers, washing machine, dishwashers and TV (kWh/year)

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Energy efficiency improvement in households by country

Most improvement had been realized in new Member Countries since 1997 : more than 2%/year for Romania, Poland, Estonia, Lithuania; more than 1%/year for 9 countries Germany, Latvia, Norway, Austria or Netherlands



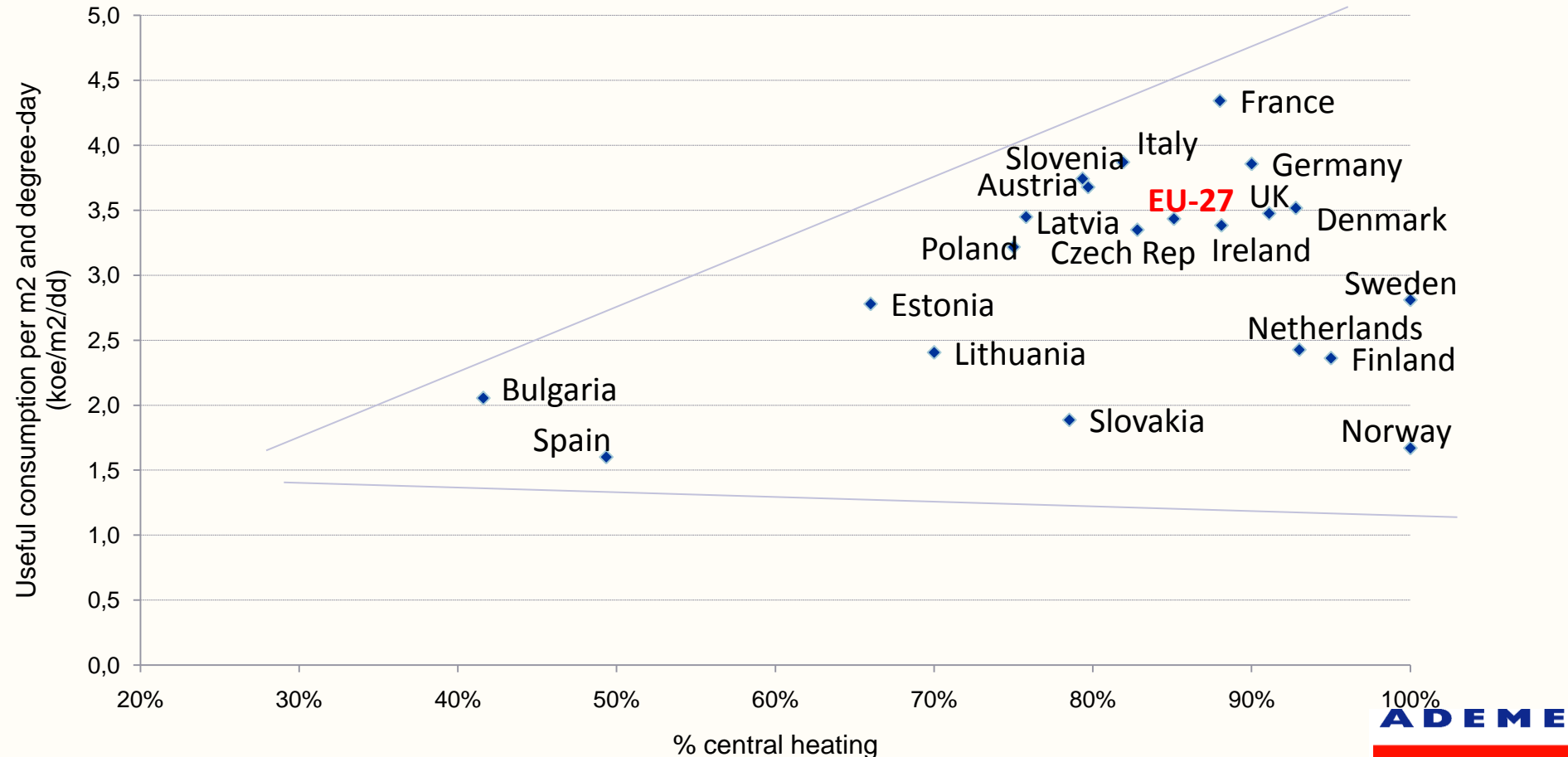
Source : ODYSSEE

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Useful energy requirement per m² for space heating

Important gap in useful heating consumption (factor 2) among countries. Nordic countries such as Norway, Finland, Netherlands even Slovakia have the best performance (or the lowest requirements) and their performance could be considered as a target for the other countries.



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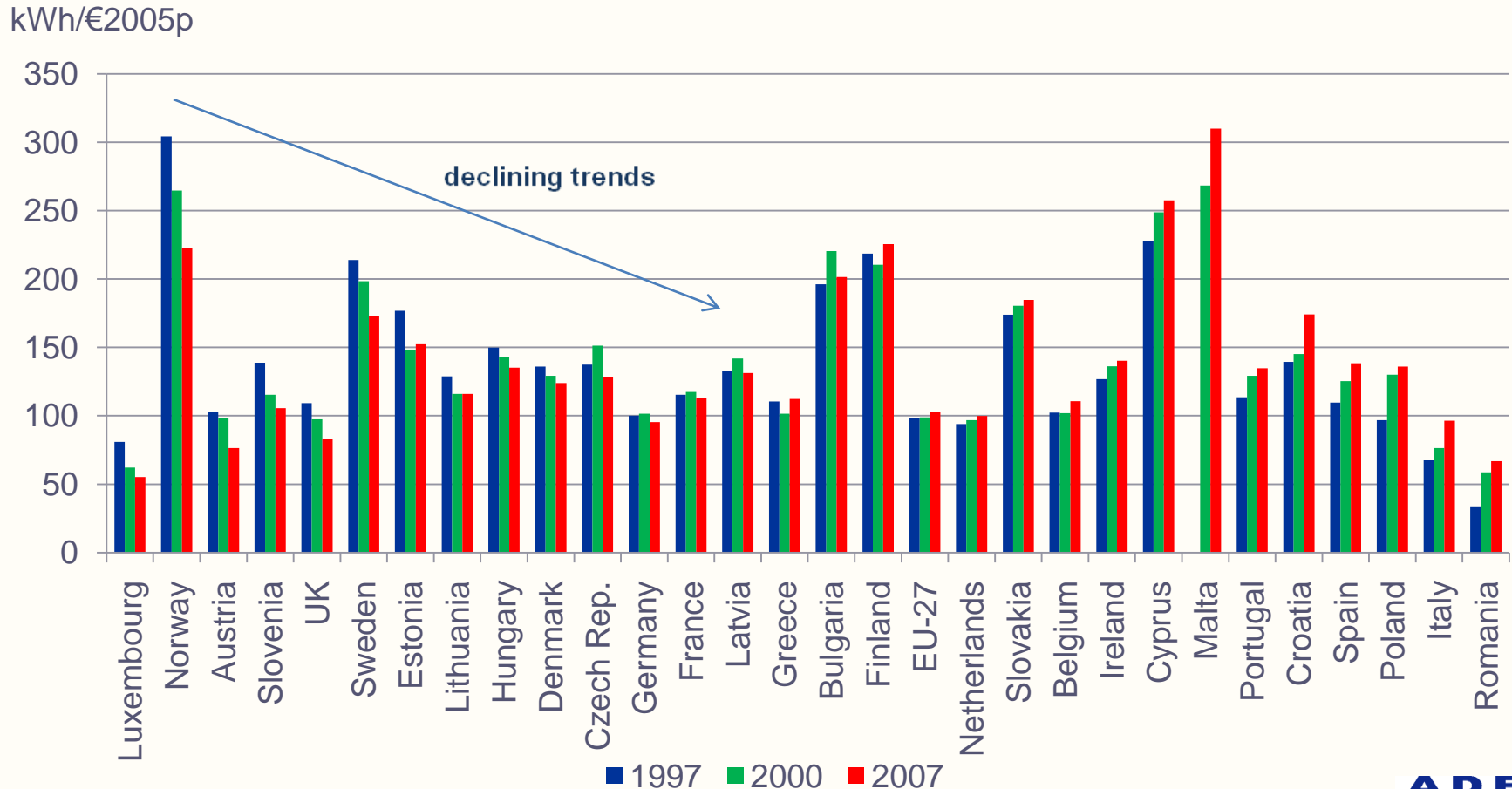


Source : ODYSSEE

Notes: Heating demand in this graph is expressed in useful energy, corrected from climate and fuel mix

Electricity intensities in services in the EU-27 countries

Declining electricity intensity (ie decoupling electricity consumption and activity) in almost half of the countries and stabilisation in France and EU-15



Source : ODYSSEE

Notes: Electricity intensity expressed in kWh per one unit of Euros of 2005 in purchasing power parities

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