



ADEME



Monaco, 29-30 March 2007

Energy and sustainable development in the mediterranean
Plan Bleu

The need for a regional monitoring of energy

A European experience : the ODYSSEE project

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- > Energy efficiency indicators comparison : The ODYSSEE project
- > What types of EE indicators?
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Monitoring the revival of energy efficiency policies

- > **At EU level**, important pieces of legislation have been adopted to reach the target of the ECCTP, EEAP, Green Paper on EE, EU Directives
- > **In the UNFCCC process**, the application of decision 13 CP.7 and art2 (1)b of the KP, on **exchange of information on good practices of P&Ms** and the obligation of reporting on **Demonstrable Progress (Art. 3.2 KP)** certainly rely on the setting up of a monitoring system for P&Ms .
- > **At national level**, there is a need for evaluation of the impact of public funding dedicated to EE P&Ms

➔ An increasing need for monitoring P&Ms implementation



The Energy Service Directive Target: Article 4 and Annexes I, II,

- > **Measured as from 1.1.2008.**
- > **9-year 9% target (cumulative annual savings).**
- > **Intermediate target for 3rd year.**
- > **Base for calculating target is 5-year average of unadjusted final consumption.**
- > **Conversion table in Annex II (2.5 for electricity).**
- > **Early actions initiated not earlier than 1995 (1991).**
- > **Early actions of a technical nature should be updated or assessed in relation to the benchmark for such measures. (All must be verifiable and measurable or estimable.)**

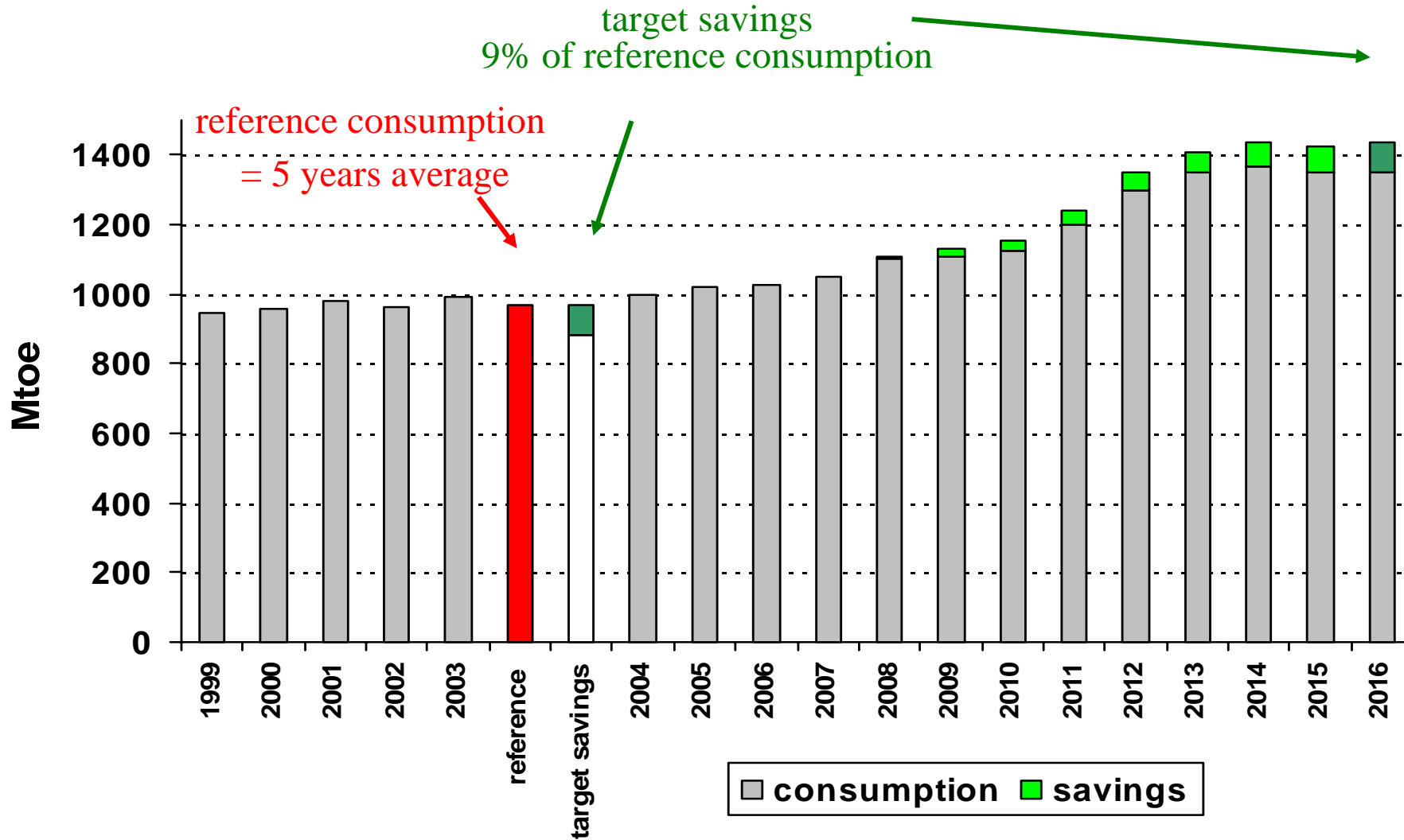


The use of indicators

- > 1) to measure the **energy efficiency progress** achieved and calculate energy savings
- > (2) to **explain the reasons** for the observed variation in the energy consumption
- > (3) to have **meaningful comparison** of countries energy efficiency situations
- > (4) to set up **target values** in terms of energy efficiency improvement
- 5) to explain the variations of **CO2 emissions**



The Energy Services Directive Target: Cumulative savings





ODYSSEE : a brief reminder

- > **A comprehensive and detailed technico-economic data base on Energy Efficiency Indicators and CO2 indicators at macro or sectoral levels;**
- > **A network able to review and report on past achievements of energy efficiency trends at EU and national levels.**

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ENERGI STYRELSEN

Motiva



SEI SUSTAINABLE ENERGY IRELAND

ENEA

IFE Institutt for energiteknikk



AGÊNCIA PARA A ENERGIA

IDA Instituto para la Diversificación y Ahorro de la Energía



Institut System- und Innovationsforschung

Swedish Energy Agency



CYPRUS INSTITUTE OF ENERGY



Energia Központ Kft.

LIAA



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Energy Centre Hungary

CEA



1918 TALLINNA TEHNIKAÜLIKOOL TALLINN UNIVERSITY OF TECHNOLOGY



"Jožef Stefan" Institute



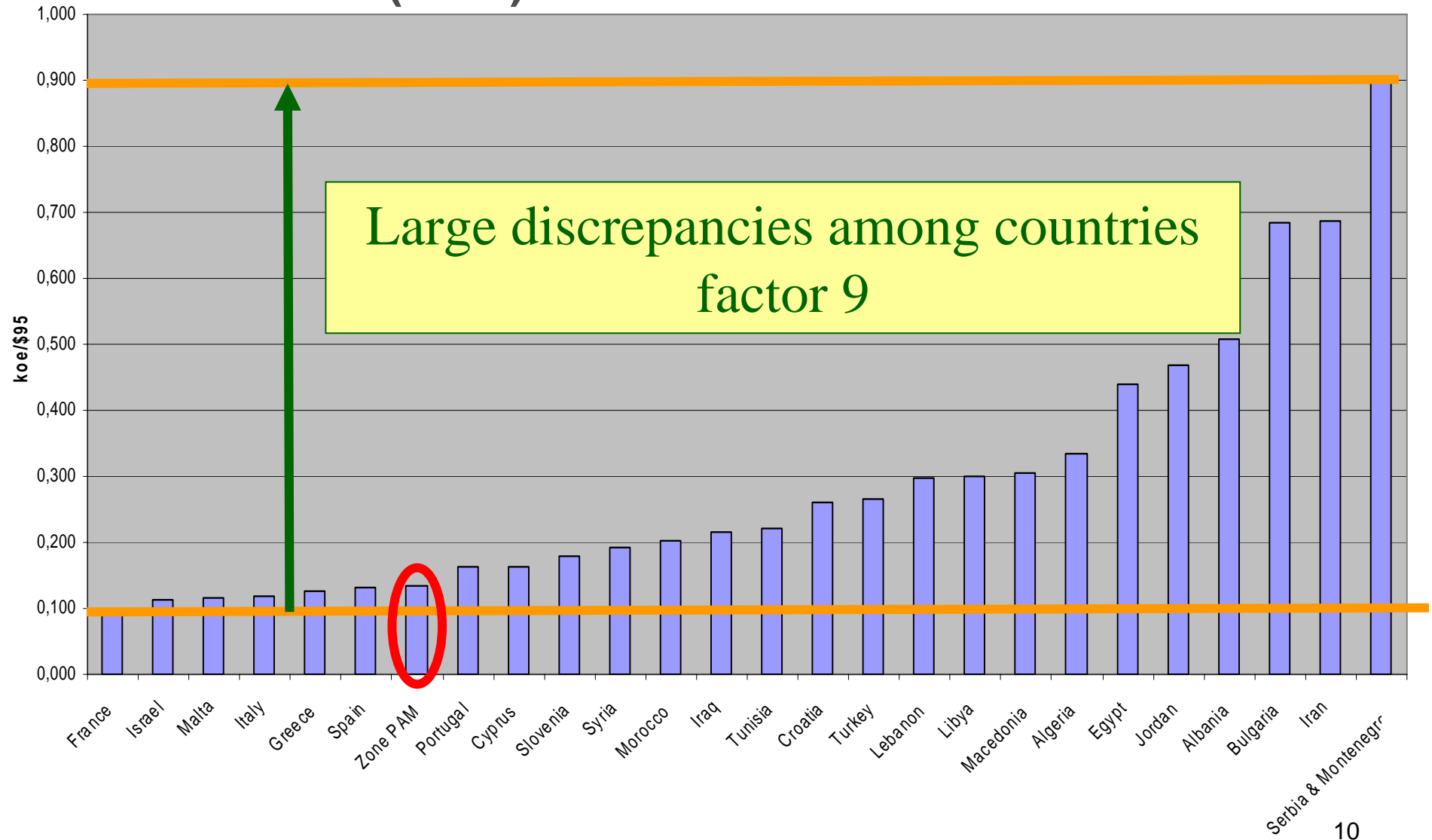
ODYSSEE

Energy efficiency and CO2 indicators

- > **Macro-economic indicators**, such as energy intensities
- > More detailed **technical and economic indicators**, at the level of sub-sectors (industry, services), end-uses (heating, major household electrical appliances), modes of transport (cars, trucks...), so as to improve the interpretation of the factors behind the trends observed (technical, behavioural, economic...).
- > The **newly developed energy efficiency indices** (“aggregate bottom-up indicators”) that provide a synthetic overview of sectoral trends in energy efficiency.
- > Understanding the differences between countries in their relative performance and comparing them with **benchmark values** (the EU average, the three best EU countries) will be also part of the study (“**adjusted**” and “**target indicators**”).
- > To enrich the analysis with **diffusion indicators** (penetration rate of efficient technologies (label A refrigerator , LFC’s) or good practices.

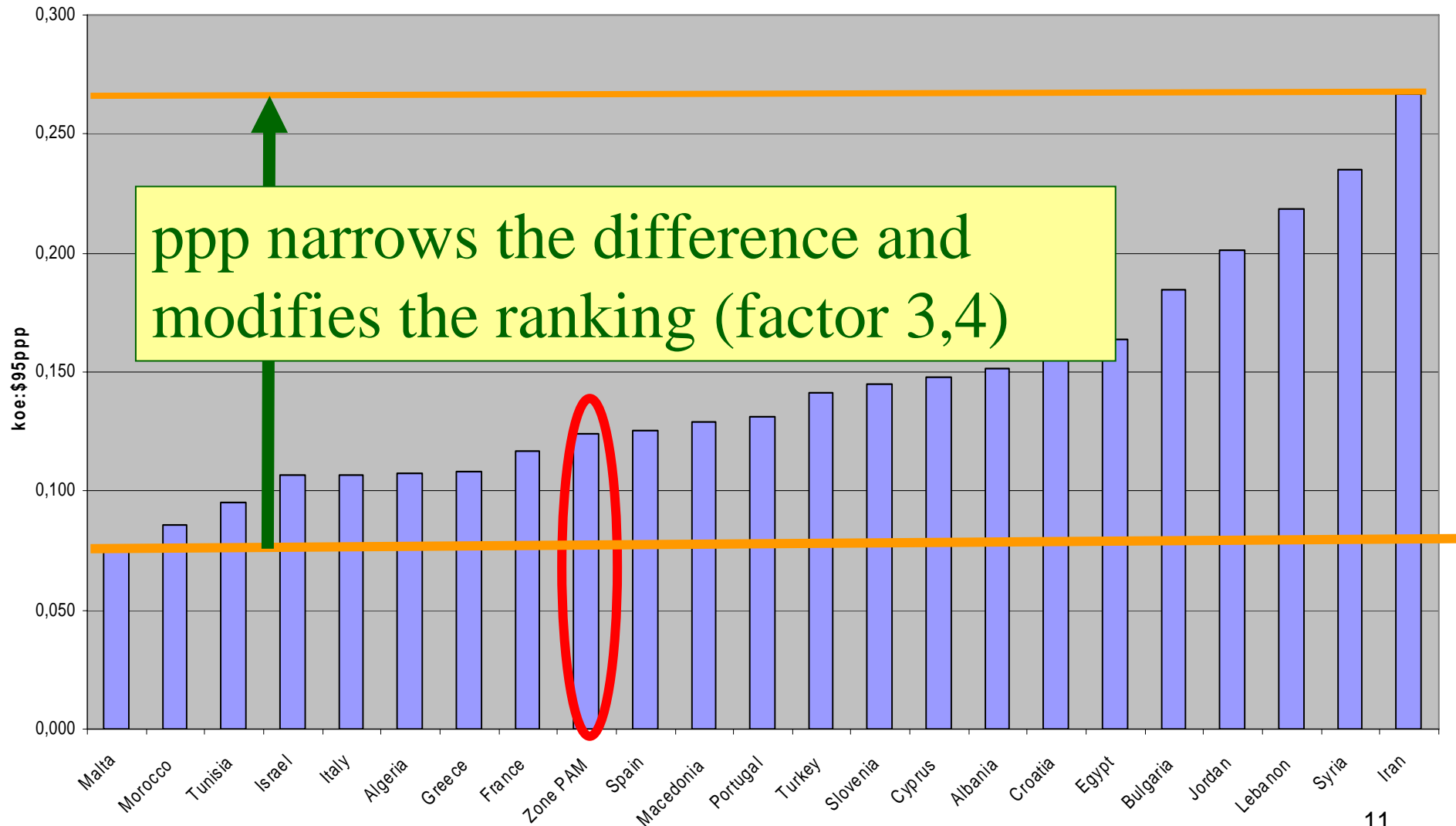


Final energy intensities (koe/\$95) in mediterranean countries (2005) source Enerdata -ADEME



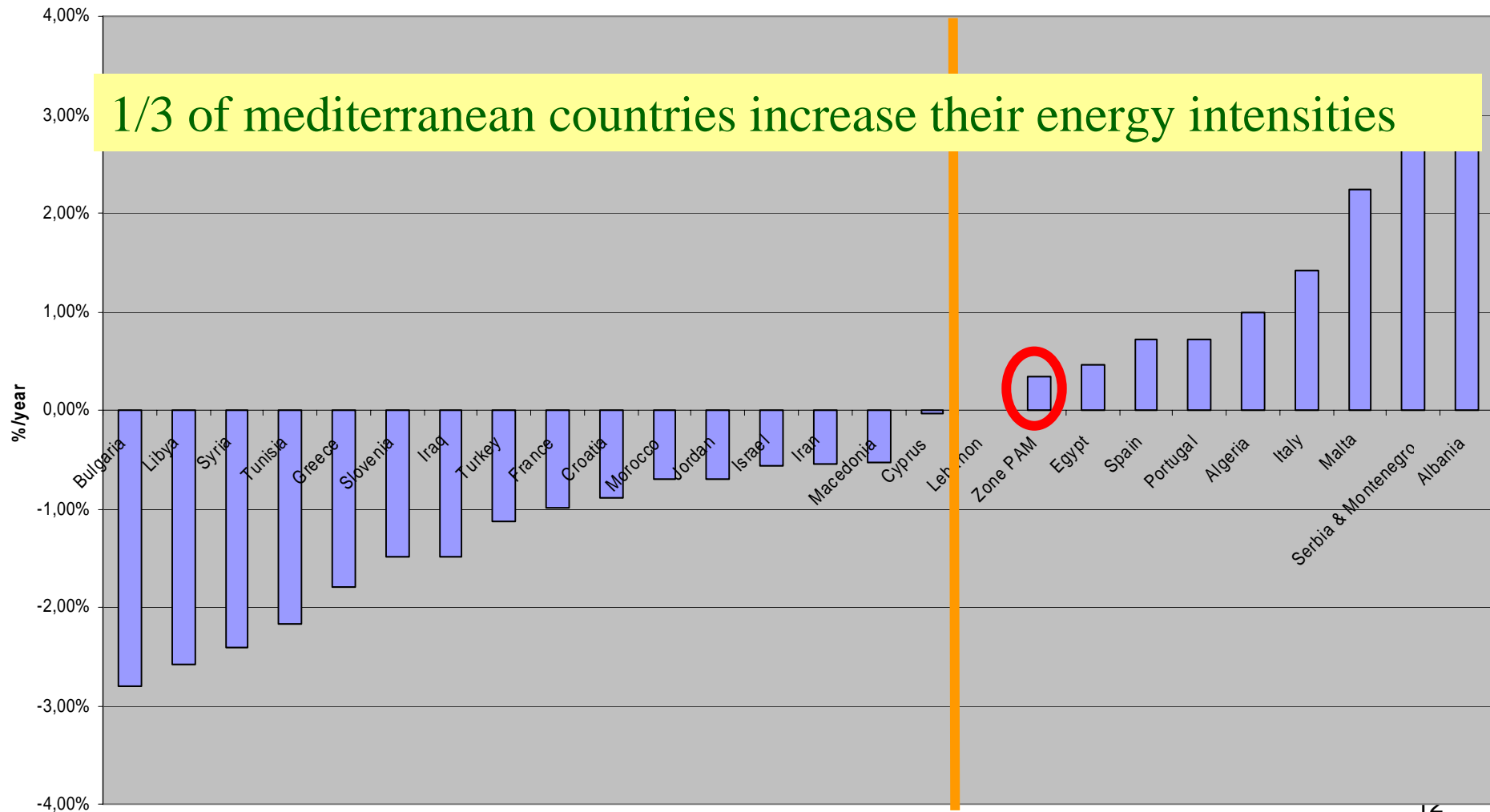


Final energy intensities adjusted with ppp (2005) source ENERDATA-ADEME





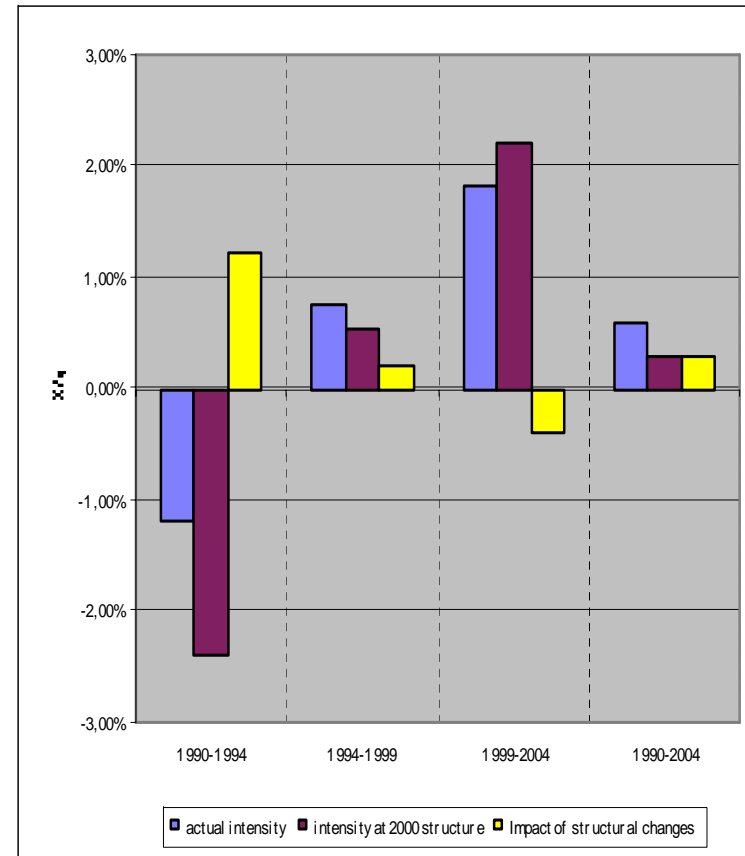
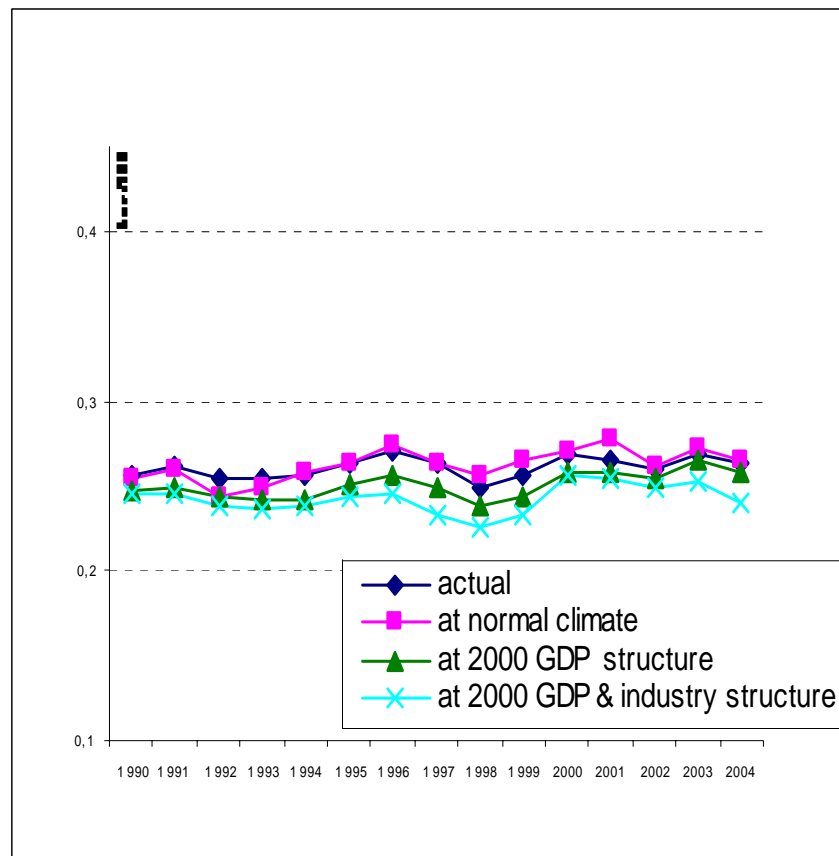
Yearly trends of final energy intensities (2000-2005) source Enerdata-ADEME)





Adjusted indicators : The impact of structural changes in the industry in Turkey source EIE-ADEME

Figure 9 : Energy intensity variation of manufacturing: role of structural changes

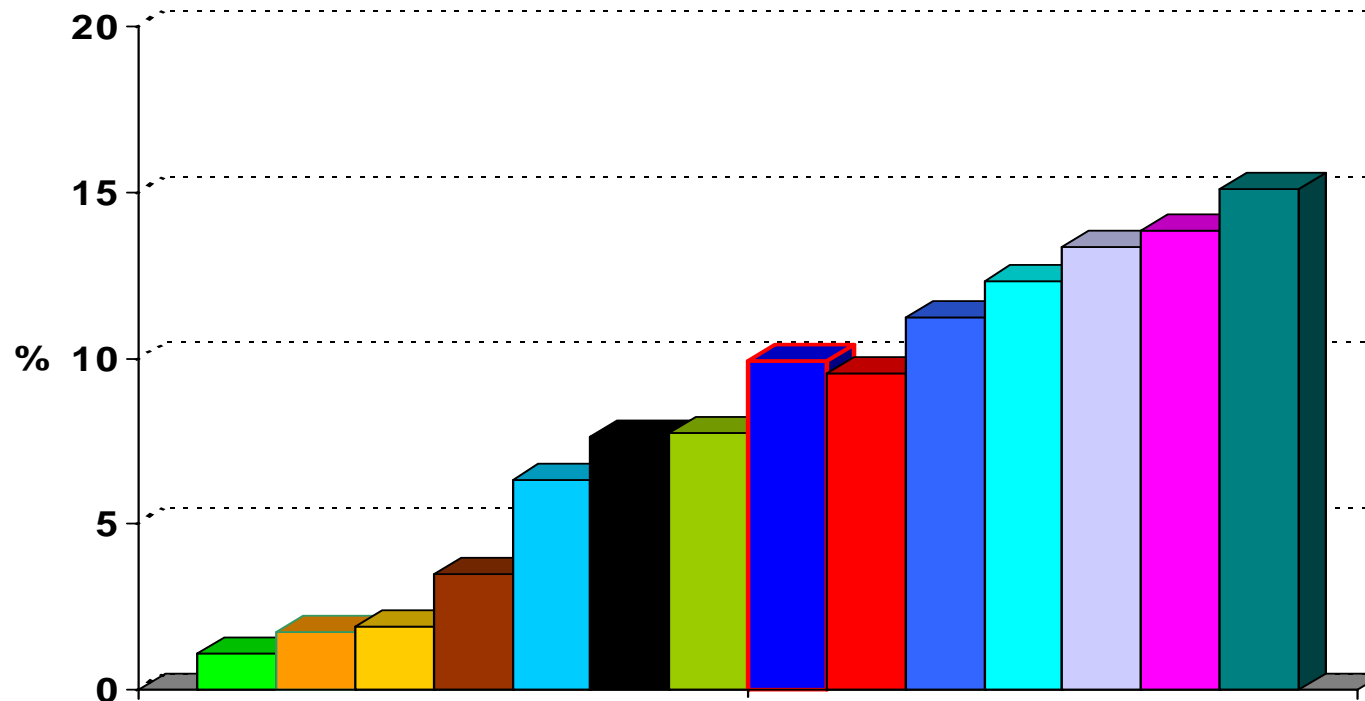




The Energy efficiency index ODEX

Energy efficiency at final consumers level has improved of 10 % in the UE-15 since 1990

Energy efficiency gains at final consumers level between 1990 et 2002



All countries improve their efficiency ; great discrepancies across countries.

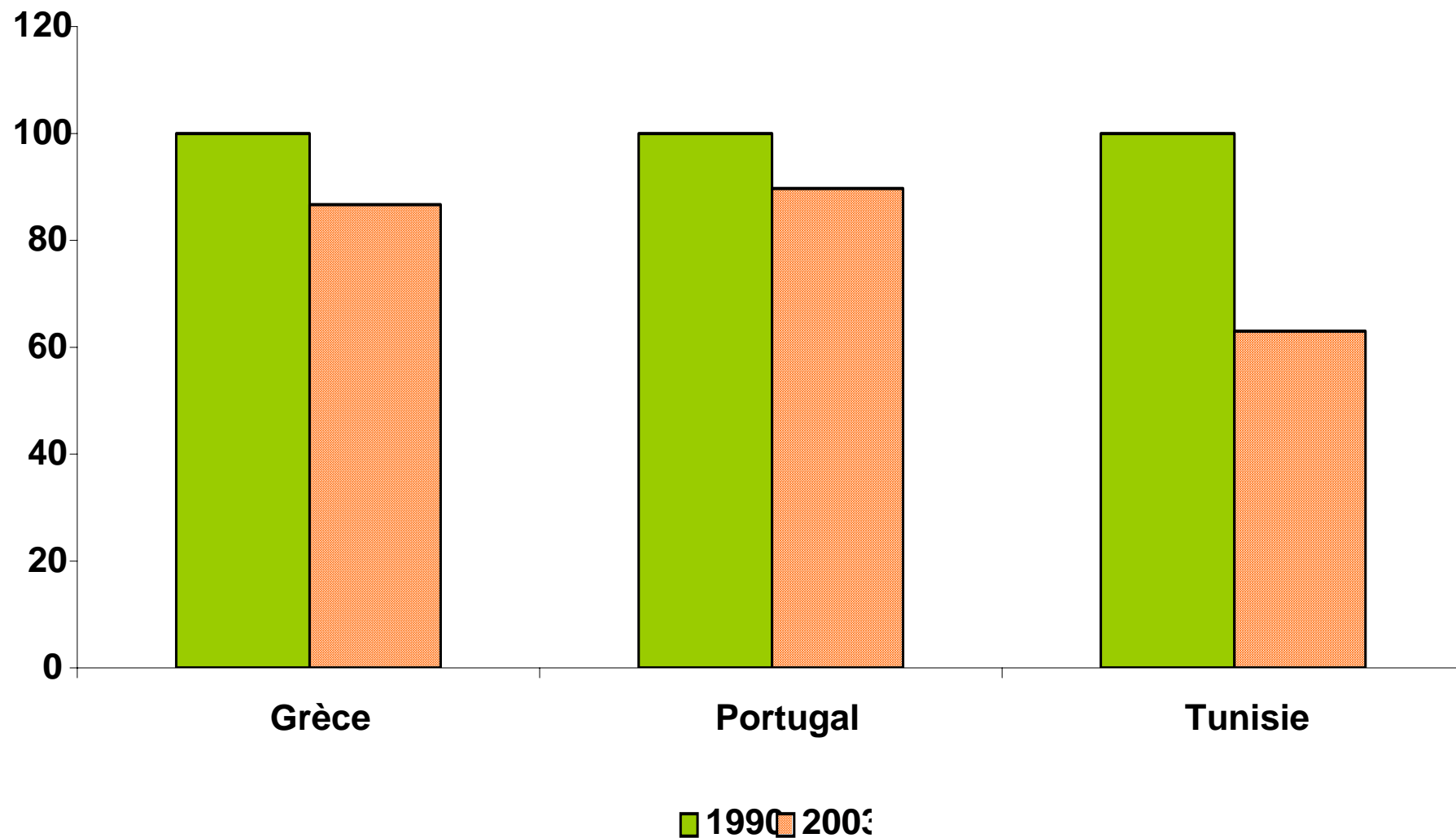
These efficiency gains are calculated with an index so-called ODEX , which weights gains observed in 30 end-uses

ODEX allows the monitoring of the ESD



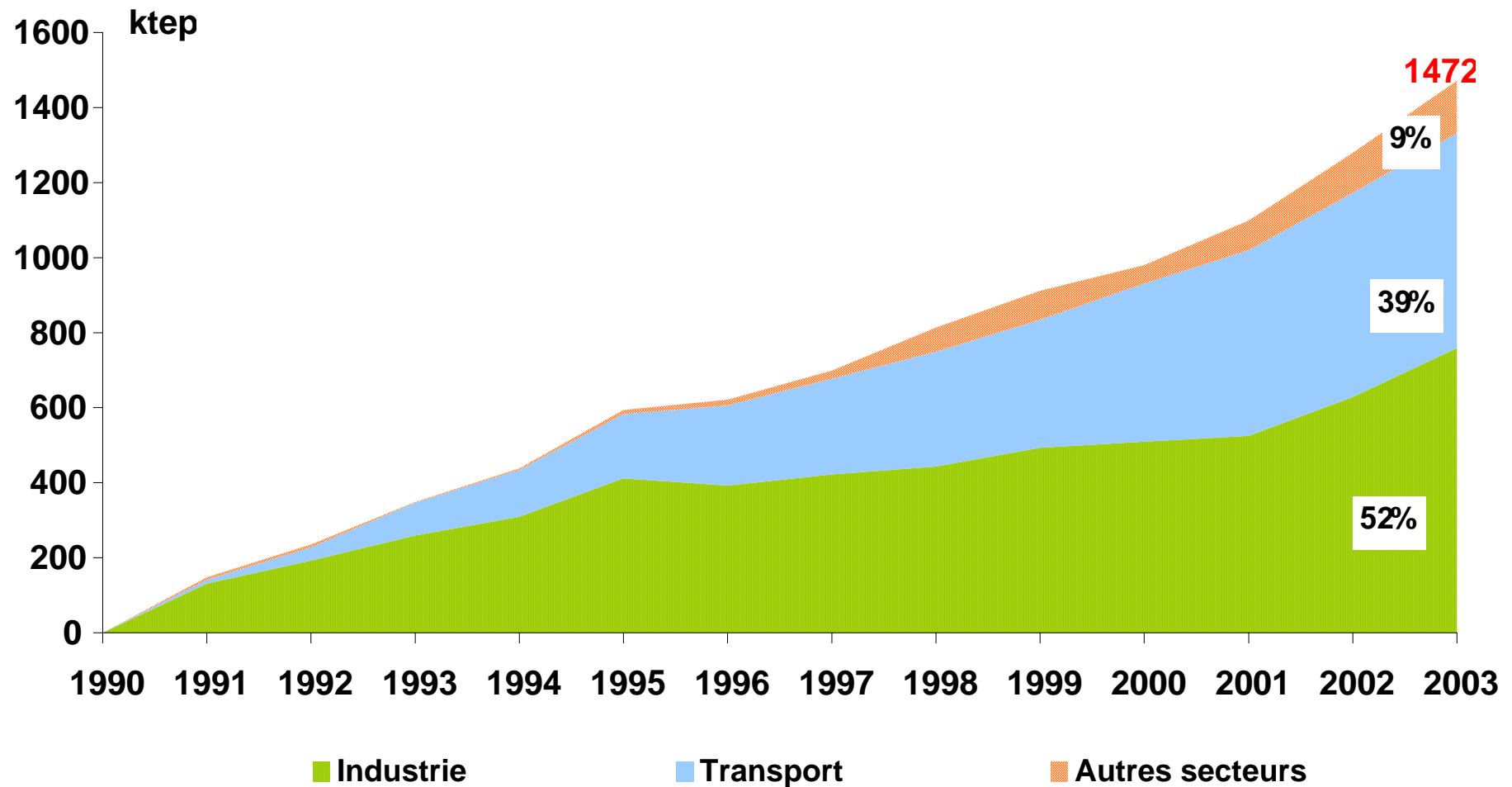


Comparaison de l'indice d'efficacité énergétique dans le secteur industriel : (ODEX 1990-2003)





Energy savings in Tunisia (1990-2003) (source ANME-ADEME)

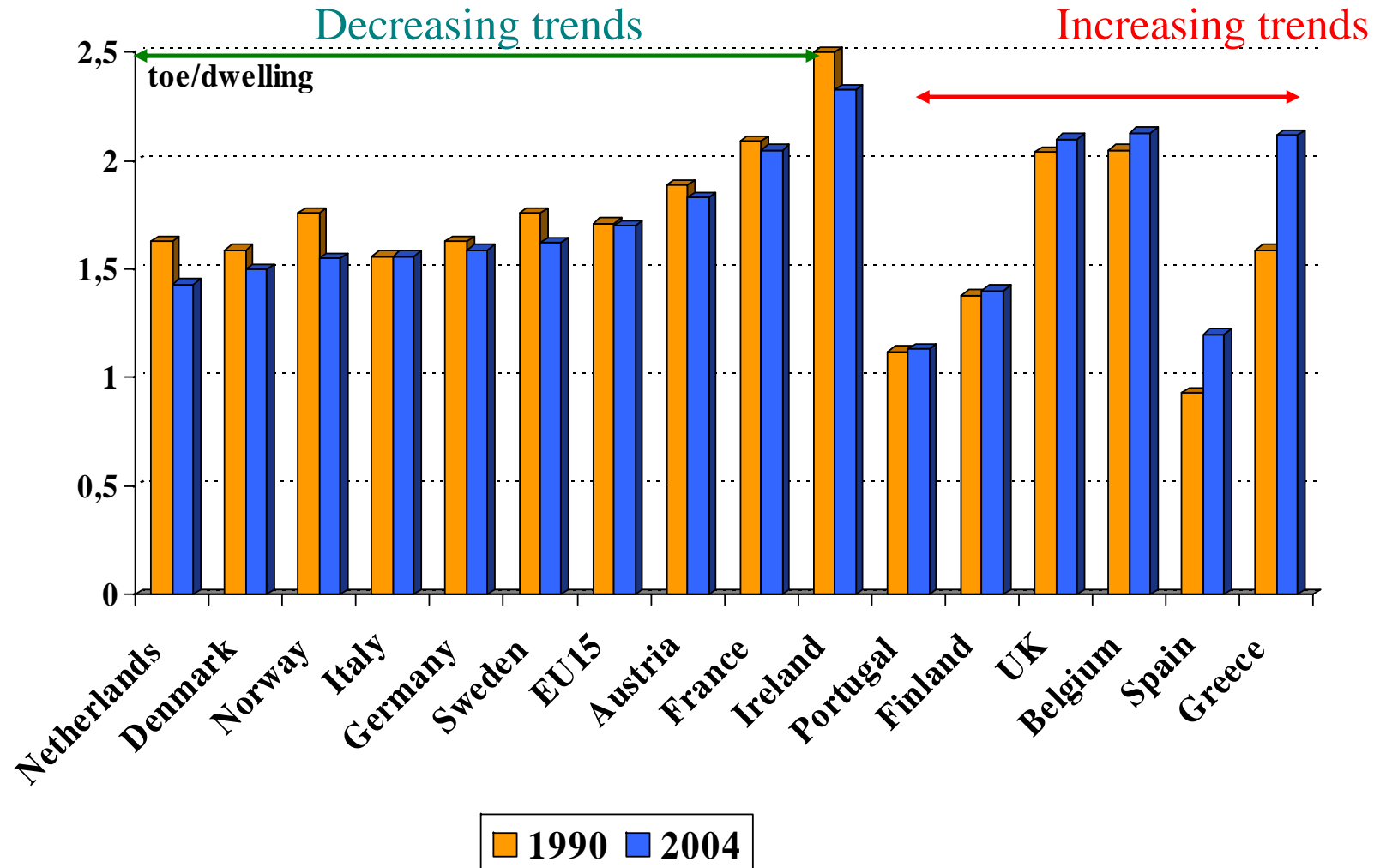




Average consumption per dwelling

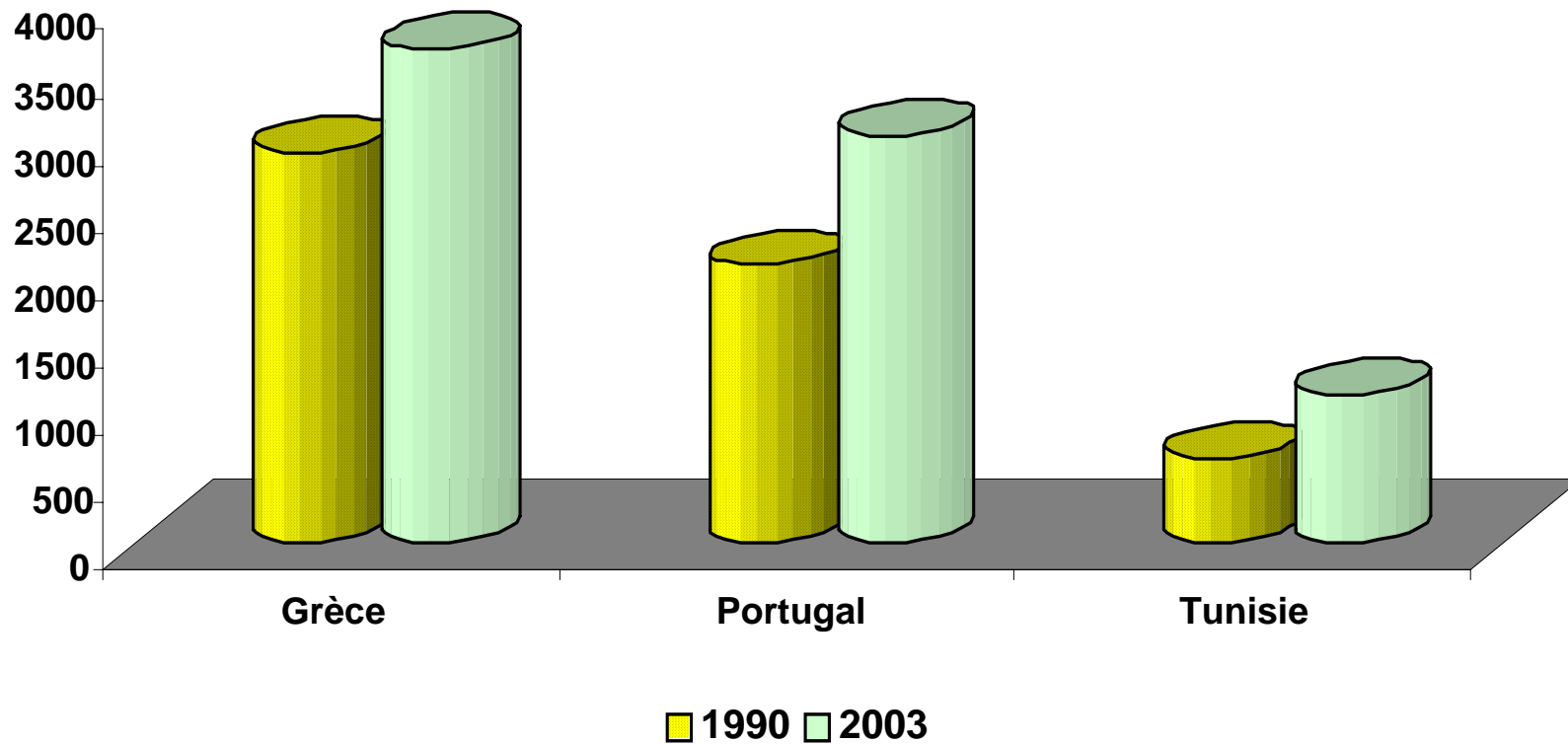
(scaled at EU-15 average climate)

Different trends across countries



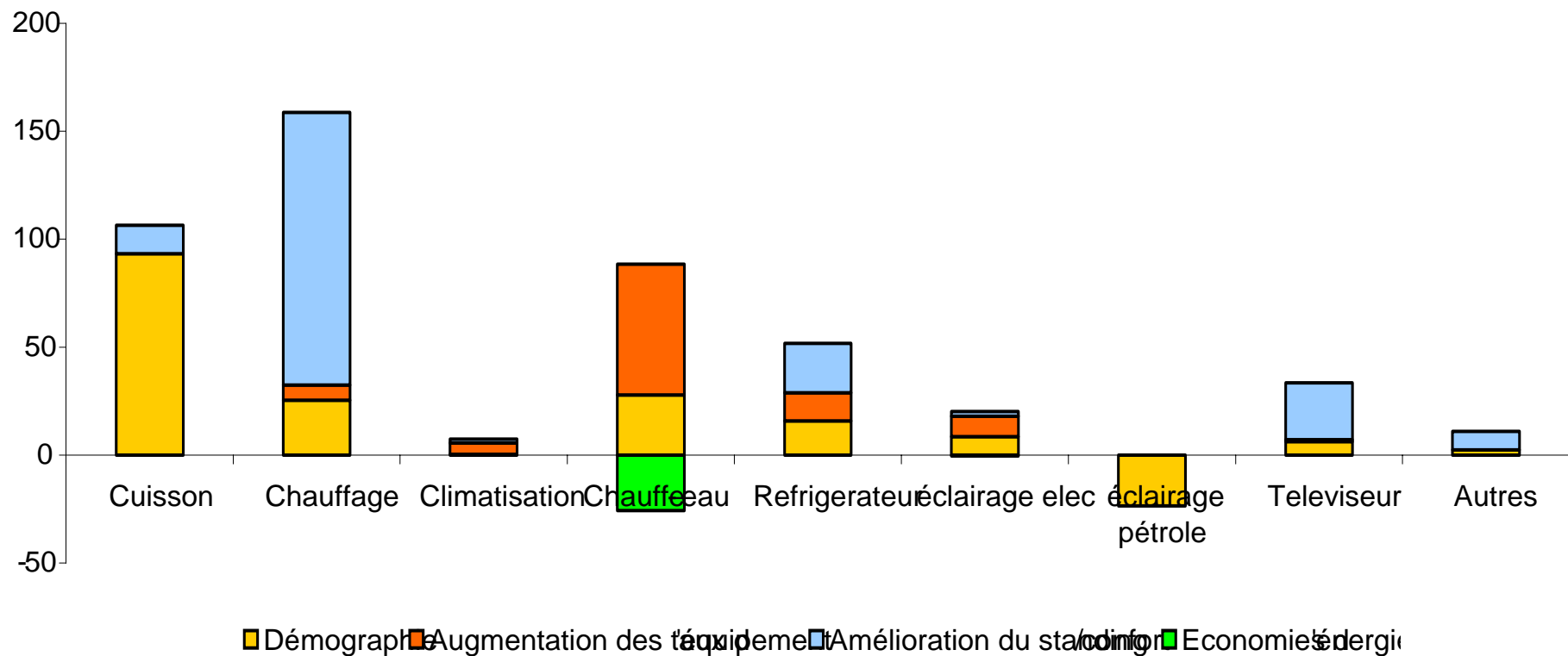


Comparison of the electricity consumption per dwelling (Kwh/Dwe) source ANME-ADEME





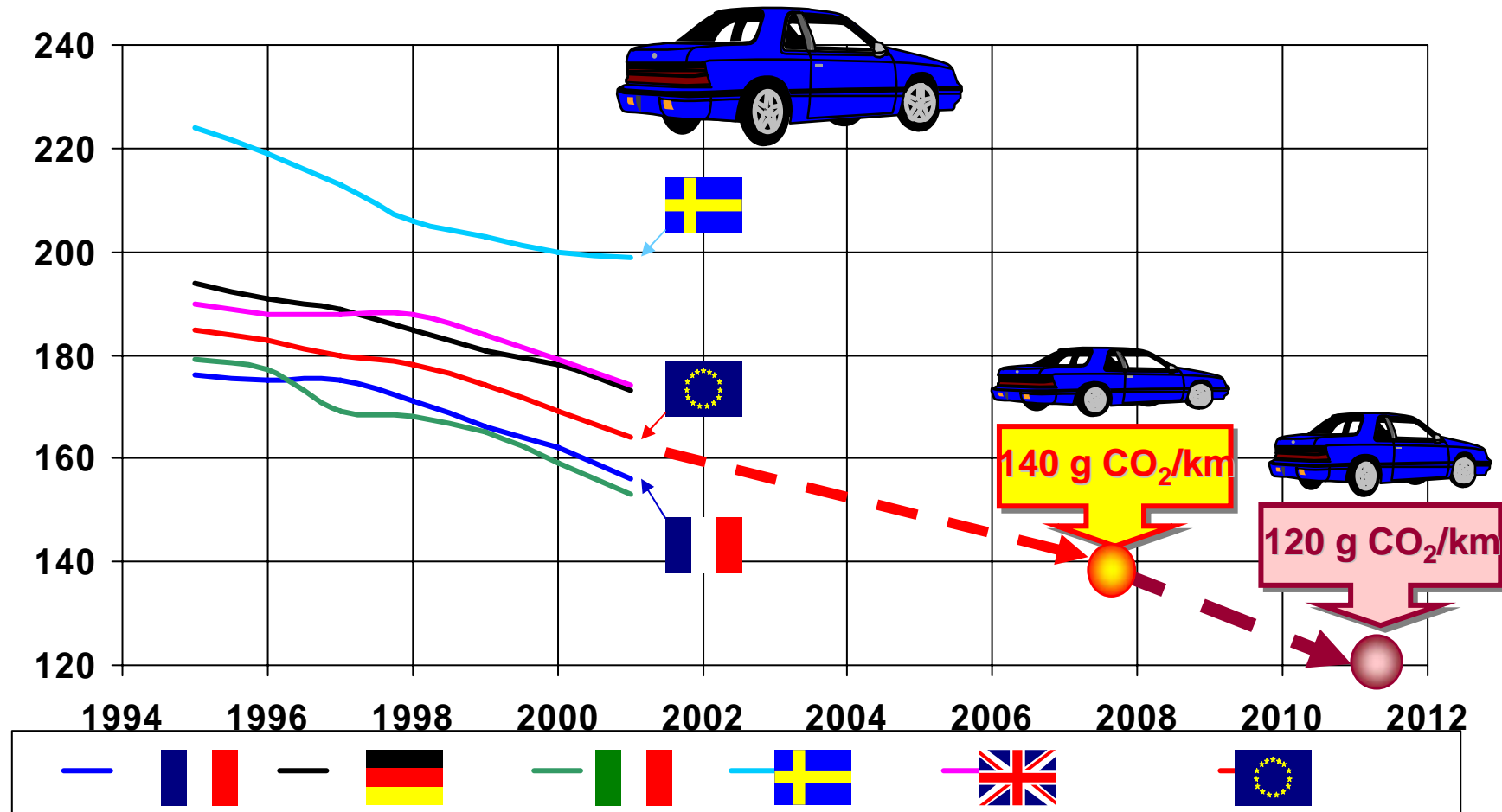
Explanatory factors of the consumption per dwelling changes (Tunisia 1990-2003; source ANME-ADEME)





ACEA Voluntary Agreement

On track with the 2008 target, And 2012 ?

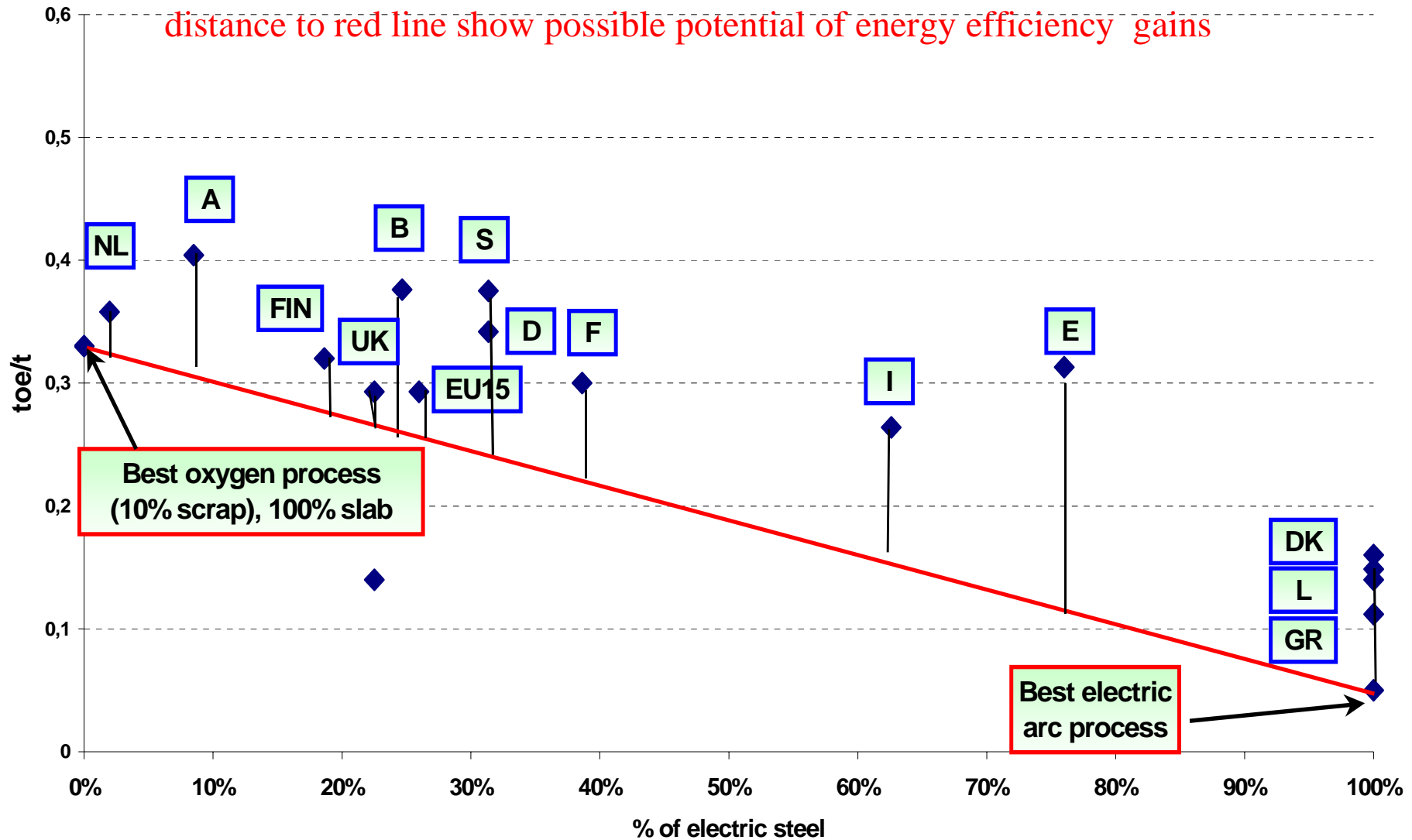


SOURCE ACEA/OICA/CEMT



Consumption per tonne of crude steel

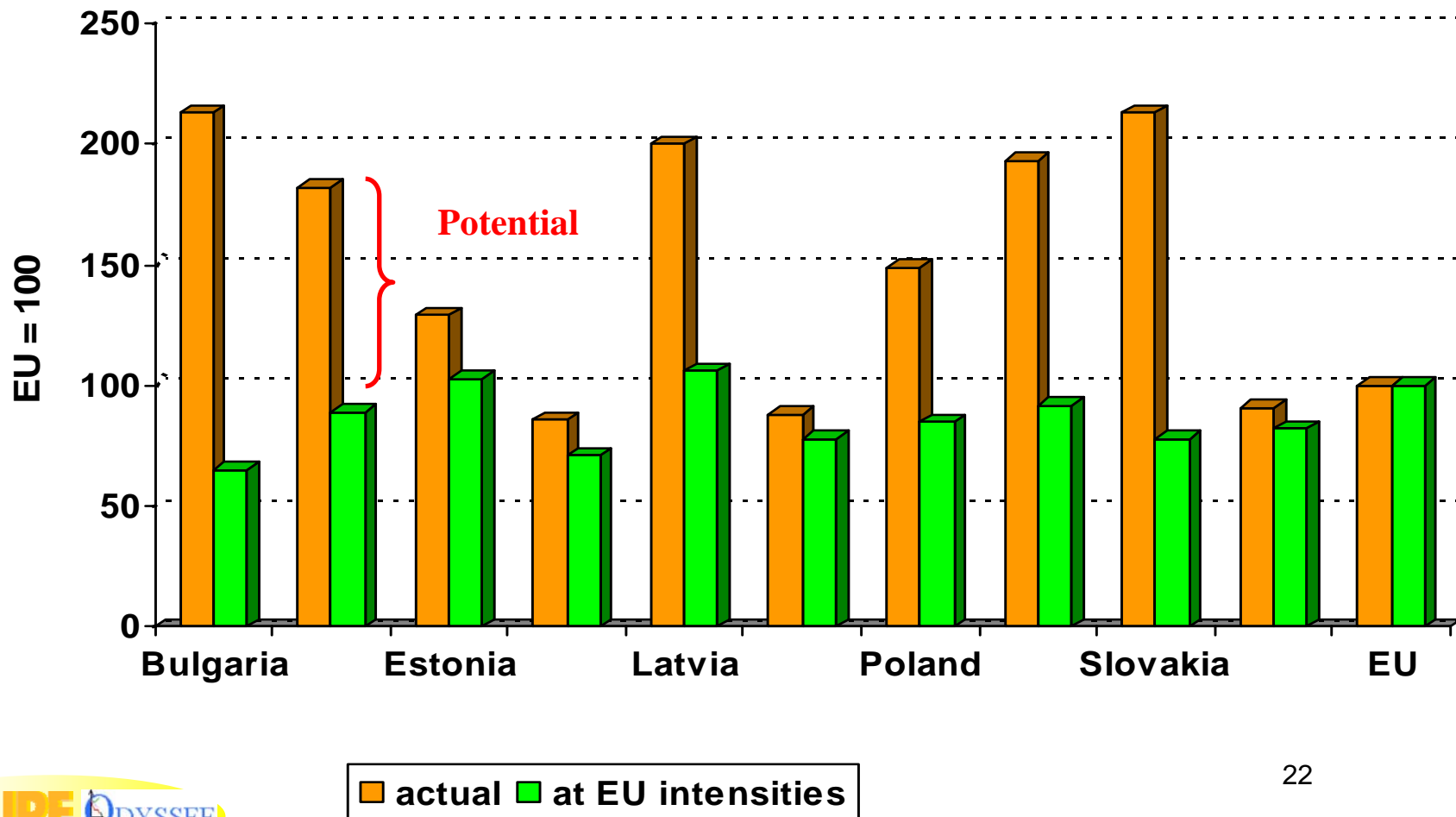
Difference in specific consumption partly explained by differences in process mix;
 distance to red line show possible potential of energy efficiency gains





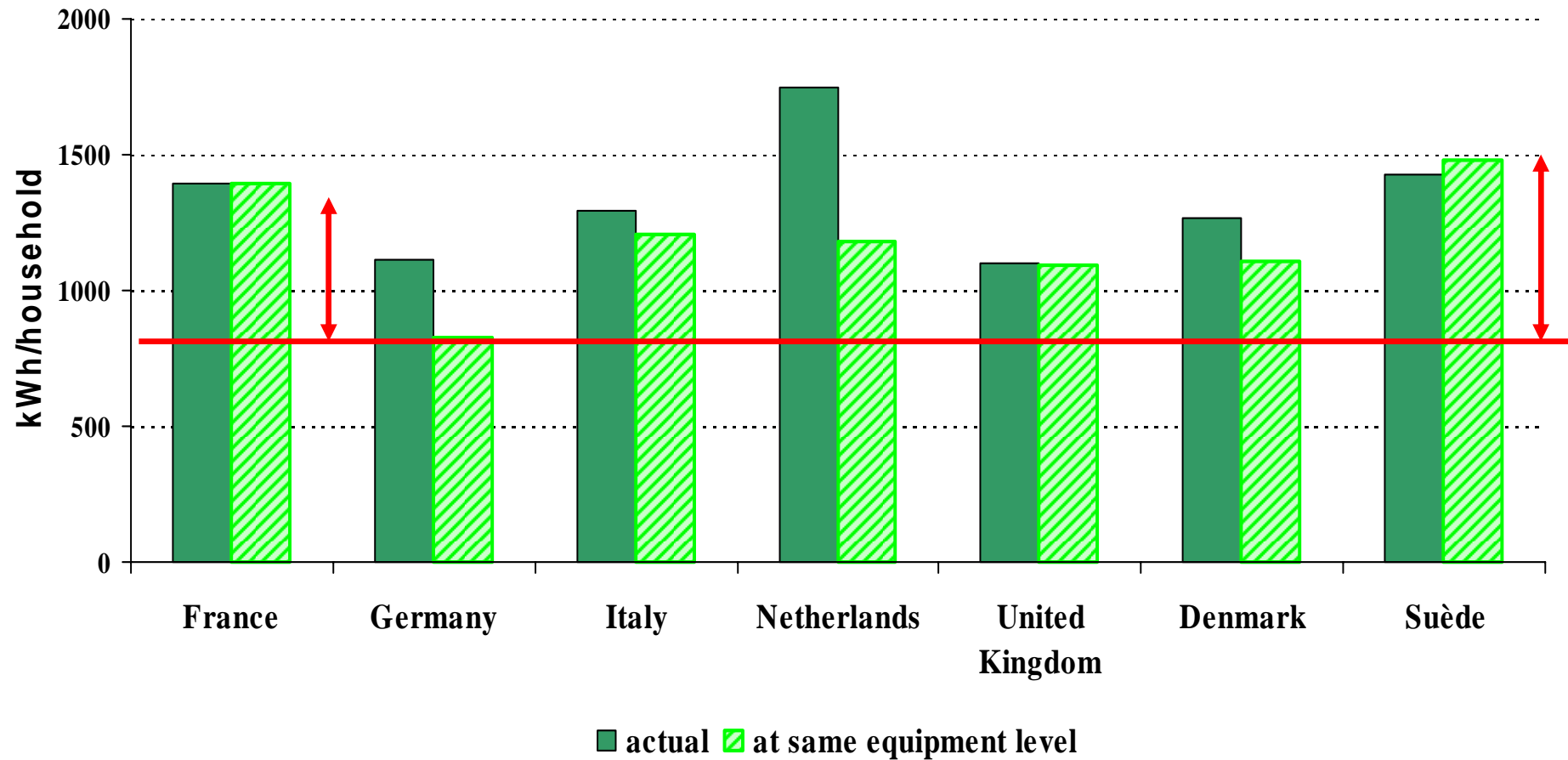
Target intensity of manufacturing : potential of energy intensity improvement in manufacturing

Difference between these two intensities give the magnitude of the potential





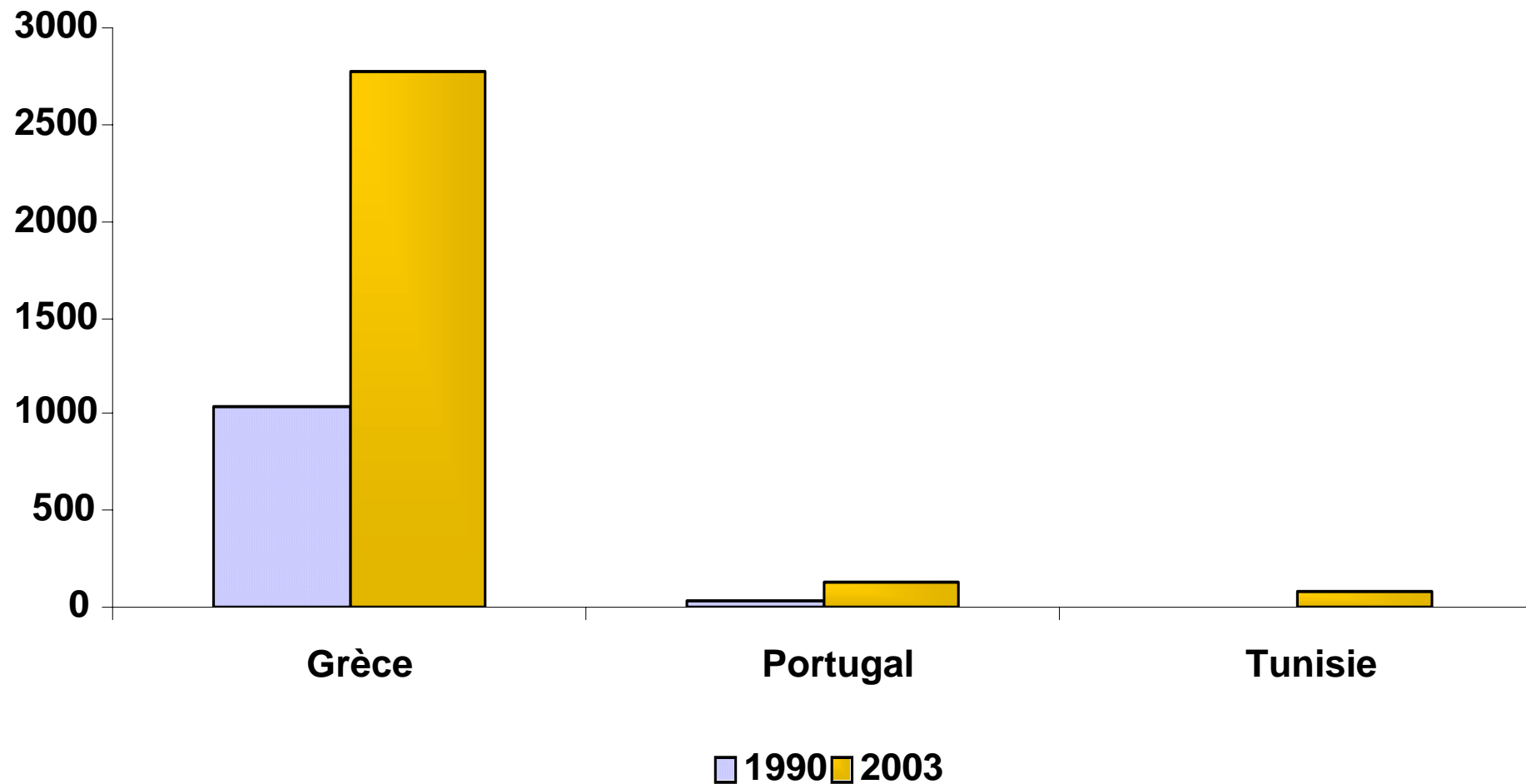
Target for large electrical appliances



* large appliance 23



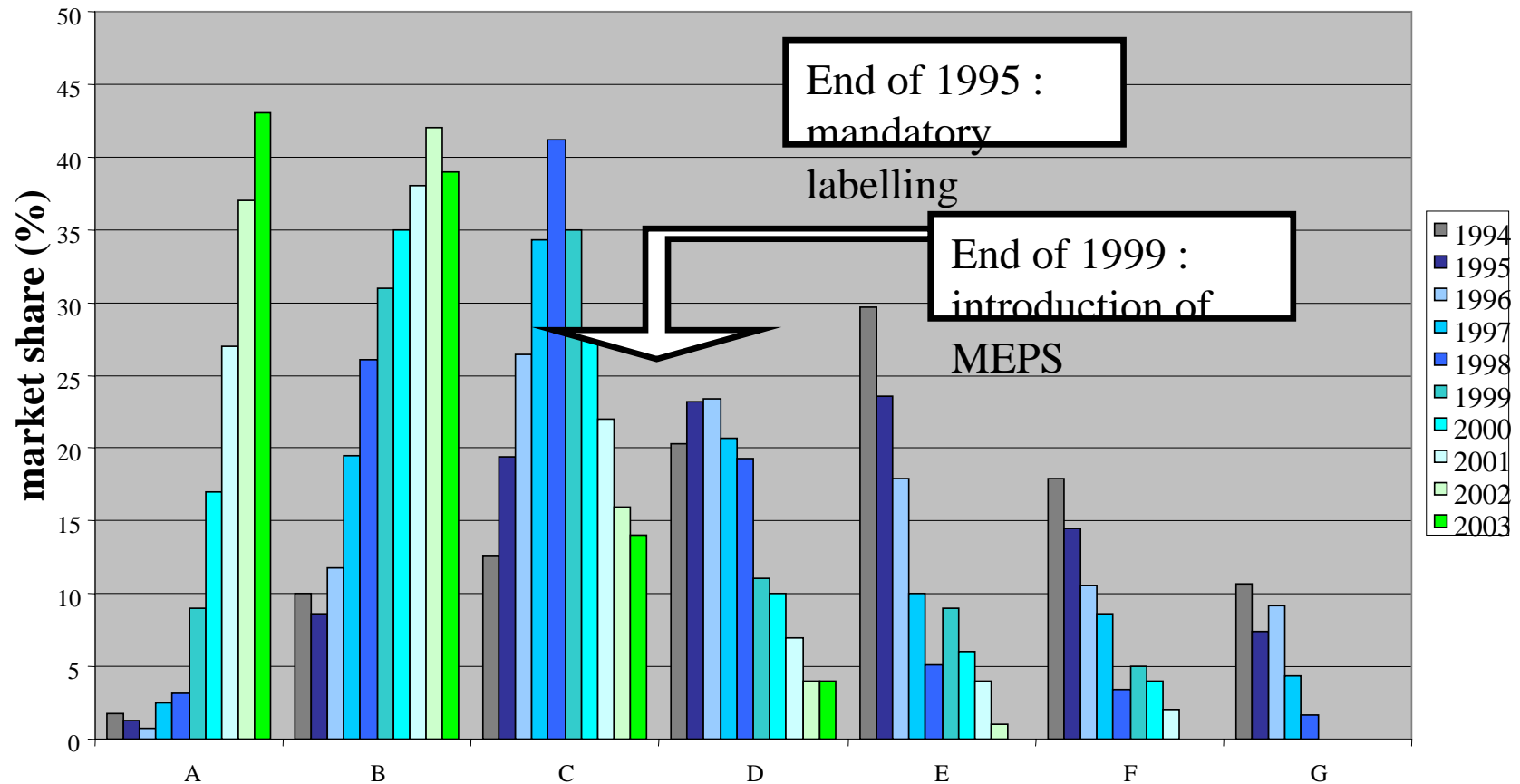
Diffusion indicators : penetration of solar heater (1000 M2) (source ANME-ADEME)





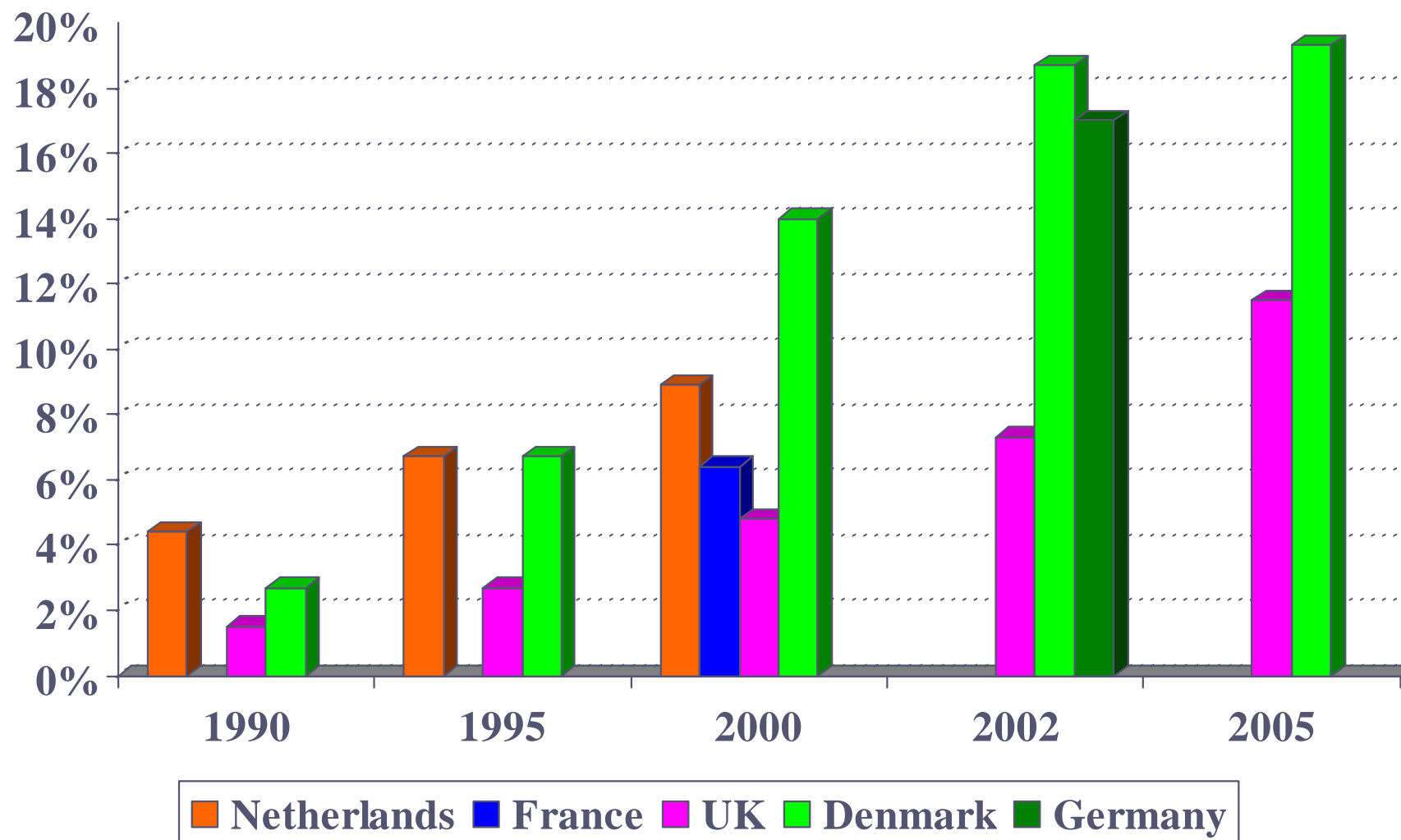
Impacts of labels and standards

Refrigerators / Freezers (France)





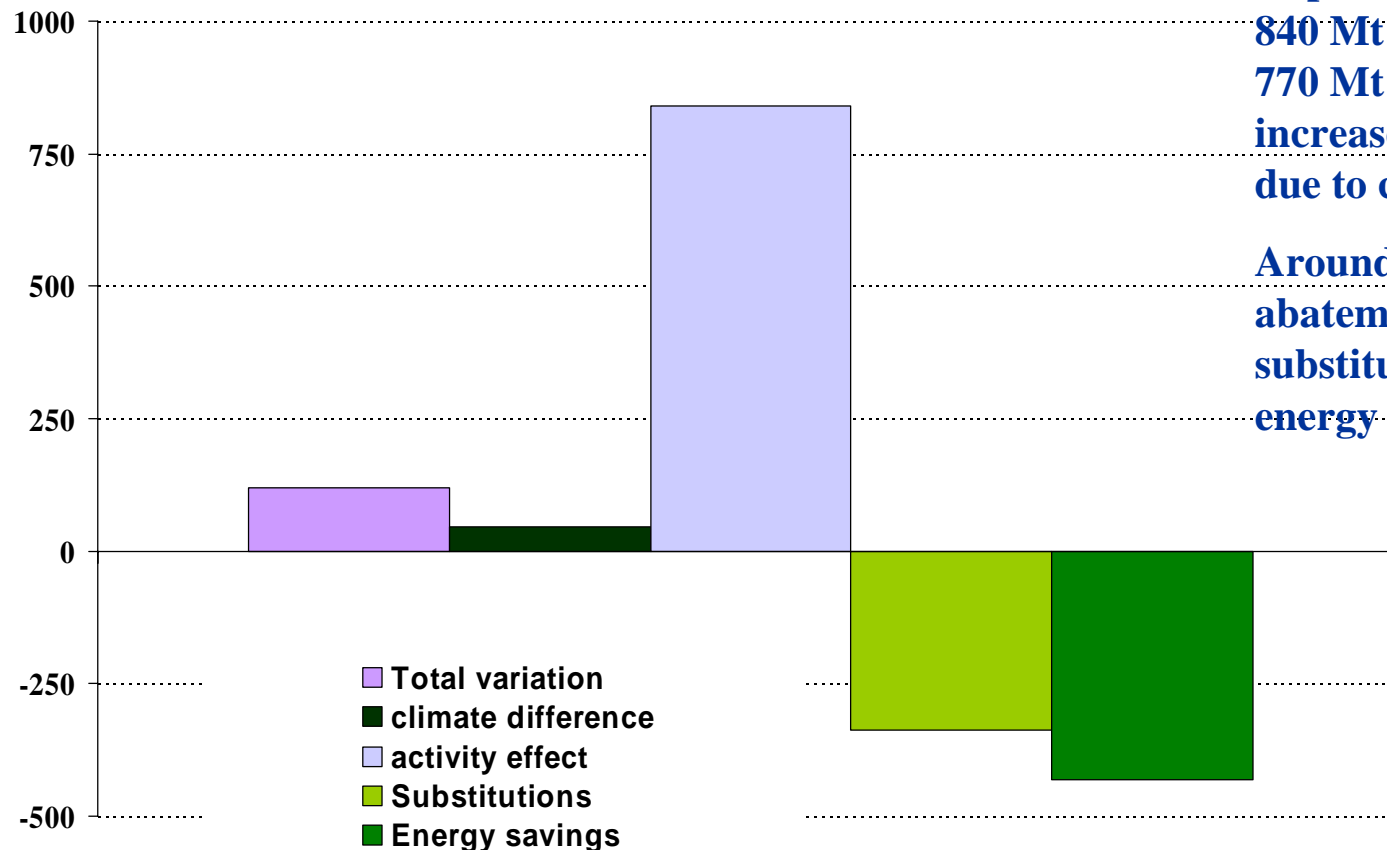
Diffusion of CFL lamps : market share





Due to substantial savings, total CO₂ energy-related emissions are in 2003 only 4% above of 1990 level in the UE-15

Factors of variation of total CO₂ emissions in the UE-15
(Mt CO₂) (1990-2003)



Impact of economic growth (+ 840 Mt CO₂) largely balanced by 770 Mt of savings → emissions increase of 120 Mt (gap of 70 Mt due to climate differences)

Around 45% of emissions abatements are due to fuels substitution and 55% related to energy efficiency improvements.



In summary, three types of energy efficiency and CO₂ indicators are considered

- Indicators to monitor and explain **trends** in energy efficiency and CO₂ abatement by country: **ODEX** (plus measurement of energy/CO₂ savings)
- Indicators to **compare** the energy efficiency “performance” level of a country with other countries (“adjusted indicators”) and **target** indicators
- **Diffusion** indicators to measure the diffusion of efficient technologies and practices



Originality of the ODYSSEE project

- **Unique data bases** by its comprehensive content (about 200 EE and CO2 indicators) and time coverage (1970 - 2004)
- **Interpretation of indicators** trends : important component of the project ; this justifies the involvement of national agencies → not a project on statistics
- **Large set of indicators** to address the various definition of energy efficiency
- **Interpretation is enriched by comparing different indicators for a given sector** (eg energy versus CO2, various indicators for cars or for industry)



Why so many indicators are necessary?

- In the **ODYSSEE** project : **about 200 indicators** and number is increasing
- Each indicator **answer to a specific question** : depending on the question, one or several indicators can be considered
- **Energy efficiency has different meaning and frontiers** (economic efficiency versus technical efficiency)
- Several indicators often necessary to cope with possible **data gaps** (alternative indicators)
- **Interpretation** provided by comparing several indicators



Conclusion (1)

- > Energy efficiency indicators are **necessary** to monitor energy efficiency policies;
- > International comparison through **benchmark** EE indicators provides useful information for **energy savings potential** assessment and impact policies evaluation;
- > EE indicators methodologies exist since many years and are **workable**. They are already implemented in many mediterranean countries including in the south (Tunisia, turkey etc.);
- > To be politically endorsed, EE indicators methodologies should be implemented in a **decentralised** way with a common methodology and data base;



Conclusion (2)

- > **ODYSSEE-MURE : the current best practices in Europe for monitoring energy efficiency**
- > **Mediterranean countries may gather effort to implement a common monitoring tool of energy efficiency because their national circumstances have some shared characteristics**

Please visit us

ODYSSEE-indicators.com; MURE2.com